



**SUMMARY TEST DATA  
ON  
HADA-D2002**

**PL46303/2426**

Customer: _____	Tested By: <u>Anton L.</u>
SO No: _____	Temperature: <u>+25°C -40°C +85°C</u>
Model No: <u>HADA-D2002</u>	Date: <u>6/25/24</u>
Serial No: <u>PL46303/2426</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°	-42.0 dBm See Plot	
3	Frequency Flatness:	±1.65 dB Max	±0.813 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)	-0.60 / -1.04 dB +0.68 / -1.44 dB See Plot	
6	Log Linearity:	±0.5 dB Max @ +25°C ±0.75 dB Max @ -40°C to +85°C	+0.45 / -0.28 dB +0.57 / -0.50 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%)	23.5 ns See Plot	
10	Fall Time:	500 ns Max (@ Pulse width 100usec input) (90% to 10%)	141.9 ns See Plot	
11	DC Offset: (Input 50 Ω terminated):	+95 mV +55/-100 mV (@ -40°C to +85°C)	84 mV @ +25°C 59 mV @ -40°C 102 mV @ +85°C	
12	Input VSWR:	3.0:1 Max @ +23 dBm	2.34:1 See Plot	

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13	Propagation Delay:	60 ns Max	45 ns	PMI QA3
14	Power Supply:	+12 ± 1VDC @ 125 mA Max -12 ± 1VDC @ 75 mA Max	90 mA 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: *H. Inter*

Date: 6-25-24



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**Log Linearity and Log Accuracy @ +25°C**

Output Voltage Offset= 0.084 Volts

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
2 GHz	2147	49.9

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
6 GHz	2144	49.2

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
10 GHz	2108	49.8

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
14 GHz	2105	49.6

Frequency	INTERCEPT (mV)	SLOPE (mV/dB)
18 GHz	2110	50.6

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	343	600	849	1093	1366	1621	1842	2090	2338	Measured Value (mV)
	-9	-1	-1	-7	17	22	-6	-7	-9	Error (mV)
	-0.17	-0.02	-0.03	-0.13	0.34	0.45	-0.12	-0.15	-0.17	LINEARITY ERROR (dB)
	-0.14	0.00	-0.02	-0.14	0.32	0.42	-0.16	-0.20	-0.24	LOGGING ACCURACY (dB)
										MAX
										MIN
6 GHz	358	615	868	1111	1371	1623	1841	2087	2332	Measured Value (mV)
	-14	-3	4	1	15	21	-8	-8	-9	Error (mV)
	-0.28	-0.06	0.08	0.02	0.30	0.42	-0.15	-0.16	-0.18	LINEARITY ERROR (dB)
	0.16	0.30	0.36	0.22	0.42	0.46	-0.18	-0.26	-0.36	LOGGING ACCURACY (dB)
										MAX
										MIN
10 GHz	310	570	815	1061	1312	1567	1798	2054	2315	Measured Value (mV)
	-5	6	2	-1	1	7	-11	-5	7	Error (mV)
	-0.10	0.12	0.04	-0.03	0.01	0.13	-0.23	-0.09	0.15	LINEARITY ERROR (dB)
	-0.80	-0.60	-0.70	-0.78	-0.76	-0.66	-1.04	-0.92	-0.70	LOGGING ACCURACY (dB)
										MAX
										MIN
14 GHz	309	569	814	1059	1328	1579	1801	2048	2296	Measured Value (mV)
	-11	2	-1	-4	17	20	-6	-7	-7	Error (mV)
	-0.21	0.03	-0.03	-0.09	0.33	0.39	-0.13	-0.15	-0.15	LINEARITY ERROR (dB)
	-0.82	-0.62	-0.72	-0.82	-0.44	-0.42	-0.98	-1.04	-1.08	LOGGING ACCURACY (dB)
										MAX
										MIN
18 GHz	291	549	787	1035	1305	1559	1807	2060	2311	Measured Value (mV)
	2	7	-8	-12	5	6	1	1	-1	Error (mV)
	0.05	0.15	-0.15	-0.25	0.09	0.11	0.01	0.01	-0.02	LINEARITY ERROR (dB)
	-1.18	-1.02	-1.26	-1.30	-0.90	-0.82	-0.86	-0.80	-0.78	LOGGING ACCURACY (dB)
										MAX
										MIN
Flatness +/- dB	0.672	0.662	0.813	0.763	0.662	0.642	0.442	0.421	0.421	
Max Video Output V	0.358	0.615	0.868	1.111	1.371	1.623	1.842	2.090	2.338	
Min Video Output V	0.291	0.549	0.787	1.035	1.305	1.559	1.798	2.048	2.296	

Logging Linearity vs Frequency	Error(dB)	
	MAX	MIN
LOGGING LINEARITY ERROR (dB)	0.45	-0.28

Logging Accuracy vs Frequency	Error(dB)	
	MAX	MIN
LOGGING ACCURACY ERROR (dB)	0.46	-1.30

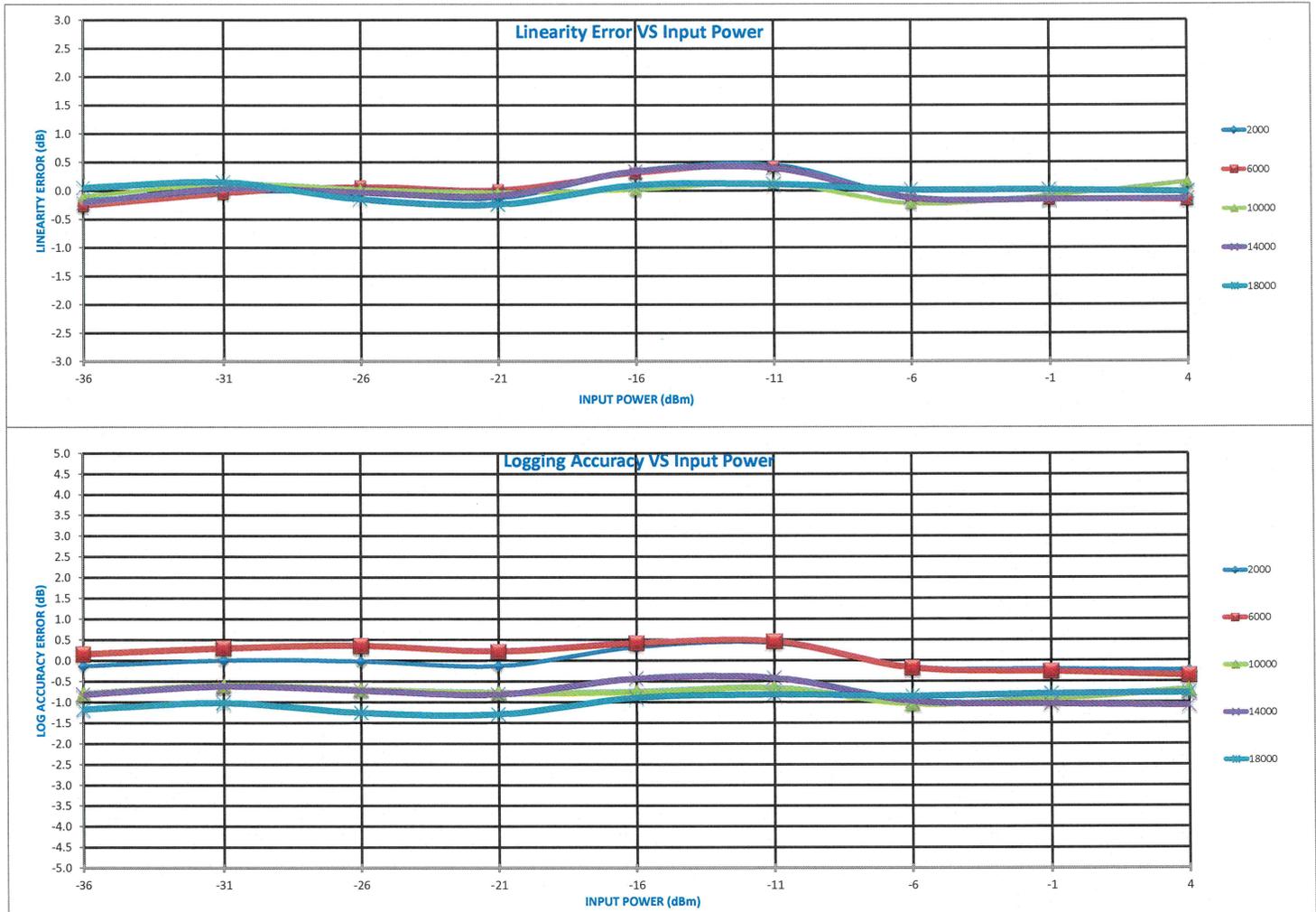
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SUMMARY TEST DATA  
ON  
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PL46303/2426

Log Linearity and Log Accuracy @ +25°C



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**SUMMARY TEST DATA  
ON  
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**Log Linearity and Log Accuracy @ -40°C**

Output Voltage Offset= 0.059 Volts

<b>Frequency</b>		
<b>2 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2131</b>
	<b>SLOPE (mV/dB)</b>	<b>49</b>

<b>6 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2129</b>
	<b>SLOPE (mV/dB)</b>	<b>48.3</b>

<b>10 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2094</b>
	<b>SLOPE (mV/dB)</b>	<b>48.8</b>

<b>14 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2107</b>
	<b>SLOPE (mV/dB)</b>	<b>48.8</b>

<b>18 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2120</b>
	<b>SLOPE (mV/dB)</b>	<b>49.9</b>

<b>Flatness +/- dB</b>
<b>Max Video Output V</b>
<b>Min Video Output V</b>

	-36	-31	-26	-21	-16	-11	-6	-1	4	<b>RF Input Power (dBm)</b>
	368	596	851	1100	1368	1620	1843	2076	2304	<b>Measured Value (mV)</b>
	0	-17	-7	-3	21	28	6	-6	-23	<b>Error (mV)</b>
	0.00	-0.35	-0.14	-0.05	0.42	0.57	0.12	-0.12	-0.46	<b>MAX</b>
	0.36	-0.08	0.02	0.00	0.36	0.40	-0.14	-0.48	-0.92	<b>MIN</b>
										<b>LINEARITY ERROR (dB)</b>
										<b>LOGGING ACCURACY (dB)</b>
										0.40
										-0.92
	384	613	870	1121	1375	1623	1844	2075	2298	<b>Measured Value (mV)</b>
	-6	-18	-3	7	19	26	5	-5	-24	<b>Error (mV)</b>
	-0.12	-0.38	-0.06	0.14	0.40	0.53	0.10	-0.11	-0.50	<b>MAX</b>
	0.68	0.26	0.40	0.42	0.50	0.46	-0.12	-0.50	-1.04	<b>MIN</b>
										<b>LINEARITY ERROR (dB)</b>
										<b>LOGGING ACCURACY (dB)</b>
										0.53
										-0.50
	338	572	824	1069	1319	1575	1798	2047	2279	<b>Measured Value (mV)</b>
	1	-9	-1	0	6	18	-4	1	-11	<b>Error (mV)</b>
	0.02	-0.19	-0.03	-0.01	0.11	0.36	-0.07	0.03	-0.22	<b>MAX</b>
	-0.24	-0.56	-0.52	-0.62	-0.62	-0.50	-1.04	-1.06	-1.42	<b>MIN</b>
										<b>LINEARITY ERROR (dB)</b>
										<b>LOGGING ACCURACY (dB)</b>
										0.36
										-0.22
	347	580	834	1079	1346	1597	1816	2056	2279	<b>Measured Value (mV)</b>
	-3	-14	-4	-3	20	27	2	-2	-23	<b>Error (mV)</b>
	-0.06	-0.29	-0.08	-0.06	0.41	0.55	0.04	-0.04	-0.47	<b>MAX</b>
	-0.06	-0.40	-0.32	-0.42	-0.08	-0.06	-0.68	-0.88	-1.42	<b>MIN</b>
										<b>LINEARITY ERROR (dB)</b>
										<b>LOGGING ACCURACY (dB)</b>
										0.55
										-0.47
	331	566	815	1058	1330	1584	1828	2073	2307	<b>Measured Value (mV)</b>
	8	-6	-7	-14	9	13	7	3	-13	<b>Error (mV)</b>
	0.16	-0.13	-0.14	-0.27	0.17	0.26	0.15	0.06	-0.26	<b>MAX</b>
	-0.38	-0.68	-0.70	-0.84	-0.40	-0.32	-0.44	-0.54	-0.86	<b>MIN</b>
										<b>LINEARITY ERROR (dB)</b>
										<b>LOGGING ACCURACY (dB)</b>
										0.26
										-0.27
	0.541	0.480	0.562	0.643	0.572	0.490	0.470	0.296	0.286	
	0.384	0.613	0.870	1.121	1.375	1.623	1.844	2.076	2.307	
	0.331	0.566	0.815	1.058	1.319	1.575	1.798	2.047	2.279	

<b>Logging Linearity vs Frequency</b>	<b>Error(dB)</b>
	<b>MAX</b>
	<b>MIN</b>
<b>LOGGING LINEARITY ERROR (dB)</b>	<b>0.57</b>
	<b>-0.50</b>

<b>Logging Accuracy vs Frequency</b>	<b>Error(dB)</b>
	<b>MAX</b>
	<b>MIN</b>
<b>LOGGING ACCURACY ERROR (dB)</b>	<b>0.68</b>
	<b>-1.42</b>

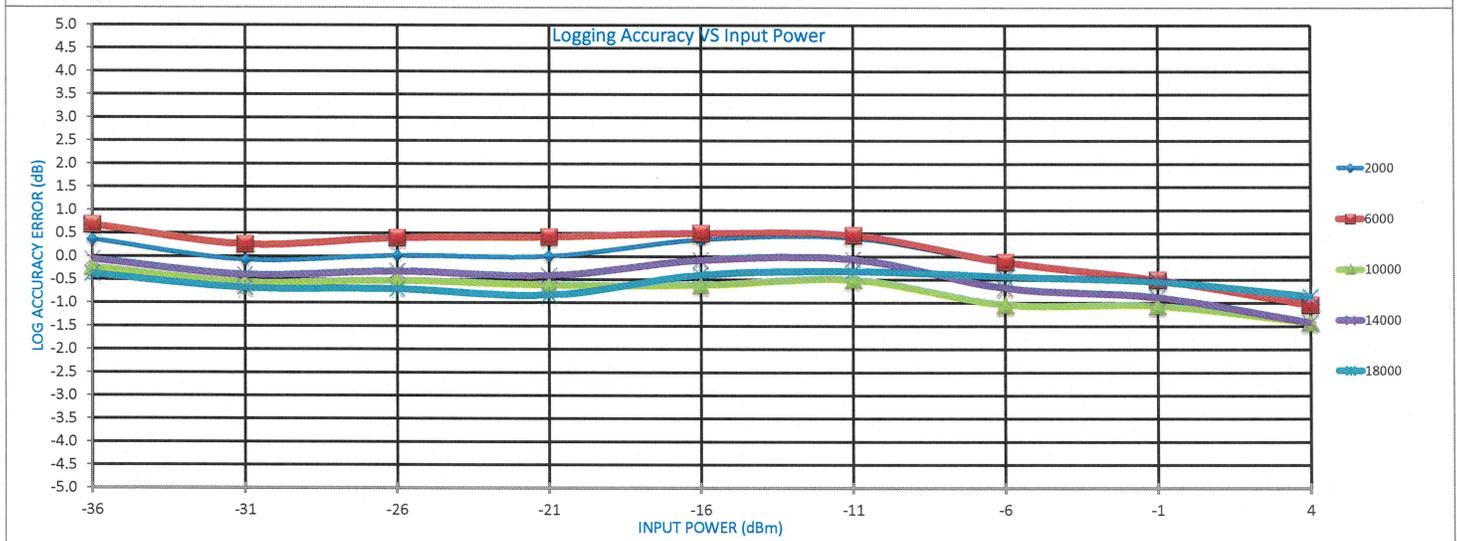
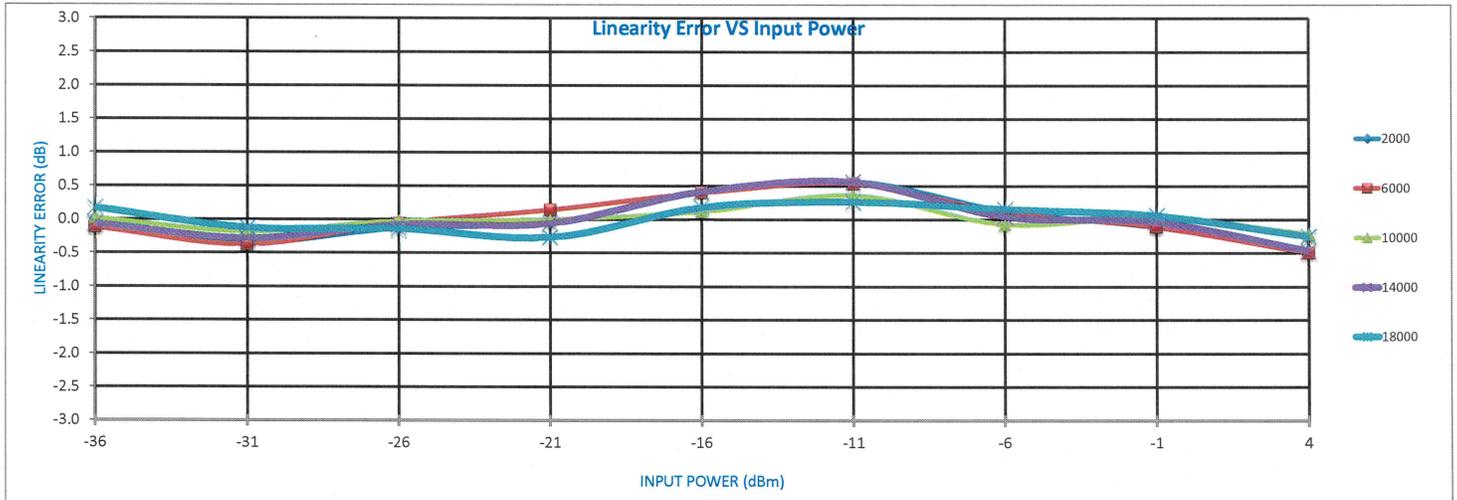
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**Log Linearity and Log Accuracy @ -40°C**



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**SUMMARY TEST DATA  
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**Log Linearity and Log Accuracy @ +85°C**

Output Voltage Offset= 0.102 Volts

<b>Frequency</b>		
<b>2 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2149</b>
	<b>SLOPE (mV/dB)</b>	<b>50.3</b>

<b>6 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2150</b>
	<b>SLOPE (mV/dB)</b>	<b>49.7</b>

<b>10 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2117</b>
	<b>SLOPE (mV/dB)</b>	<b>50.2</b>

<b>14 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2093</b>
	<b>SLOPE (mV/dB)</b>	<b>49.8</b>

<b>18 GHz</b>	<b>INTERCEPT (mV)</b>	<b>2111</b>
	<b>SLOPE (mV/dB)</b>	<b>50.8</b>

<b>Flatness +/- dB</b>
<b>Max Video Output V</b>
<b>Min Video Output V</b>

	-36	-31	-26	-21	-16	-11	-6	-1	4	RF Input Power (dBm)
	332	596	839	1084	1355	1609	1837	2087	2357	Measured Value (mV)
	-6	7	-2	-8	11	13	-10	-12	7	Error (mV)
	-0.11	0.13	-0.04	-0.17	0.22	0.27	-0.20	-0.23	0.13	MAX
	-0.36	-0.08	-0.22	-0.32	0.10	0.18	-0.26	-0.26	0.14	MIN
										LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
	352	615	862	1104	1365	1615	1839	2087	2356	Measured Value (mV)
	-10	5	4	-3	10	12	-13	-13	8	Error (mV)
	-0.20	0.10	0.07	-0.05	0.20	0.24	-0.25	-0.26	0.16	MAX
	0.04	0.30	0.24	0.08	0.30	0.30	-0.22	-0.26	0.12	MIN
										LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
	310	572	814	1060	1308	1563	1801	2056	2341	Measured Value (mV)
	0	11	2	-3	-6	-2	-15	-11	24	Error (mV)
	-0.01	0.21	0.04	-0.06	-0.12	-0.04	-0.29	-0.21	0.47	MAX
	-0.80	-0.56	-0.72	-0.80	-0.84	-0.74	-0.98	-0.88	-0.18	MIN
										LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
	297	555	796	1043	1306	1557	1787	2028	2300	Measured Value (mV)
	-4	5	-3	-5	9	12	-7	-15	8	Error (mV)
	-0.09	0.10	-0.06	-0.10	0.19	0.23	-0.14	-0.30	0.17	MAX
	-1.06	-0.90	-1.08	-1.14	-0.88	-0.86	-1.26	-1.44	-1.00	MIN
										LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
	290	545	781	1030	1296	1550	1803	2055	2328	Measured Value (mV)
	9	10	-8	-13	-2	-2	-3	-5	14	Error (mV)
	0.17	0.19	-0.16	-0.26	-0.03	-0.03	-0.05	-0.10	0.28	MAX
	-1.20	-1.10	-1.38	-1.40	-1.08	-1.00	-0.94	-0.90	-0.44	MIN
										LINEARITY ERROR (dB)
										LOGGING ACCURACY (dB)
	0.618	0.698	0.808	0.738	0.688	0.648	0.518	0.588	0.568	
	0.352	0.615	0.862	1.104	1.365	1.615	1.839	2.087	2.357	
	0.290	0.545	0.781	1.030	1.296	1.550	1.787	2.028	2.300	

<b>Logging Linearity vs Frequency</b>	<b>Error(dB)</b>	
	<b>MAX</b>	<b>MIN</b>
<b>LOGGING LINEARITY ERROR (dB)</b>	0.47	-0.30

<b>Logging Accuracy vs Frequency</b>	<b>Error(dB)</b>	
	<b>MAX</b>	<b>MIN</b>
<b>LOGGING ACCURACY ERROR (dB)</b>	0.30	-1.44

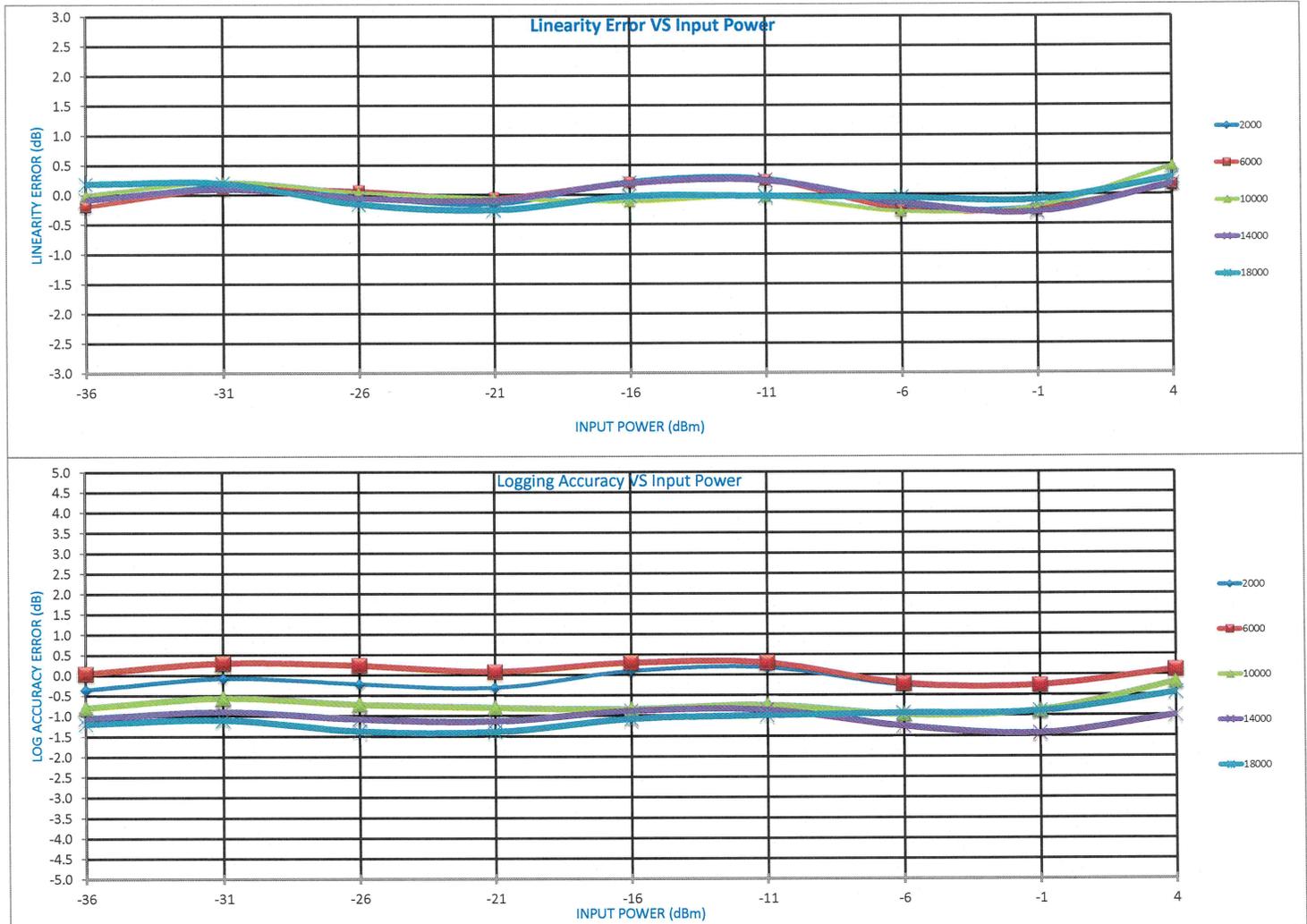
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**Log Linearity and Log Accuracy @ +85°C**



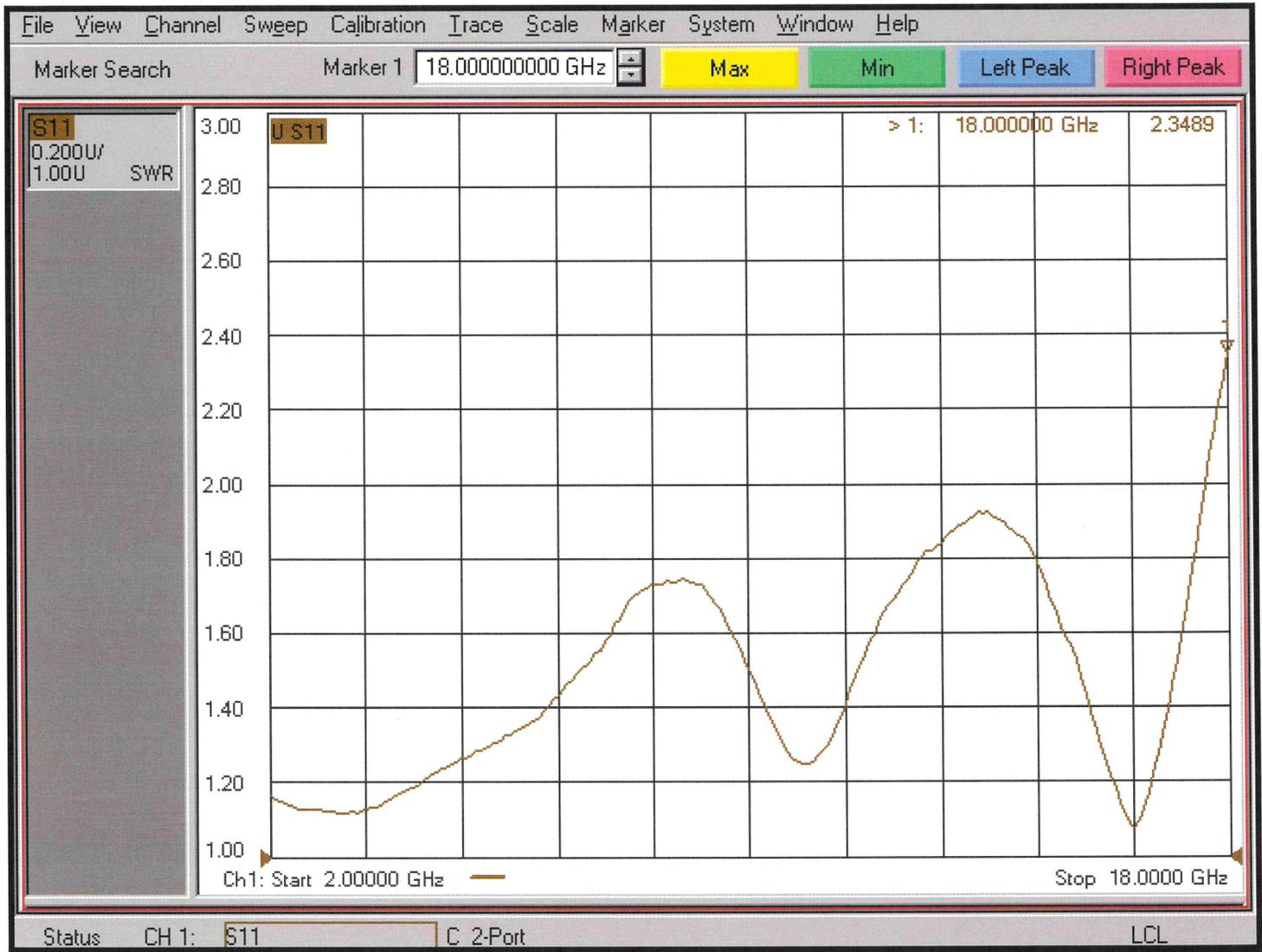
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**VSWR 2.34:1**



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**SUMMARY TEST DATA  
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**TSS @ -42.0 dBm**



M50-X 3034T, MY59241076, 07.50.2021102830: Fri Jun 21 07:02:39 2024



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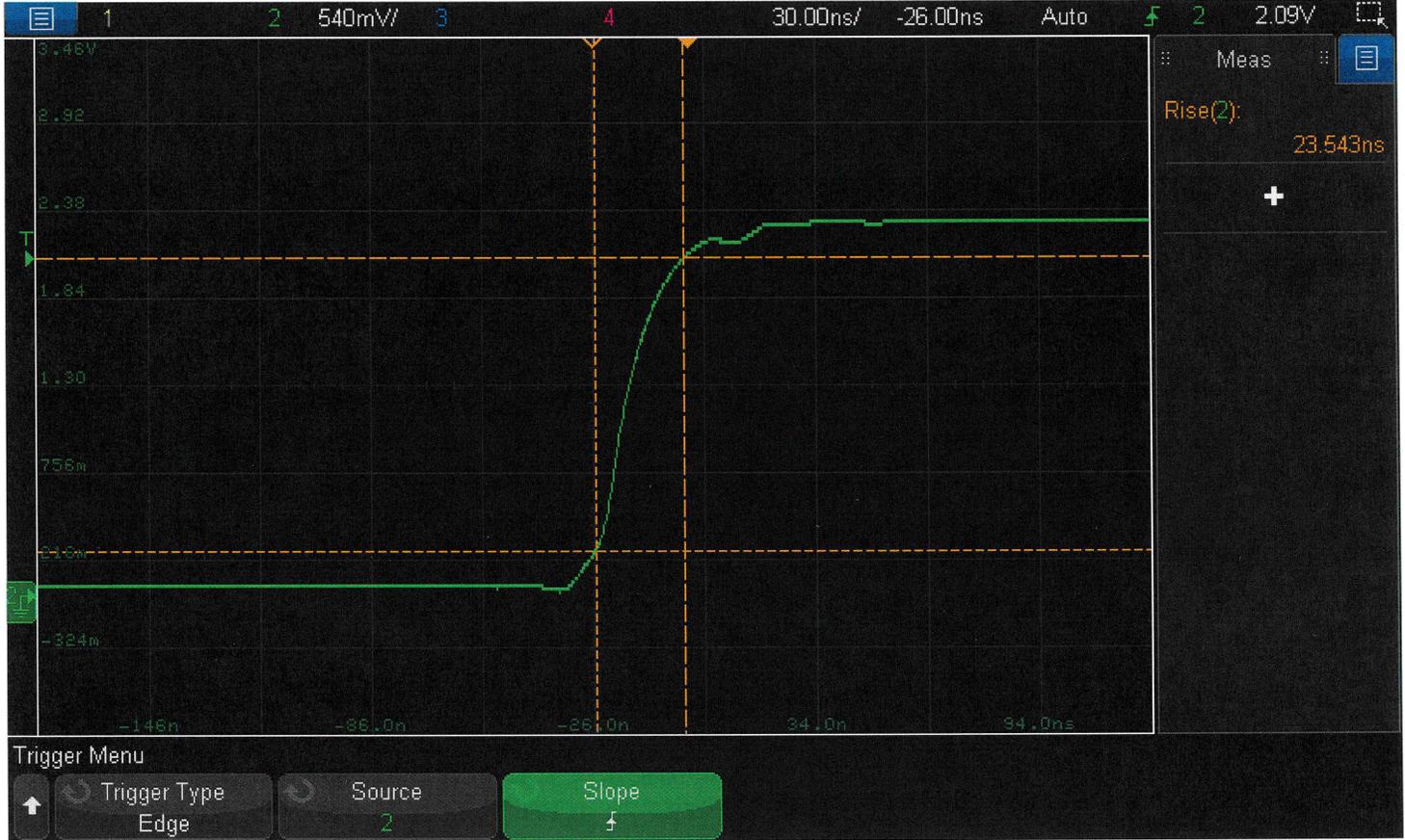
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**Rise Time 23.5 ns**



MSO-X 3034T, MY59241076, 07.50.2021102830: Fri Jun 21 06:42:24 2024



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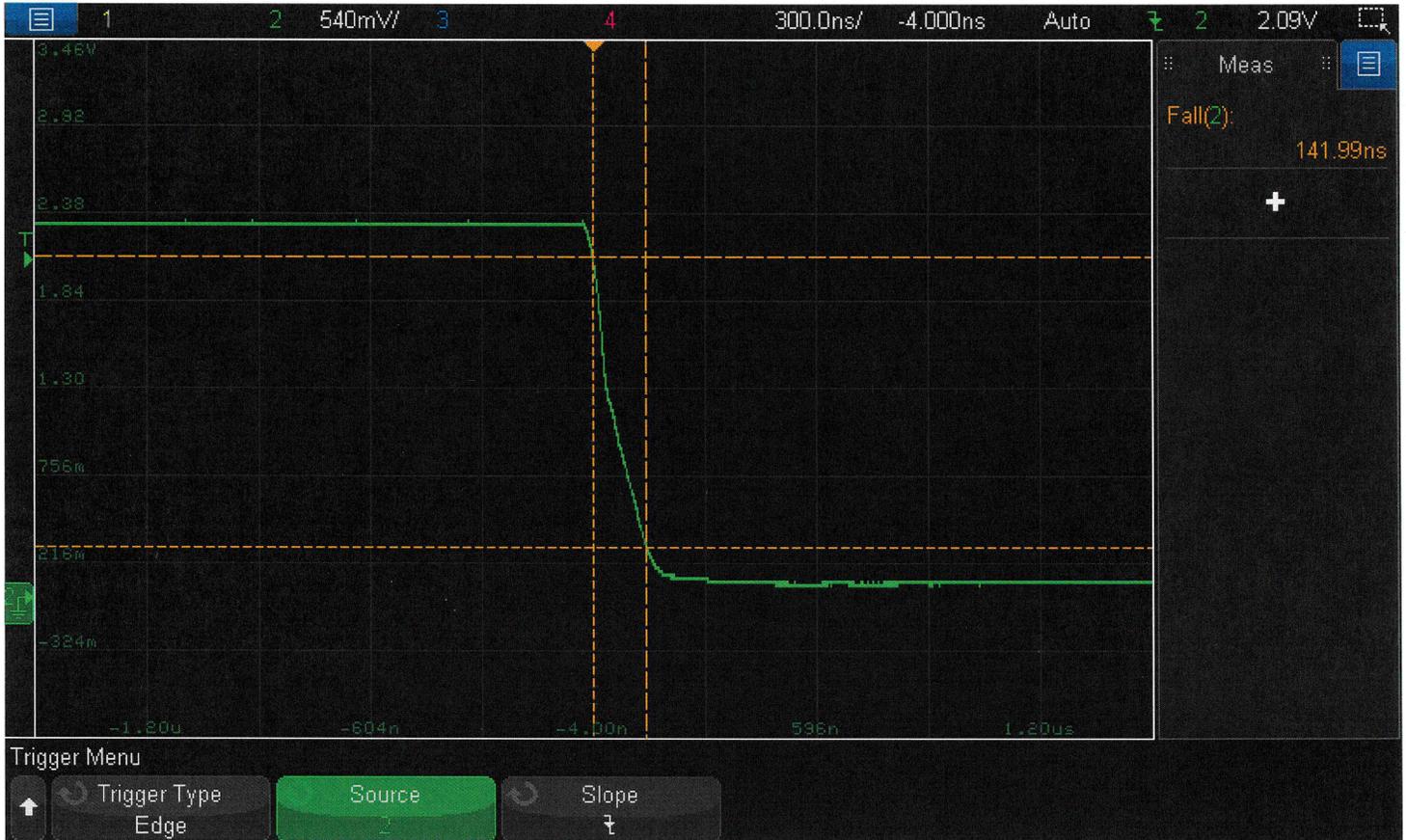
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PL46303/2426

Fall Time 141.9 ns



MSO-X 3034T, MY59241076, 07.50.2021102830: Fri Jun 21 06:34:07 2024



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