SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

Customer:		Tested By:	J.Emperador
SO No:		Temperature:	+25°C -40C +85C
Model No:	HADA-D2002	Date:	12/16/20
Serial No:	PL30759/2051	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°	-41.0 dBm See Plot	
3	Frequency Flatness:	±1.65 dB Max	±1.20 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)	+0.78 dB -2.72 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	-0.33 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%)	19.10 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	111.87 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	+75 mV +91 mV See Plot	PMI QA3

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

SUMMARY TEST DATA ON HADA-D2002

PL30759/2051

12	Input VSWR:	3.0:1 Max @ +23 dBm	**1.57: 1** **See Plot**	**PMI QA3**
13	Propagation Delay:	60 ns Max	**40 ns**	
14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	**84 mA** **43 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-62 (or equivalent), 5 meter, 93±0.5 Ohms terminated.

QA/QC Approval: Arthur Zimerman **Date:** 1-21-21

4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

LOG TRANSFER WITH FREQUENCY @ +25C
MODEL: HADA-D2002
SERIAL NO: PL30759
TESTED BY: J.Emperador
DATE: 12/10/20

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= 0.075 Volts
TSS Frequency(Min)= 18.0 GHz

Frequency		-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)		
2 GHz	INTERCEPT (m	2161											
	SLOPE (mV/dB	49.9											
		362	621	864	1096	1360	1625	1863	2120	2349	Measured Value (mV)	Error(dB)	
		-2	7	1	-17	-2	13	2	9	-11	Error (mV)	MAX	MIN
		-0.04	0.15	0.02	-0.33	-0.04	0.27	0.03	0.18	-0.23	LINEARITY ERROR (dB)	0.27	-0.33
		0.24	0.42	0.28	-0.08	0.20	0.50	0.26	0.40	-0.02	LOGGING ACCURACY (dB)	0.50	-0.08
6 GHz	INTERCEPT (m	2203											
	SLOPE (mV/dB	50.2											
		398	651	899	1132	1396	1657	1898	2154	2407	Measured Value (mV)	Error(dB)	
		3	5	2	-16	-3	7	-3	1	3	Error (mV)	MAX	MIN
		0.07	0.11	0.04	-0.32	-0.06	0.13	-0.07	0.03	0.07	LINEARITY ERROR (dB)	0.13	-0.32
		0.96	1.02	0.98	0.64	0.92	1.14	0.96	1.08	1.14	LOGGING ACCURACY (dB)	1.14	0.64
10 GHz	INTERCEPT (m	2182											
	SLOPE (mV/dB	50.2											
		376	634	881	1113	1377	1639	1877	2133	2384	Measured Value (mV)	Error(dB)	
		0	7	3	-16	-2	9	-4	1	2	Error (mV)	MAX	MIN
		0.00	0.14	0.06	-0.31	-0.05	0.18	-0.08	0.03	0.03	LINEARITY ERROR (dB)	0.18	-0.31
		0.52	0.68	0.62	0.26	0.54	0.78	0.54	0.66	0.68	LOGGING ACCURACY (dB)	0.78	0.26
14 GHz	INTERCEPT (m	2165											
	SLOPE (mV/dB	49.9											
		368	627	871	1103	1365	1626	1863	2117	2363	Measured Value (mV)	Error(dB)	
		-2	8	3	-15	-2	10	-3	2	-1	Error (mV)	MAX	MIN
		-0.04	0.16	0.05	-0.30	-0.04	0.19	-0.05	0.04	-0.02	LINEARITY ERROR (dB)	0.19	-0.30
		0.36	0.54	0.42	0.06	0.30	0.52	0.26	0.34	0.26	LOGGING ACCURACY (dB)	0.54	0.06
18 GHz	INTERCEPT (m	2120											
	SLOPE (mV/dB	49.8											
		322	587	827	1060	1321	1583	1819	2076	2315	Measured Value (mV)	Error(dB)	
		-5	11	2	-14	-2	11	-3	5	-5	Error (mV)	MAX	MIN
		-0.10	0.22	0.04	-0.29	-0.05	0.21	-0.05	0.11	-0.10	LINEARITY ERROR (dB)	0.22	-0.29
		-0.56	-0.26	-0.46	-0.80	-0.58	-0.34	-0.62	-0.48	-0.70	LOGGING ACCURACY (dB)	-0.26	-0.80
	Flatness +/- dB		0.80	0.60	0.70	0.70	0.80	0.70	0.80	0.80	0.90		
	Max Video Output V		0.40	0.65	0.90	1.13	1.40	1.66	1.90	2.15	2.41		
	Min Video Output V		0.32	0.59	0.83	1.06	1.32	1.58	1.82	2.08	2.32		

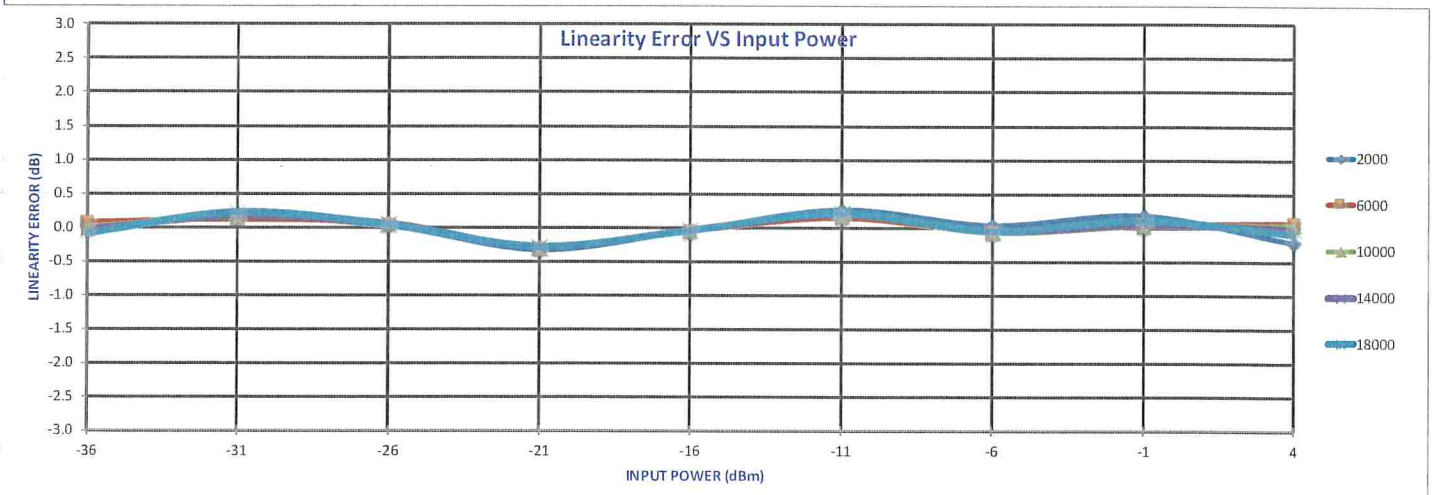
Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
LOGGING LINEARITY ERROR (dB)	0.27	-0.33

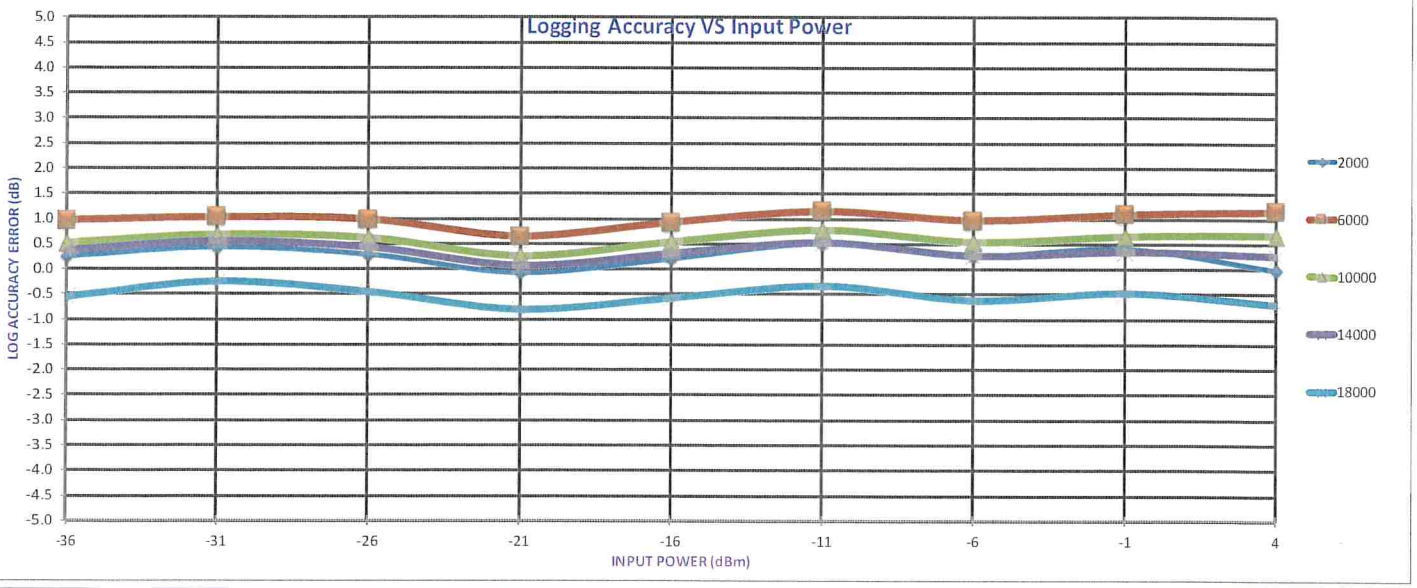
Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
LOGGING ACCURACY ERROR (dB	1.14	-0.80

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

LOG TRANSFER WITH FREQUENCY @ +25C
MODEL: HADA-D2002
SERIAL NO: PL30759
TESTED BY: J.Emperador





4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

LOG TRANSFER WITH FREQUENCY @ -40C
MODEL: HADA-D2002
SERIAL NO: PL30759
TESTED BY: J.Emperador
DATE: 12/10/20

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= 0.06 Volts

Frequency			-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)		
2 GHz	INTERCEPT (m	2078	347	585	824	1049	1305	1564	1800	2034	2256	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB	48.2	3	0	-1	-17	-2	16	11	4	-14	Error (mV)	MAX	MIN
			0.07	0.01	-0.03	-0.36	-0.04	0.33	0.23	0.09	-0.30	LINEARITY ERROR (dB)	0.33	-0.36
			-0.06	-0.30	-0.52	-1.02	-0.90	-0.72	-1.00	-1.32	-1.88	LOGGING ACCURACY (dB)	-0.06	-1.88
6 GHz	INTERCEPT (m	2129	387	620	864	1093	1349	1602	1845	2073	2327	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB	48.6	9	-2	-1	-15	-2	8	8	-8	3	Error (mV)	MAX	MIN
			0.18	-0.03	-0.02	-0.31	-0.04	0.16	0.16	-0.16	0.07	LINEARITY ERROR (dB)	0.18	-0.31
			0.74	0.40	0.28	-0.14	-0.02	0.04	-0.10	-0.54	-0.46	LOGGING ACCURACY (dB)	0.74	-0.54
10 GHz	INTERCEPT (m	2112	370	606	851	1077	1333	1589	1828	2058	2305	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB	48.5	.6	-1	1	-16	-2	11	7	-5	-1	Error (mV)	MAX	MIN
			0.11	-0.02	0.02	-0.32	-0.05	0.23	0.15	-0.11	-0.02	LINEARITY ERROR (dB)	0.23	-0.32
			0.40	0.12	0.02	-0.46	-0.34	-0.22	-0.44	-0.84	-0.90	LOGGING ACCURACY (dB)	0.40	-0.90
14 GHz	INTERCEPT (m	2088	357	596	836	1062	1317	1572	1810	2041	2268	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB	48.1	2	0	0	-15	-1	14	11	1	-12	Error (mV)	MAX	MIN
			0.04	0.00	-0.01	-0.31	-0.01	0.29	0.23	0.03	-0.25	LINEARITY ERROR (dB)	0.29	-0.31
			0.14	-0.08	-0.28	-0.76	-0.66	-0.56	-0.80	-1.18	-1.64	LOGGING ACCURACY (dB)	0.14	-1.64
18 GHz	INTERCEPT (m	2040	311	555	791	1017	1270	1528	1762	2001	2214	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB	48	-1	3	-1	-15	-2	16	10	9	-18	Error (mV)	MAX	MIN
			-0.02	0.06	-0.02	-0.31	-0.04	0.33	0.20	0.18	-0.38	LINEARITY ERROR (dB)	0.33	-0.38
			-0.78	-0.90	-1.18	-1.66	-1.60	-1.44	-1.76	-1.98	-2.72	LOGGING ACCURACY (dB)	-0.78	-2.72
	Flatness +/- dB		0.80	0.70	0.80	0.80	0.80	0.80	0.90	0.70	1.20			
	Max Video Output V		0.39	0.62	0.86	1.09	1.35	1.60	1.85	2.07	2.33			
	Min Video Output V		0.31	0.56	0.79	1.02	1.27	1.53	1.76	2.00	2.21			

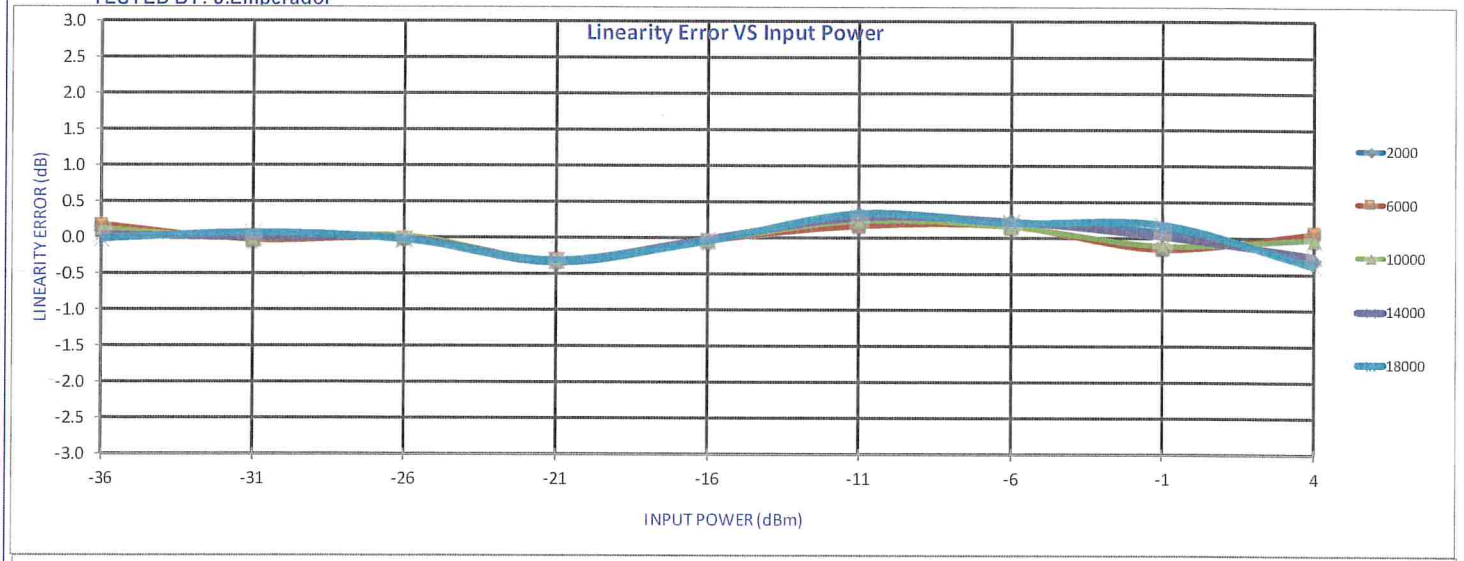
Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
LOGGING LINEARITY ERROR (dB)	0.33	-0.38

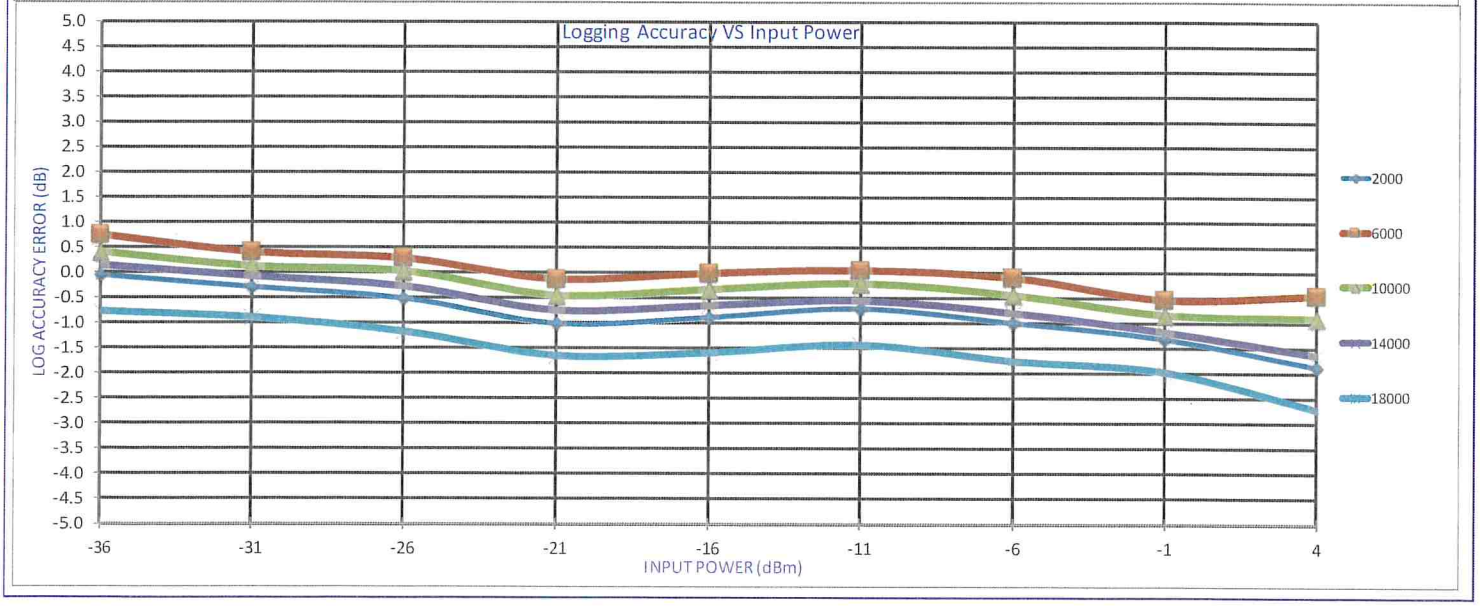
Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
LOGGING ACCURACY ERROR (dB	0.74	-2.72

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

LOG TRANSFER WITH FREQUENCY @ -40C
MODEL: HADA-D2002
SERIAL NO: PL30759
TESTED BY: J.Emperador





4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

LOG TRANSFER WITH FREQUENCY @ +85C
MODEL: HADA-D2002
SERIAL NO: PL30759
TESTED BY: J.Emperador
DATE: 12/10/20

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= 0.091 Volts

Frequency		-36	-31	-26	-21	-16	-11	-6	-1	4
		RF Input Power (dBm)								
2 GHz	INTERCEPT (m	2183	341	607	846	1082	1354	1624	1865	2139	2396
	SLOPE (mV/dB	51.3	6	15	-2	-23	-8	6	-10	8	8
			0.11	0.30	-0.05	-0.45	-0.15	0.11	-0.19	0.15	0.16
			-0.18	0.14	-0.08	-0.36	0.08	0.48	0.30	0.78	0.92
6 GHz	INTERCEPT (m	2227	376	639	884	1119	1391	1659	1901	2177	2454
	SLOPE (mV/dB	51.7	9	14	1	-23	-9	1	-16	2	21
			0.18	0.27	0.01	-0.44	-0.17	0.01	-0.30	0.04	0.40
			0.52	0.78	0.68	0.38	0.82	1.18	1.02	1.54	2.08
10 GHz	INTERCEPT (m	2198	351	617	861	1096	1367	1636	1875	2148	2420
	SLOPE (mV/dB	51.5	6	14	1	-21	-8	4	-14	2	16
			0.11	0.28	0.02	-0.41	-0.15	0.08	-0.27	0.03	0.32
			0.02	0.34	0.22	-0.08	0.34	0.72	0.50	0.96	1.40
14 GHz	INTERCEPT (m	2179	342	609	849	1084	1353	1620	1860	2129	2398
	SLOPE (mV/dB	51.1	4	16	0	-21	-7	4	-12	1	15
			0.09	0.31	0.00	-0.41	-0.15	0.08	-0.23	0.03	0.29
			-0.16	0.18	-0.02	-0.32	0.06	0.40	0.20	0.58	0.96
18 GHz	INTERCEPT (m	2127	297	561	799	1038	1303	1568	1814	2077	2343
	SLOPE (mV/dB	51	5	14	-2	-18	-8	2	-7	1	12
			0.11	0.28	-0.05	-0.36	-0.16	0.04	-0.13	0.03	0.24
			-1.06	-0.78	-1.02	-1.24	-0.94	-0.64	-0.72	-0.46	-0.14
	Flatness +/- dB		0.80	0.80	0.80	0.80	0.90	0.90	0.80	1.00	1.10
	Max Video Output V		0.38	0.64	0.88	1.12	1.39	1.66	1.90	2.18	2.45
	Min Video Output V		0.30	0.56	0.80	1.04	1.30	1.57	1.81	2.08	2.34

2 GHz	Measured Value (mV)	Error(dB)	
	Error (mV)	MAX	MIN
	LINEARITY ERROR (dB)	0.30	-0.45
	LOGGING ACCURACY (dB)	0.92	-0.36

6 GHz	Measured Value (mV)	Error(dB)	
	Error (mV)	MAX	MIN
	LINEARITY ERROR (dB)	0.40	-0.44
	LOGGING ACCURACY (dB)	2.08	0.38

10 GHz	Measured Value (mV)	Error(dB)	
	Error (mV)	MAX	MIN
	LINEARITY ERROR (dB)	0.32	-0.41
	LOGGING ACCURACY (dB)	1.40	-0.08

14 GHz	Measured Value (mV)	Error(dB)	
	Error (mV)	MAX	MIN
	LINEARITY ERROR (dB)	0.31	-0.41
	LOGGING ACCURACY (dB)	0.96	-0.32

18 GHz	Measured Value (mV)	Error(dB)	
	Error (mV)	MAX	MIN
	LINEARITY ERROR (dB)	0.28	-0.36
	LOGGING ACCURACY (dB)	-0.14	-1.24

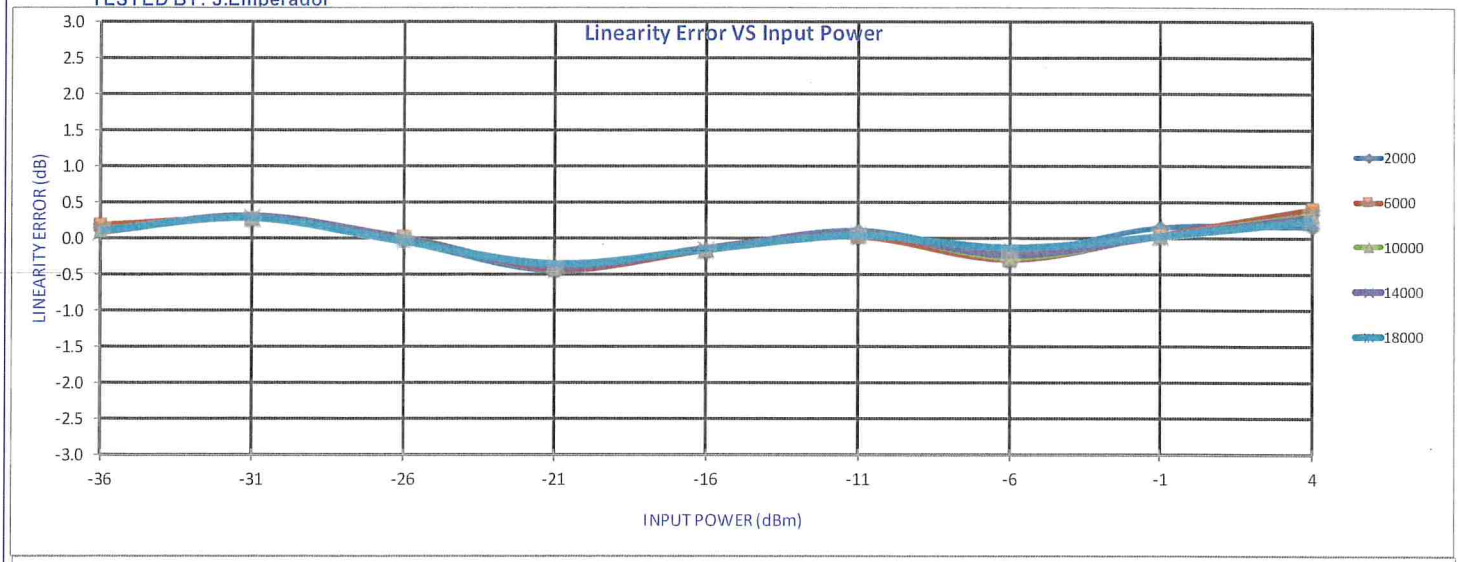
Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
LOGGING LINEARITY ERROR (dB)	0.40	-0.45

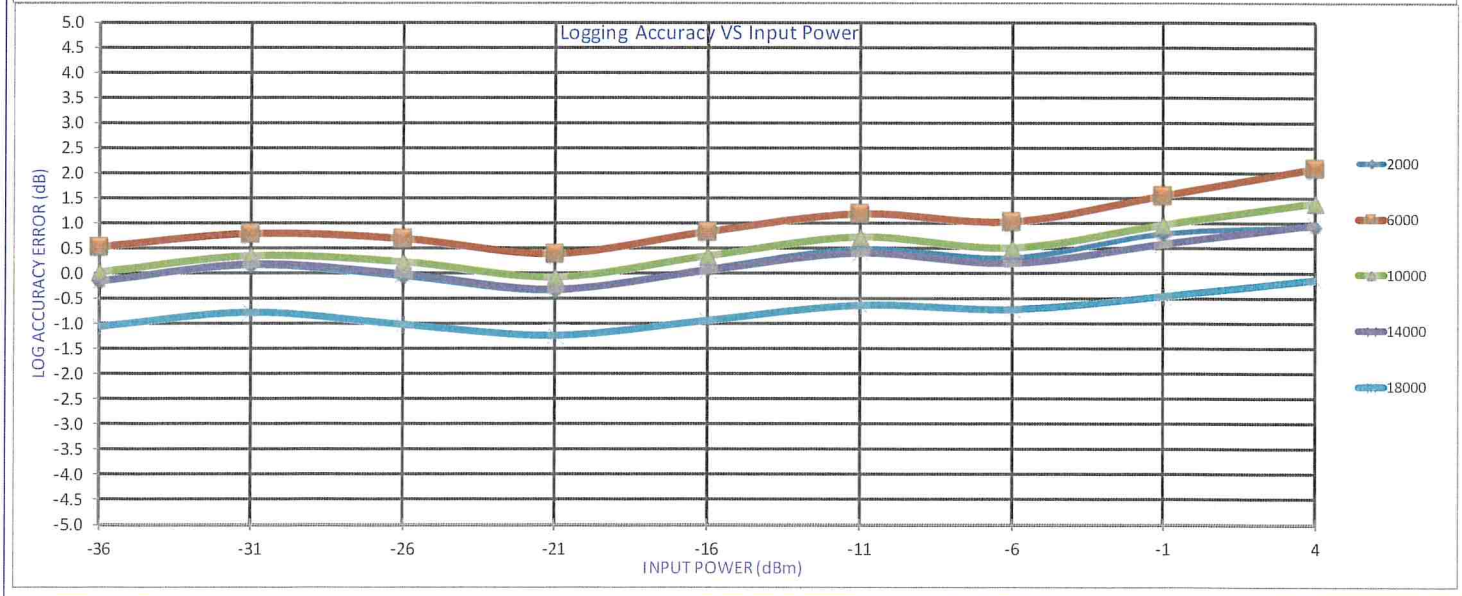
Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
LOGGING ACCURACY ERROR (dB	2.08	-1.24

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

LOG TRANSFER WITH FREQUENCY @ +85C
MODEL: HADA-D2002
SERIAL NO: PL30759
TESTED BY: J.Emperador



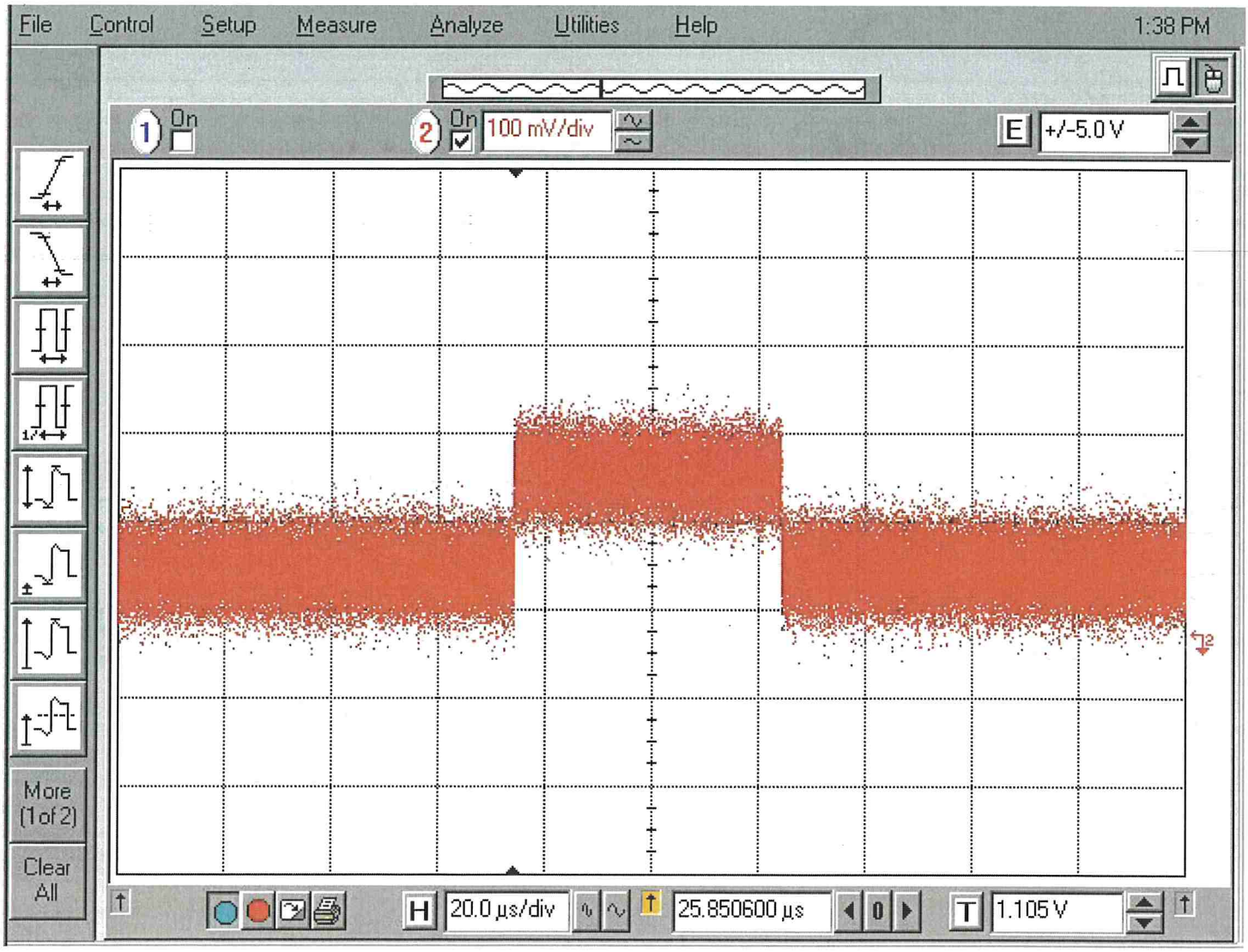


4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

TSS @ -41.0 dBm

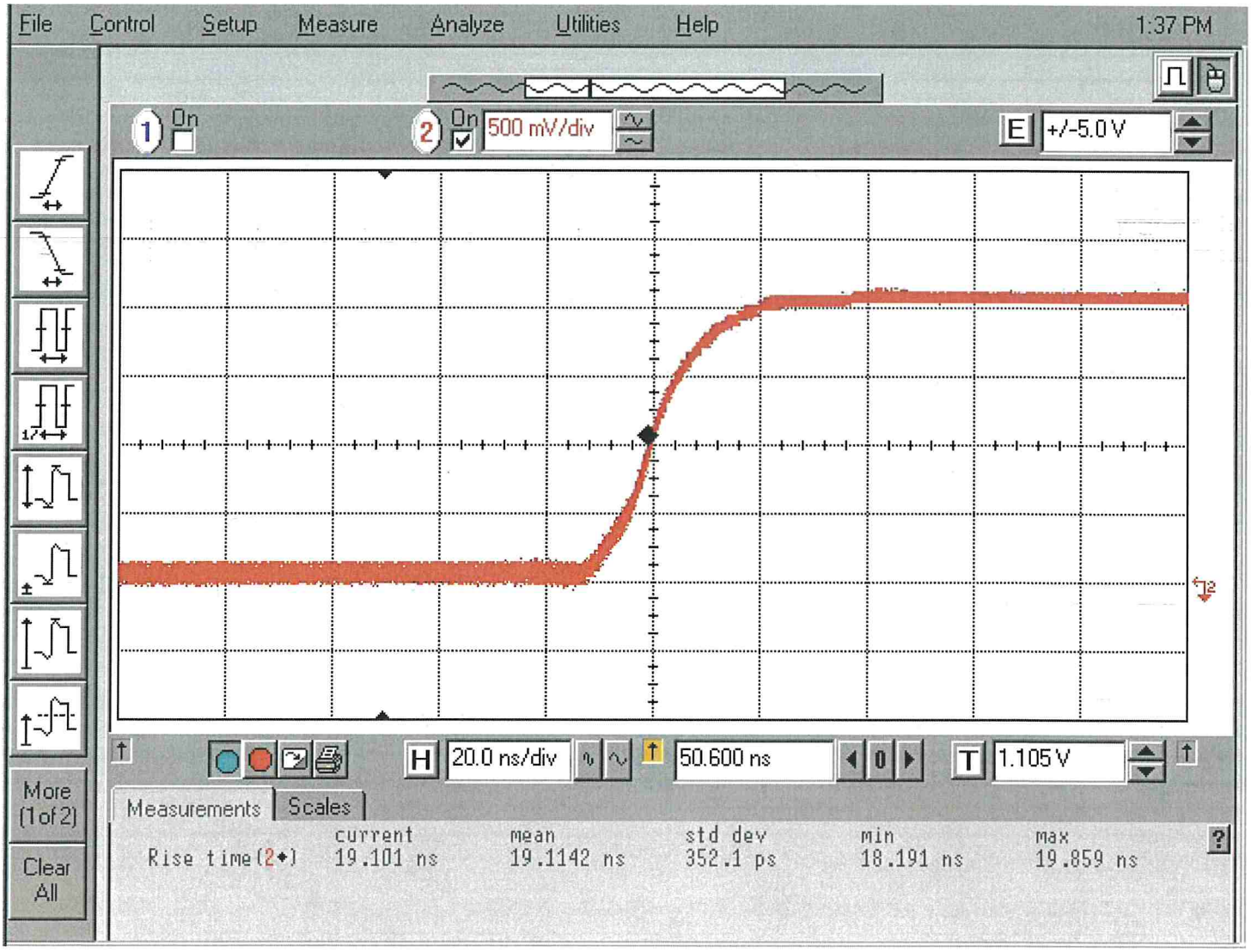


4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

Rise Time @ 19.10 ns

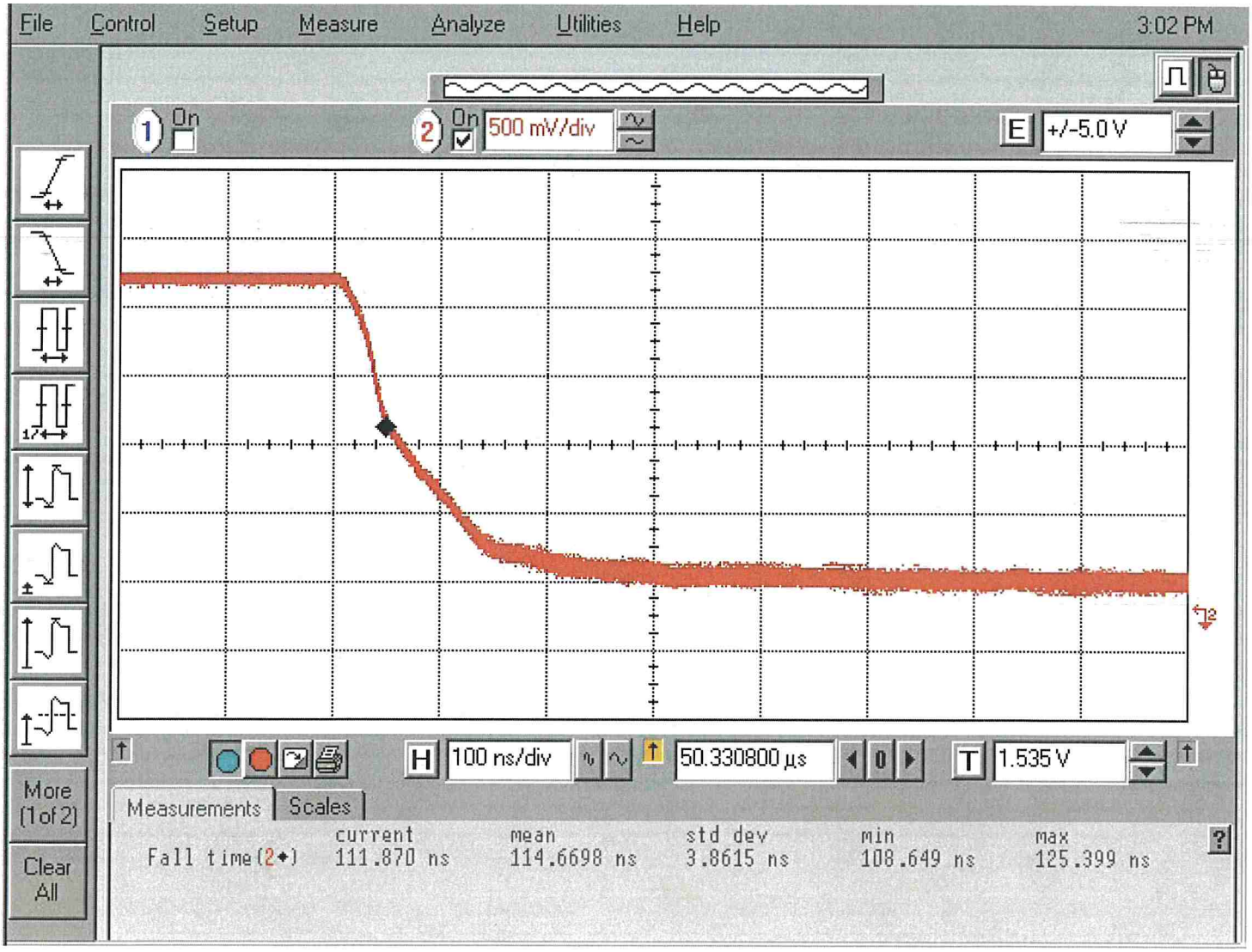


4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

Fall Time @ 111.87 ns

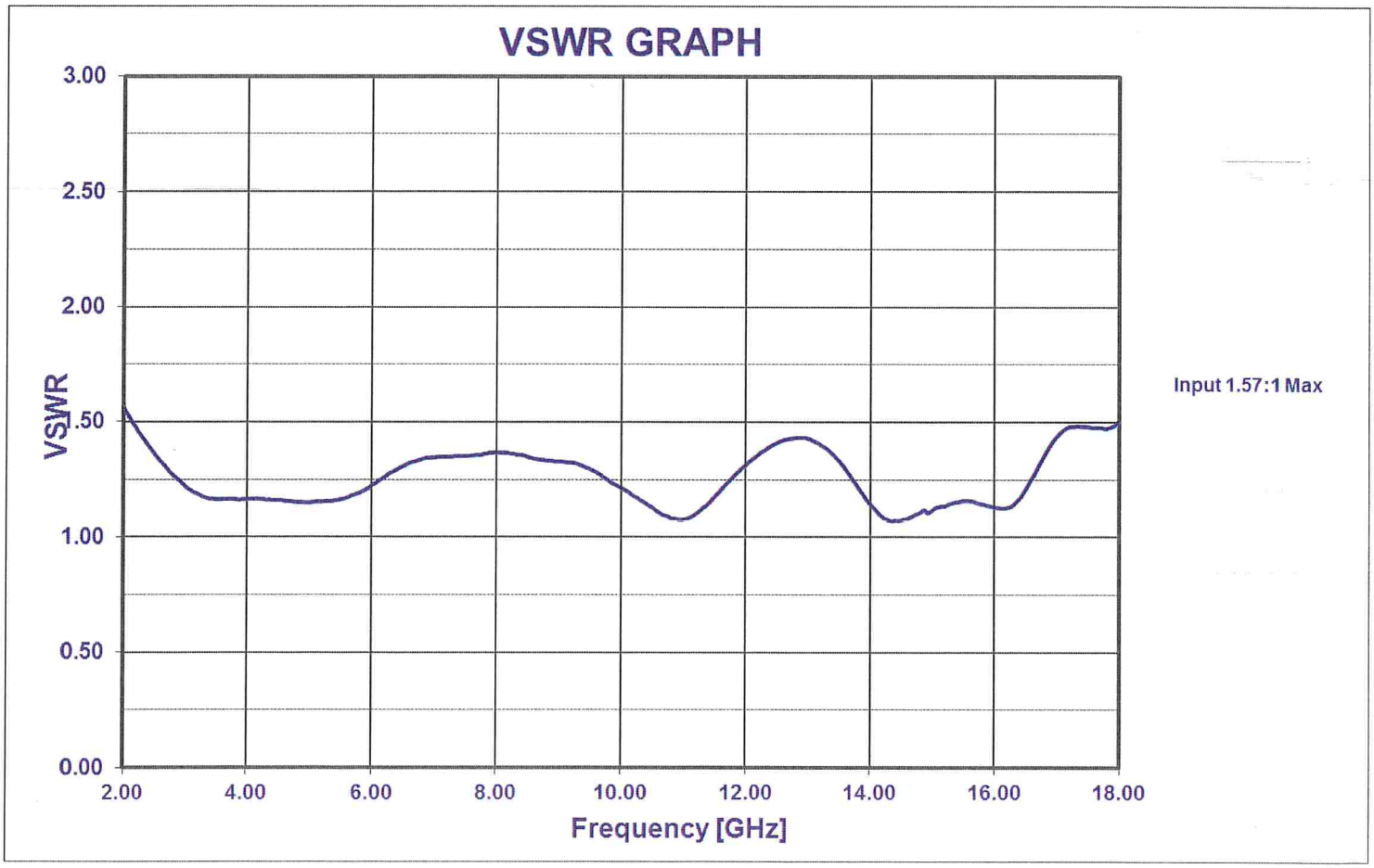


4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com

SUMMARY TEST DATA
ON
HADA-D2002

PL30759/2051

VSWR @ 1.57:1



4921 Robert J. Mathews Pkwy Suite 1, El Dorado Hills, CA 95762 USA Phone: (916)542-1401 Fax: (916)265-2597
Email: sales@pmi-rf.com