



**SUMMARY TEST DATA
ON
HADA-D2002**

Customer: _____	Tested By: <u>D. Weinrob</u>
SO No: _____	Temperature: <u>+25°C</u>
Model No: <u>HADA-D2002</u>	Date: <u>07/25/2024</u>
Serial No: <u>PL46535/2430</u>	Drawing No: <u>27620222</u> Rev: <u>A1</u>

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°	-41.4 dBm See Plot	
3	Frequency Flatness:	±1.65 dB Max	0.86 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)	0.1 dB / -0.80 dB 2.16 dB / -0.88 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	0.29 dB / -0.31 dB 0.63 dB / -0.4 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%)	19.8 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	330 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	111 mV @ +25°c 128 mV @ -40°c 145 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	2.56:1 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 @ 100mA -12 ± 1VDC @ 50mA	
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. Linton

Date:

7.25.24

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SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ +25C
 MODEL: HADA-D2002
 SERIAL NO: PL46535
 TESTED BY: D. Weinrob
 DATE: 7/3/2024



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= 0.111 Volts

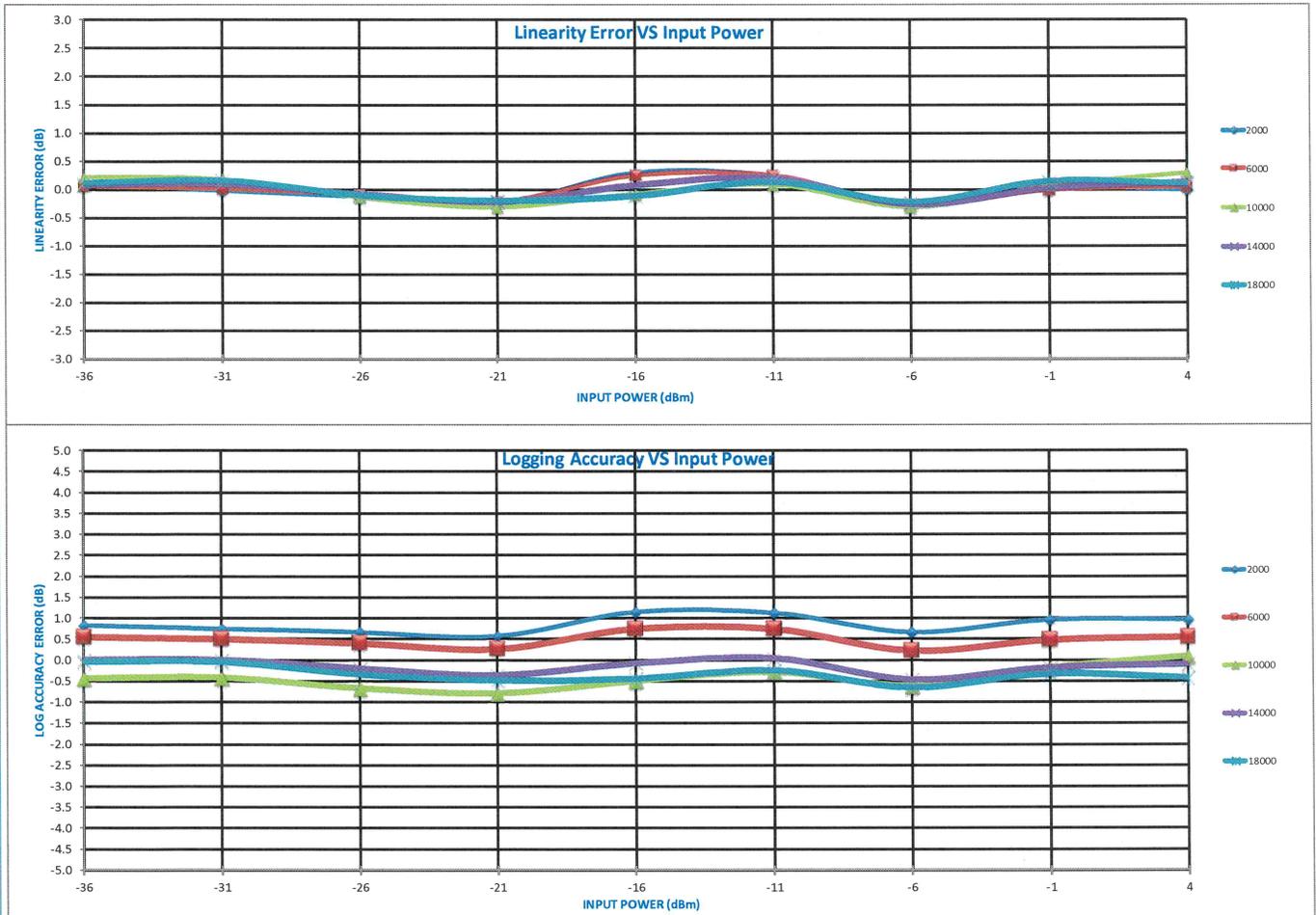
Frequency		-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)		
2 GHz	INTERCEPT (m)	2197										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	50.3										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.29 -0.26
												LOGGING ACCURACY (dB)	1.14 0.56
6 GHz	INTERCEPT (m)	2175										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	50										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.25 -0.27
												LOGGING ACCURACY (dB)	0.74 0.22
10 GHz	INTERCEPT (m)	2138										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	50.6										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.29 -0.31
												LOGGING ACCURACY (dB)	0.10 -0.80
14 GHz	INTERCEPT (m)	2140										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	49.8										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.21 -0.28
												LOGGING ACCURACY (dB)	0.04 -0.46
18 GHz	INTERCEPT (m)	2126										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	49.5										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.15 -0.22
												LOGGING ACCURACY (dB)	-0.04 -0.64
	Flatness +/- dB	0.629	0.579	0.669	0.679	0.819	0.699	0.649	0.639	0.689			
	Max Video Output V	0.391	0.637	0.883	1.128	1.407	1.656	1.883	2.148	2.398			
	Min Video Output V	0.328	0.579	0.816	1.060	1.325	1.586	1.818	2.084	2.329			
	Logging Linearity vs Frequency											Error(dB)	
												MAX MIN	
	LOGGING LINEARITY ERROR (dB)											0.29	-0.31
	Logging Accuracy vs Frequency											Error(dB)	
												MAX MIN	
	LOGGING ACCURACY ERROR (dB)											1.14	-0.80

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 Email: sales@pmi-rf.com



SUMMARY TEST DATA ON HADA-D2002

LOG TRANSFER WITH FREQUENCY @ +25C
MODEL: HADA-D2002
SERIAL NO: PL46535
TESTED BY: D. Weinrob



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**SUMMARY TEST DATA
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LOG TRANSFER WITH FREQUENCY @ -40C
MODEL: HADA-D2002
SERIAL NO: PL46535
TESTED BY: D. Weinrob
DATE: 7/3/2024



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4921 Robert J. Mathews Parkway Suit 1
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GRAPH #2

Output Voltage Offset= 0.128 Volts

Frequency		-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)		
2 GHz	INTERCEPT (m)	2233										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	49.9										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.45 -0.33
												LOGGING ACCURACY (dB)	2.16 1.32
6 GHz	INTERCEPT (m)	2209										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	49.5										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.43 -0.36
												LOGGING ACCURACY (dB)	1.74 0.78
10 GHz	INTERCEPT (m)	2171										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	50.2										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.29 -0.26
												LOGGING ACCURACY (dB)	0.68 0.10
14 GHz	INTERCEPT (m)	2174										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	49.4										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.38 -0.31
												LOGGING ACCURACY (dB)	0.98 0.12
18 GHz	INTERCEPT (m)	2160										Measured Value (mV)	Error(dB)
	SLOPE (mV/dB)	49.3										Error (mV)	MAX MIN
												LINEARITY ERROR (dB)	0.27 -0.24
												LOGGING ACCURACY (dB)	0.70 -0.08
Flatness +/- dB		0.695	0.604	0.675	0.755	0.856	0.725	0.745	0.614	0.705			
Max Video Output V		0.439	0.677	0.928	1.180	1.458	1.703	1.935	2.182	2.416			
Min Video Output V		0.370	0.617	0.861	1.105	1.373	1.631	1.861	2.121	2.346			

Logging Linearity vs Frequency	Error(dB)
	MAX MIN
LOGGING LINEARITY ERROR (dB)	0.45 -0.36

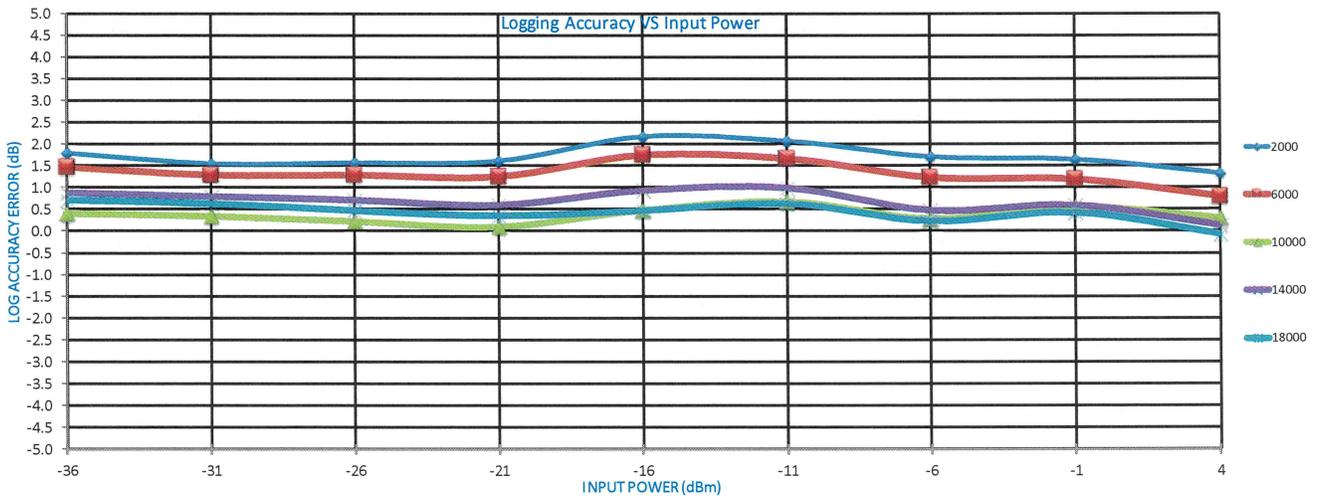
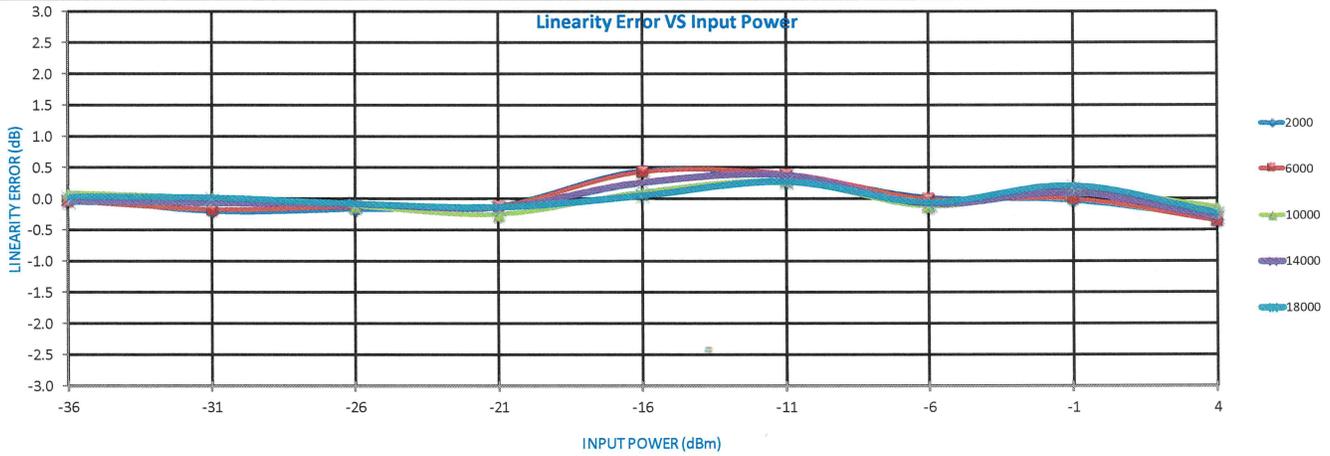
Logging Accuracy vs Frequency	Error(dB)
	MAX MIN
LOGGING ACCURACY ERROR (dB)	2.16 -0.08

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LOG TRANSFER WITH FREQUENCY @ -40C
MODEL: HADA-D2002
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**SUMMARY TEST DATA
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LOG TRANSFER WITH FREQUENCY @ +85C
MODEL: HADA-D2002
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GRAPH #3

Output Voltage Offset= 0.145 Volts

Frequency

2 GHz	INTERCEPT (m)	2196
	SLOPE (mV/dB)	50.5

6 GHz	INTERCEPT (m)	2181
	SLOPE (mV/dB)	50.3

10 GHz	INTERCEPT (m)	2142
	SLOPE (mV/dB)	50.8

14 GHz	INTERCEPT (m)	2138
	SLOPE (mV/dB)	50

18 GHz	INTERCEPT (m)	2114
	SLOPE (mV/dB)	49.4

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

	-36	-31	-26	-21	-16	-11	-6	-1	4	RF input Power (dBm)		
	388	636	874	1116	1394	1647	1875	2147	2411	Measured Value (mV)	Error(dB)	
	11	6	-8	-19	6	7	-18	2	13	Error (mV)	MAX	MIN
	0.22	0.13	-0.16	-0.37	0.13	0.13	-0.35	0.03	0.26	LINEARITY ERROR (dB)	0.26	-0.37
	0.76	0.72	0.48	0.32	0.88	0.94	0.50	0.94	1.22	LOGGING ACCURACY (dB)	1.22	0.32
	380	629	866	1107	1379	1632	1859	2128	2402	Measured Value (mV)	Error(dB)	
	11	8	-7	-17	3	5	-20	-3	20	Error (mV)	MAX	MIN
	0.21	0.16	-0.13	-0.34	0.06	0.09	-0.40	-0.05	0.39	LINEARITY ERROR (dB)	0.39	-0.40
	0.60	0.58	0.32	0.14	0.58	0.64	0.18	0.56	1.04	LOGGING ACCURACY (dB)	1.04	0.14
	335	580	811	1056	1314	1579	1818	2092	2377	Measured Value (mV)	Error(dB)	
	22	13	-10	-19	-15	-4	-19	1	32	Error (mV)	MAX	MIN
	0.43	0.25	-0.20	-0.38	-0.30	-0.08	-0.38	0.02	0.63	LINEARITY ERROR (dB)	0.63	-0.38
	-0.30	-0.40	-0.78	-0.88	-0.72	-0.42	-0.64	-0.16	0.54	LOGGING ACCURACY (dB)	0.54	-0.88
	351	598	830	1072	1331	1591	1821	2085	2361	Measured Value (mV)	Error(dB)	
	13	10	-8	-16	-7	3	-17	-3	23	Error (mV)	MAX	MIN
	0.27	0.21	-0.15	-0.31	-0.14	0.06	-0.34	-0.06	0.46	LINEARITY ERROR (dB)	0.46	-0.34
	0.02	-0.04	-0.40	-0.56	-0.38	-0.18	-0.58	-0.30	0.22	LOGGING ACCURACY (dB)	0.22	-0.58
	346	592	820	1063	1309	1572	1808	2068	2326	Measured Value (mV)	Error(dB)	
	12	11	-8	-12	-14	2	-9	4	14	Error (mV)	MAX	MIN
	0.25	0.22	-0.17	-0.25	-0.28	0.04	-0.18	0.07	0.29	LINEARITY ERROR (dB)	0.29	-0.28
	-0.08	-0.16	-0.60	-0.74	-0.82	-0.56	-0.84	-0.64	-0.48	LOGGING ACCURACY (dB)	-0.08	-0.84
	0.528	0.558	0.627	0.597	0.846	0.747	0.667	0.787	0.846			
	0.388	0.636	0.874	1.116	1.394	1.647	1.875	2.147	2.411			
	0.335	0.580	0.811	1.056	1.309	1.572	1.808	2.068	2.326			

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
LOGGING LINEARITY ERROR (dB)	0.63	-0.40

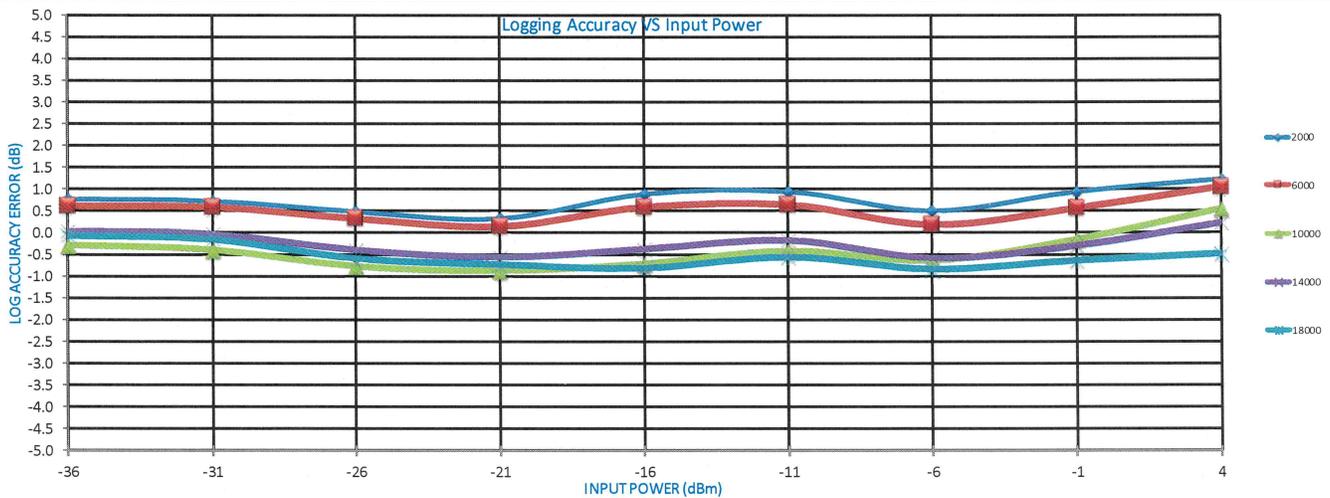
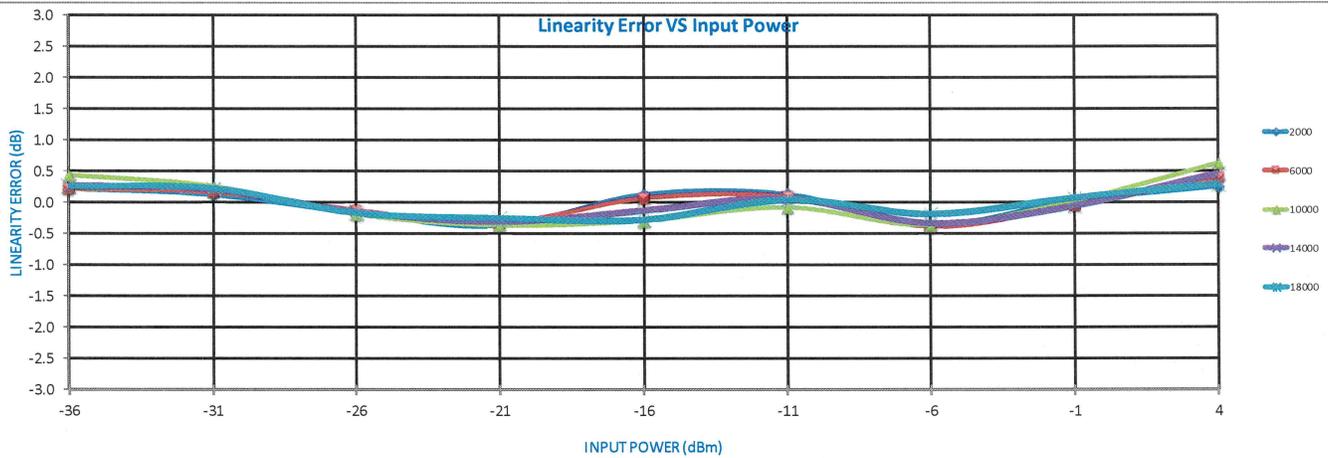
Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
LOGGING ACCURACY ERROR (dB)	1.22	-0.88

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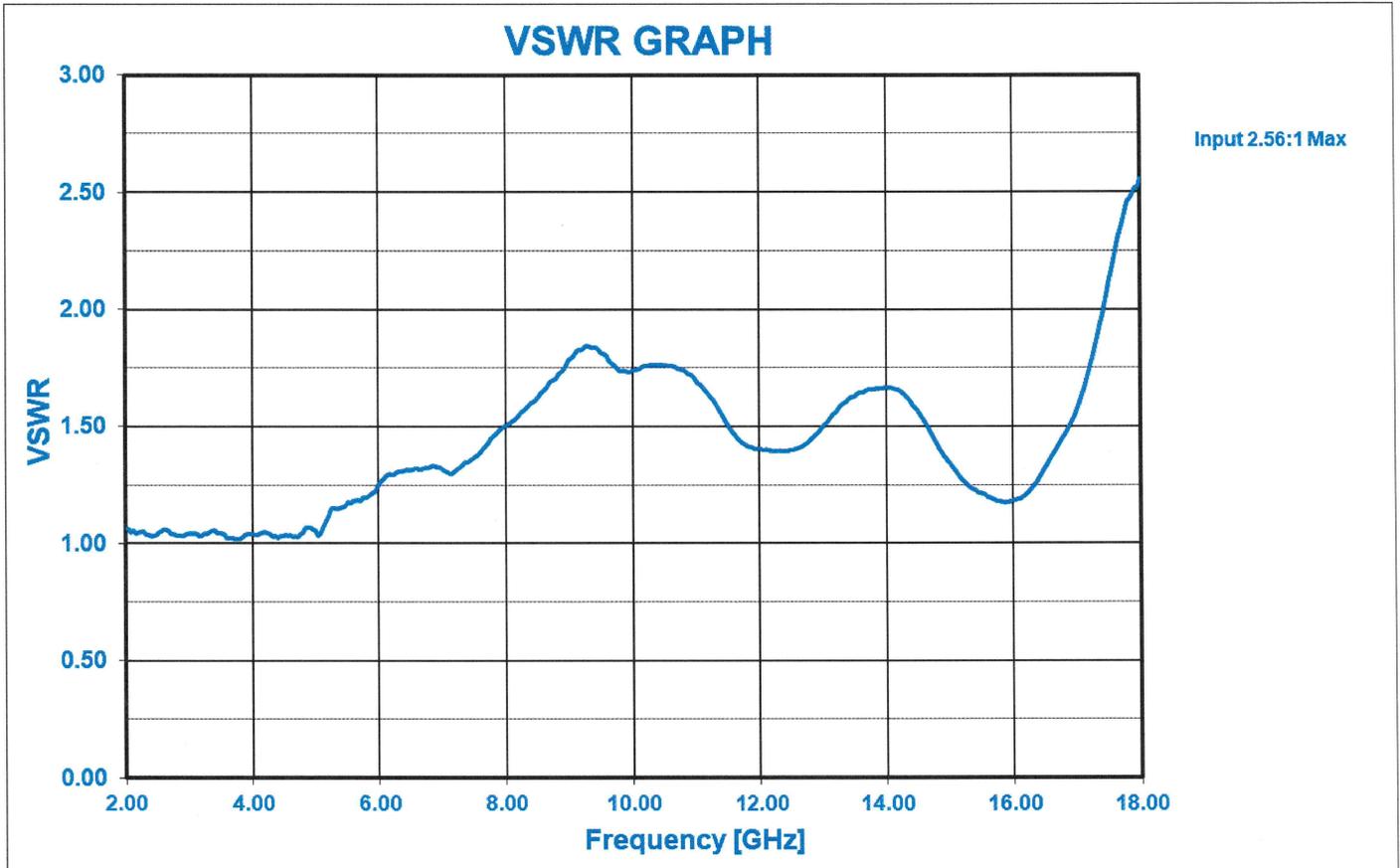
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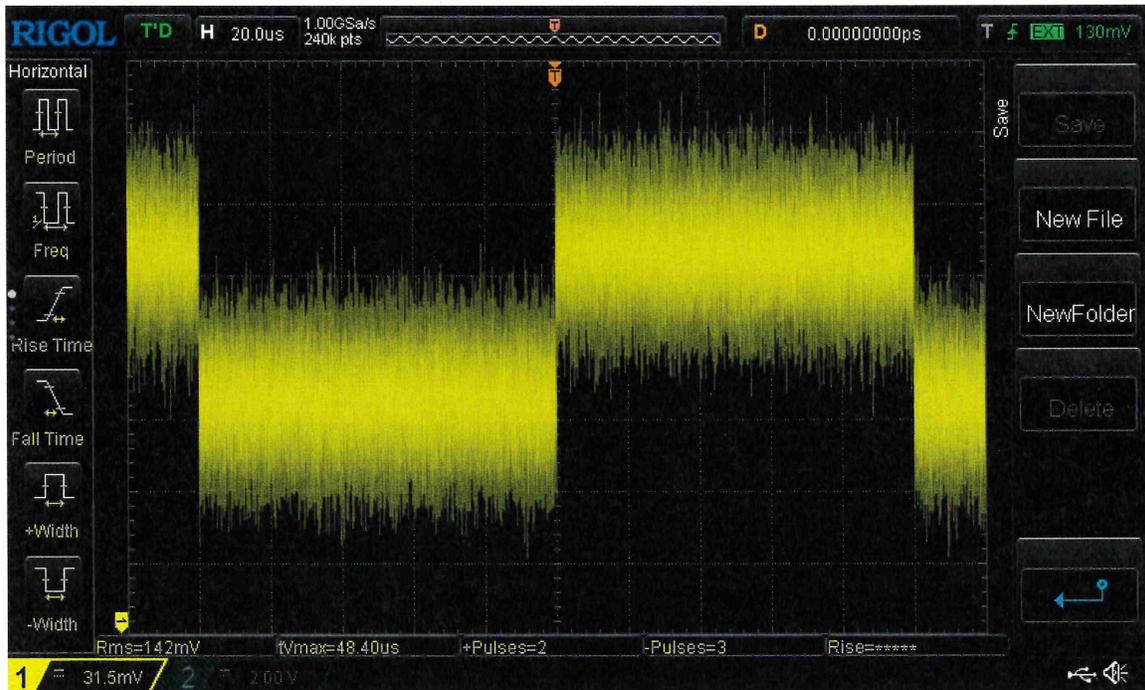


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TSS = -41.4 dBm



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Rise Time = 19.8 ns

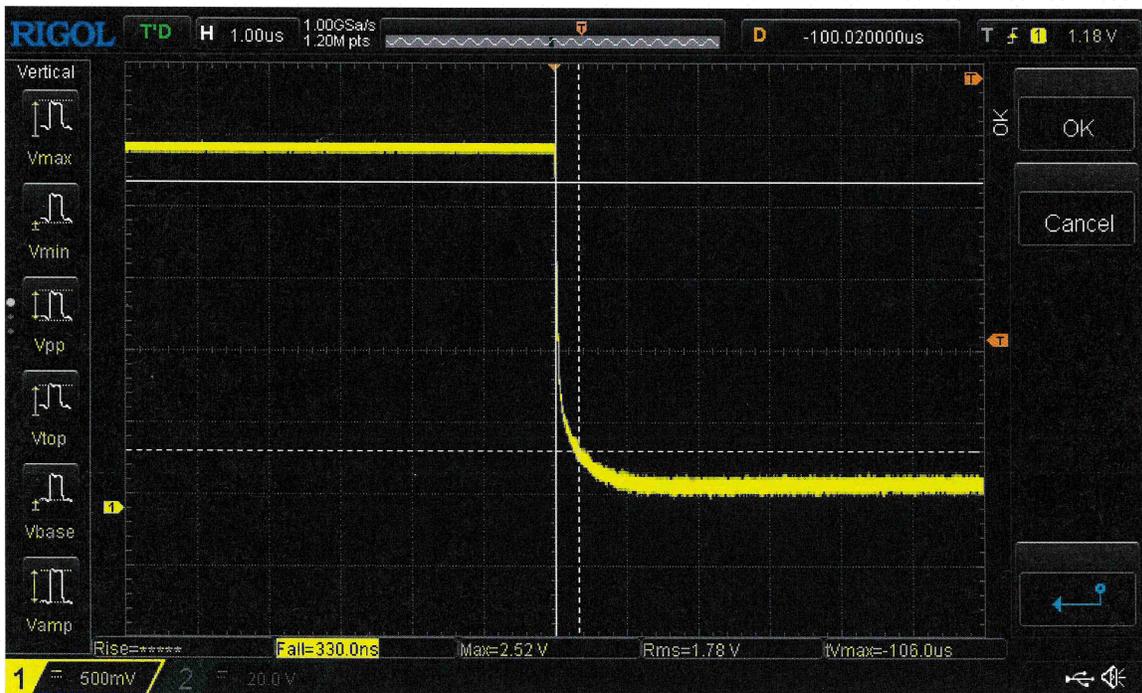


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**SUMMARY TEST DATA
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Fall Time = 330 ns



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