TYPICAL CHARACTERISTICS
FOR
SDLVA-26R540G-65-CD-1

MODEL SDLVA-26R5G40G-65-CD-1 IS A SUCCESIVE DETECTION LOG VIDEO AMPLIFIER (SDLVA) THAT OPERATES BETWEEN THE 26.5GHz TO 40GHz FREQUENCY RANGE. IT HAS A DYNAMIC RANGE OF 65 dB, A LOG SLOPE OF 25 mV / dB, AND A VERY HIGH NOMINAL VIDEO BANDWIDTH OF 32 MHz. FURTHERMORE; IT HAS BEEN DESIGNED USING CUTTING EDGE TECHNOLOGY WHICH PROVIDES STUNNING PERFORMANCE AND RELIABILITY IN A COMPACT PACKAGE MAKING IT AN OPTIMUM SOLUTION FOR HIGH SPEED CHANNELIZED RECEIVER APPLICATIONS.

September 27, 2017

Prepared By: Edd Benson
Tested By: Edd Benson
Designed By: John Merriner

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TYPICAL CHARACTERISTICS FOR SDLVA-26R540G-65-CD-1

Product Feature

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	6-15-17	

DESCRIPTION

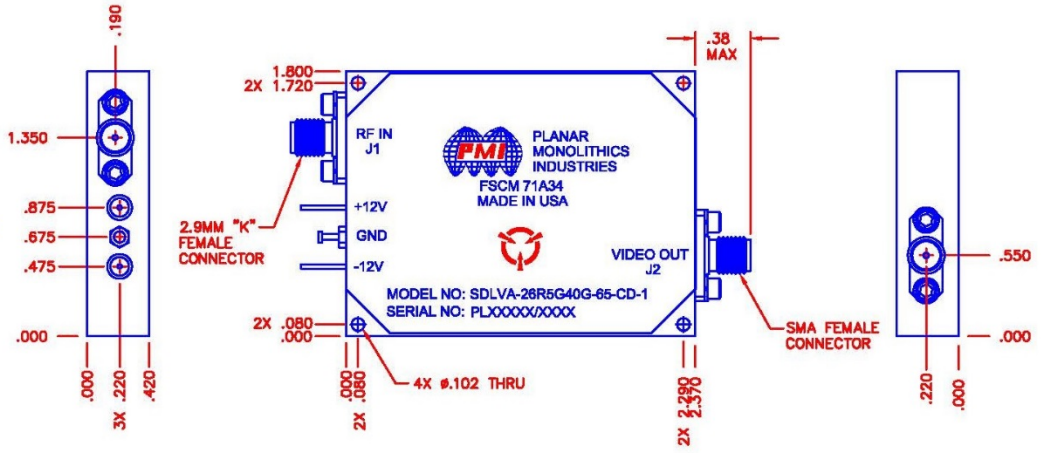
THE MODEL SDLVA-26R5G40G-65-CD-1 IS A SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER (SDLVA) THAT OPERATES BETWEEN THE 26.5 TO 40 GHz FREQUENCY RANGE. IT HAS A DYNAMIC RANGE OF 65 dB, A LOG SLOPE OF 25 mV / dB, AND A NOMINAL VIDEO BANDWIDTH OF 32 MHz. FURTHERMORE, IT HAS BEEN DESIGNED USING CUTTING EDGE GaAs TECHNOLOGY WHICH PROVIDES STUNNING PERFORMANCE AND RELIABILITY IN A COMPACT PACKAGE MAKING IT AN OPTIMUM SOLUTION FOR HIGH SPEED CHANNELIZED RECEIVER APPLICATIONS.

SPECIFICATIONS

- FREQUENCY RANGE: — 26.5 GHz to 40 GHz
- TSS — −65 dBm @ 25° C
- INPUT POWER HANDLING — 15 dBm MAX
- VIDEO LOG RANGE — −63 dBm to +2 dBm
- VIDEO LOG LINEARITY — ± 2.0 dB @ 25° C; ± 3.0 OVER TEMP
- VIDEO LOG SLOPE — 25 mV / dB nom
- VIDEO LOG INTERCEPTS:
  - VIDEO OUTPUT AT 2 dBm — 1940 mV MAX; 1476 mV MIN
  - VIDEO OUTPUT AT −63 dBm — 280 mV MAX; 65 mV MIN
- VIDEO FREQ FLATNESS — ± 2.5 dB MAX @ 25° C
- PULSE WIDTH RANGE — 30 nS TO CW
- VIDEO RISE TIME — 11 nS (8 nS typ)
- RECOVERY TIME — 60 nS (40 nS typ)
- DELAY TIME — 15 nS (5 nS typ); 7 nS over temp typ
- VIDEO OUTPUT IMPEDANCE — 50Ω
- UNPUT VSWR (50Ω) — 2.5:1
- DC POWER SUPPLY:
  - +V: — +12V @ 400 mA
  - −V: — −12V @ 200 mA

*NOTE: DO NOT SUPPLY +V WITHOUT −V SUPPLIED AS WELL AS THIS MAY DESTROY THE UNIT

- SIZE: — (L) 2.37" X (W) 1.80" X (H) 0.42"
- FINISH: — NICKEL PLATE PER SAE AMS 2404



ENVIRONMENTAL RATINGS

- **TEMPERATURE:** — −54°C TO +85°C (OPERATING); −62°C TO +86°C (STORAGE)
- **HUMIDITY:** — MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** — MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** — MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** — MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** — MIL-STD-202F, METHOD 107D COND. A

NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010
WEIGHT: 4 oz. MAX

PLANAR MONOLITHICS INDUSTRIES, INC.
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WEBSITE: www.pmi-rf.com
E-MAIL: sales@pmi-rf.com
ISO 9001 CERTIFIED

APPROVALS	DATE
DRAWN JOHNM	6-15-17
CHECKED	
ISSUED	

TITLE: PRODUCT FEATURE
SDLVA-26R5G40G-65-CD-1
26.5 TO 40 GHz, SUCCESSIVE DETECTOR LOG VIDEO AMPLIFIER

SIZE	FSCM NO.	DWG NO.	REV.
A	71A34	27033290	A1

SCALE N:S SHEET 1 OF 1

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TYPICAL CHARACTERISTICS FOR SDLVA-26R540G-65-CD-1

+25C SUMMARY PERFORMANCE DATA

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE	TEST RESULTS
1	Frequency Range:	26.5 to 40.0 GHz	**26.5 to 40.0 GHz**
2	TSS (See Photo #1)	-65 dBm Max.	**-66.4 dBm**
3	Power Handling	+15 dBm Max.	**Pass**
4	Dynamic Range:	-63 dBm to +2 dBm	**-63 dBm to +2 dBm**
5	Log Linearity: @+25C (See Graph #1)	± 2.0 dB Max.	**+1.65 dB -1.09 dB**
6	Log Slope: (See Graph #1)	25 mV/dB Nom.	**26.4 mV/dB**
8	Frequency Flatness: @+25C (See Graph #1)	±2.5 dB Max.	**±1.6 dB**
9	Pulse Width Range:	30 ns to CW	**30ns to CW**
10	Rise Time: (See Photo #2)	11 ns Max. (8 ns Typ.)	**9.30 ns**
11	Recovery Time: (See Photo #3)	60 ns Max. (40 ns Typ.)	**48.54 ns**
12	Delay Time: (Design Inherent)	15ns Max.	**11.3 ns**
13	Input VSWR: (See Graph #2)	2.5:1 Max.	**2.03:1**
14	Power Supply	+12 V @ 400 mA -12 V @ 200 mA	**+347 mA -164 mA**

Note: Additional Temperature Data on Page #10 to Page #13.

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TYPICAL CHARACTERISTICS FOR SDLVA-26R540G-65-CD-1

Graph #1

Log Transfer vs Frequency Tabulated Data @+25C

MODEL: SDLVA-26R540G-65-CD-1
SERIAL NO: PL21607
DATE: 09-27-2017
TESTED BY: E.Benson
Test Temp: +25C

GRAPH #1

PLANAR MONOLITHICS INDUSTRIES
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Frequency			-63	-58	-53	-48	-43	-38	-33	-28	-23	-18	-13	-8	-3	2	RF Input Power (dBm)			
26.5 GHz	INTERCEPT (mV)	1811	183	315	446	579	718	821	934	1059	1198	1370	1480	1607	1738	1868	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	25.9	1	4	5	9	19	-8	-24	-28	-19	24	5	3	4	5	Error (mV)		MAX	MIN
			0.03	0.14	0.20	0.35	0.72	-0.29	-0.93	-1.09	-0.72	0.94	0.19	0.10	0.17	0.19	LINEARITY ERROR (dB)		0.94	-1.09
29.88 GHz	INTERCEPT (mV)	1823	147	284	417	548	689	826	947	1078	1222	1371	1479	1603	1735	1866	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	26.5	-8	-3	-2	-4	5	9	-2	-3	8	25	1	-8	-8	-10	Error (mV)		MAX	MIN
			-0.29	-0.12	-0.09	-0.15	0.18	0.36	-0.07	-0.13	0.31	0.94	0.02	-0.29	-0.31	-0.36	LINEARITY ERROR (dB)		0.94	-0.36
33.25 GHz	INTERCEPT (mV)	1833	172	306	439	575	708	829	952	1086	1240	1379	1489	1614	1748	1887	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	26.3	-3	-1	1	5	7	-4	-13	-10	12	20	-2	-8	-6	2	Error (mV)		MAX	MIN
			-0.12	-0.03	0.02	0.19	0.25	-0.15	-0.48	-0.38	0.47	0.75	-0.06	-0.31	-0.22	0.06	LINEARITY ERROR (dB)		0.75	-0.48
36.63 GHz	INTERCEPT (mV)	1873	141	281	421	565	705	849	985	1130	1285	1388	1510	1642	1777	1914	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	27.2	-16	-12	-8	-1	3	11	11	20	38	5	-9	-13	-15	-14	Error (mV)		MAX	MIN
			-0.59	-0.45	-0.31	-0.02	0.12	0.40	0.39	0.72	1.41	0.19	-0.33	-0.49	-0.53	-0.50	LINEARITY ERROR (dB)		1.41	-0.59
40 GHz	INTERCEPT (mV)	1819	182	317	447	567	682	813	955	1110	1264	1353	1474	1602	1733	1869	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	26.0	0	5	5	-5	-19	-18	-6	19	43	2	-7	-9	-8	-2	Error (mV)		MAX	MIN
			0.01	0.20	0.21	-0.18	-0.75	-0.71	-0.24	0.72	1.65	0.07	-0.27	-0.34	-0.30	-0.07	LINEARITY ERROR (dB)		1.65	-0.75

Flatness +/- dB		0.80	0.70	0.60	0.60	0.70	0.70	1.00	1.30	1.60	0.70	0.70	0.80	0.80	0.90
Max Video Output Volts		0.183	0.317	0.447	0.579	0.718	0.849	0.985	1.130	1.285	1.388	1.510	1.642	1.777	1.914
Min Video Output Volts		0.141	0.281	0.417	0.548	0.682	0.813	0.934	1.059	1.198	1.353	1.474	1.602	1.733	1.866

Video Output @ -63dBm	Spec.
Min(V)= 0.141	0.065
Max(V)= 0.183	0.280

Log Slope Average: mV/dB	26.4
Log Slope Varaition: ± mV/dB	0.69

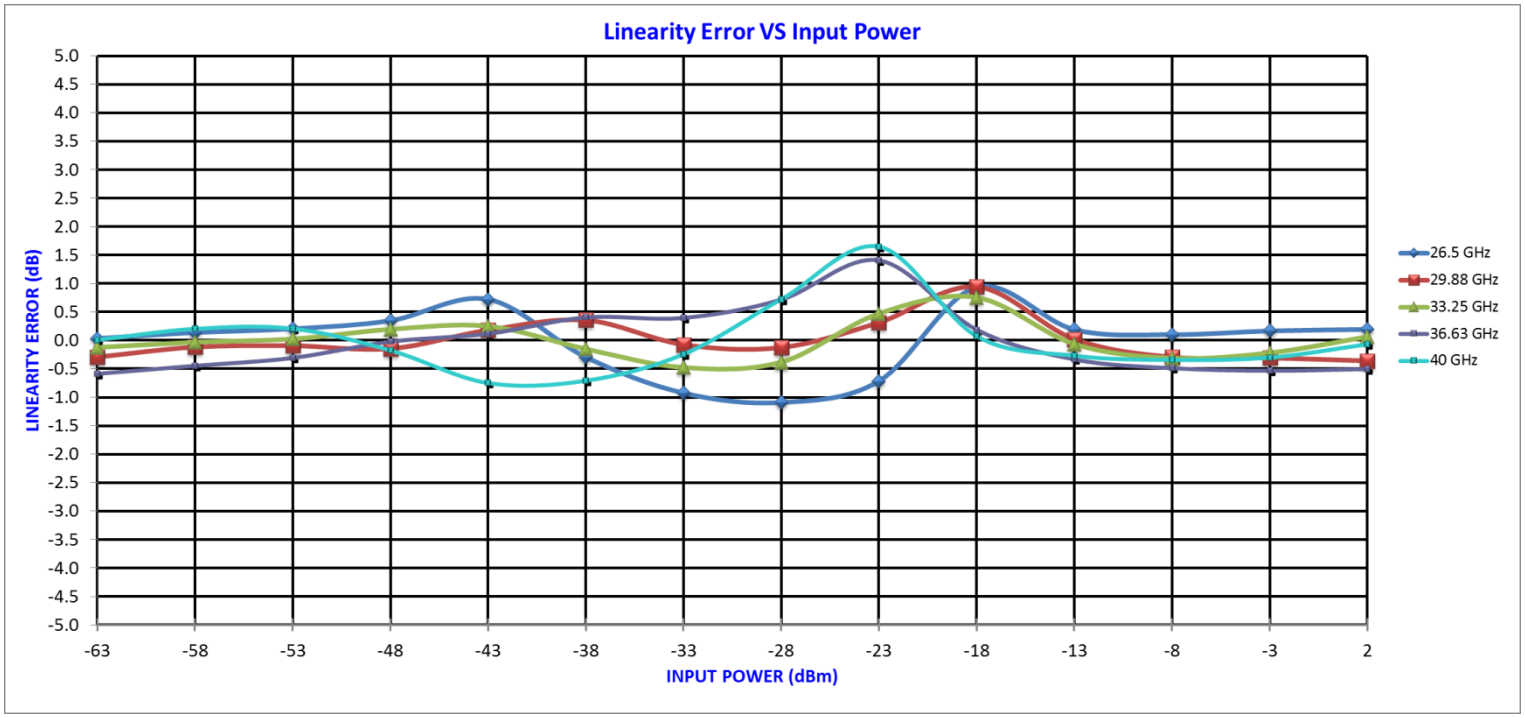
Video Output @ +2dBm	Spec.
Min(V)= 1.866	1.476
Max(V)= 1.914	1.940

Video Output Voltage With No RF	0.016

TYPICAL CHARACTERISTICS FOR SDLVA-26R540G-65-CD-1

Graph #1 (cont.)

Linearity Graph @ +25C



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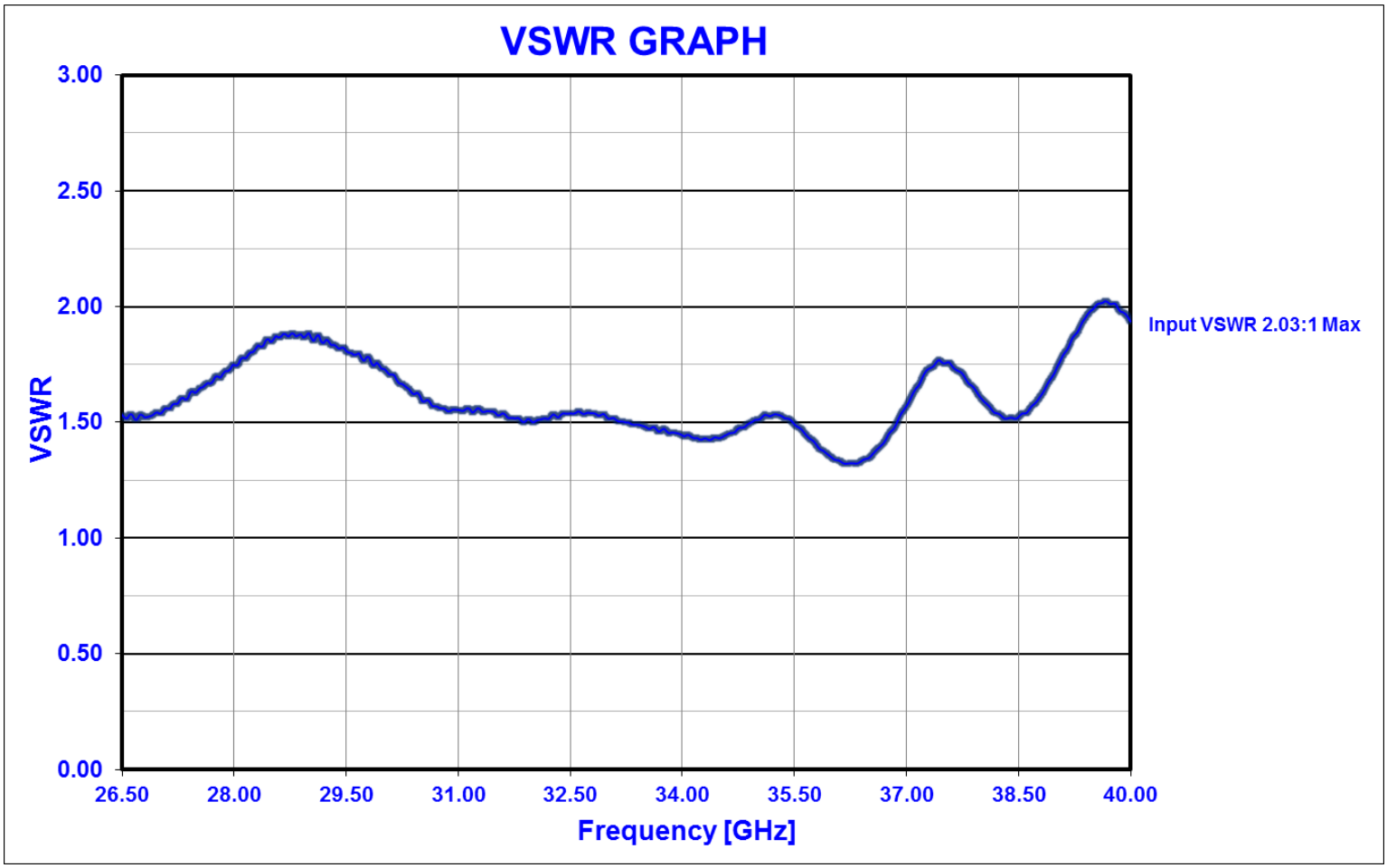
TYPICAL CHARACTERISTICS
FOR
SDLVA-26R540G-65-CD-1

Graph#2

VSWR 2.03:1 @+25C & -20dBm



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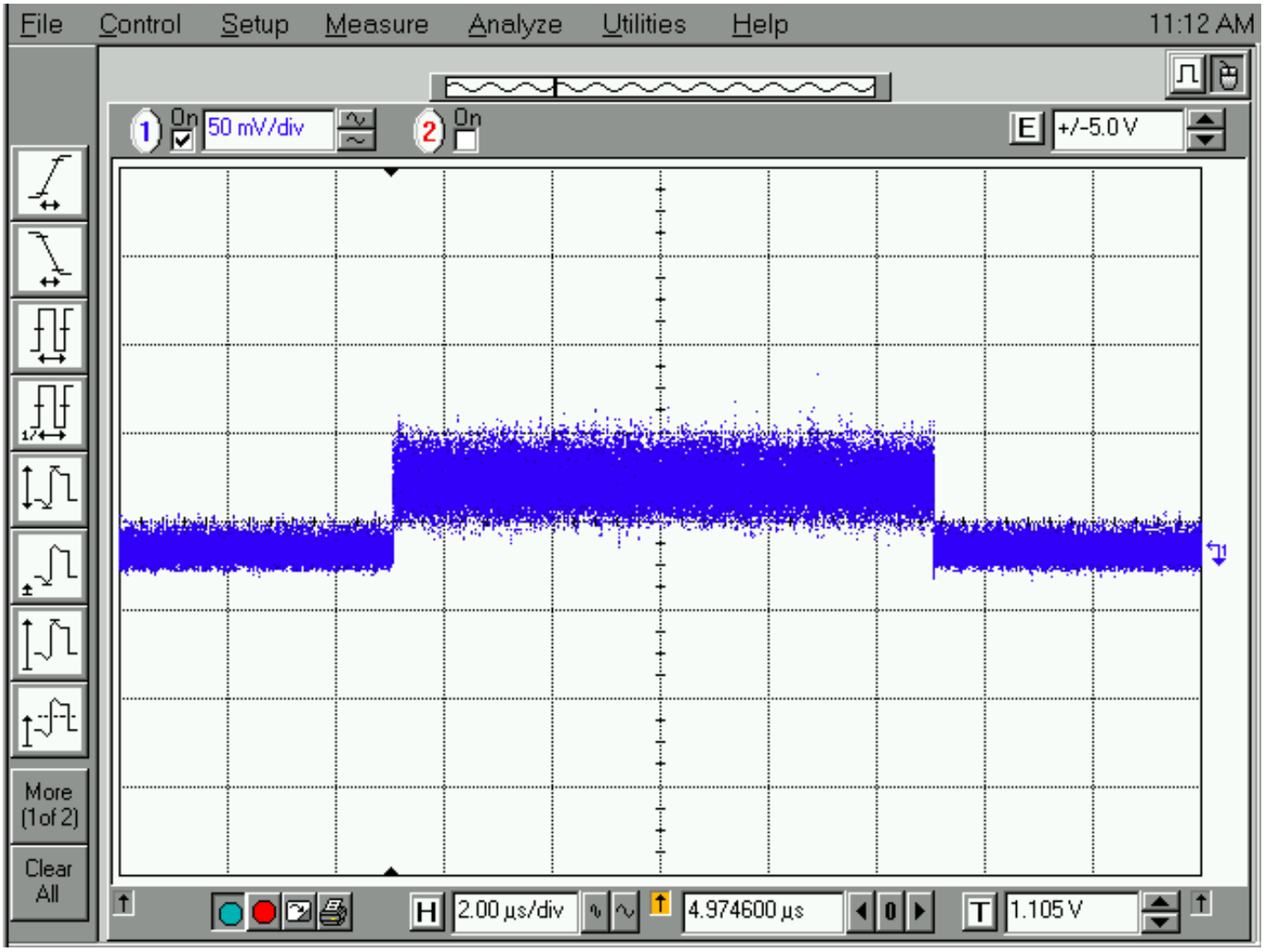
TYPICAL CHARACTERISTICS
FOR
SDLVA-26R540G-65-CD-1

Photo #1

TSS-66.4 dBm @+25C



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TYPICAL CHARACTERISTICS
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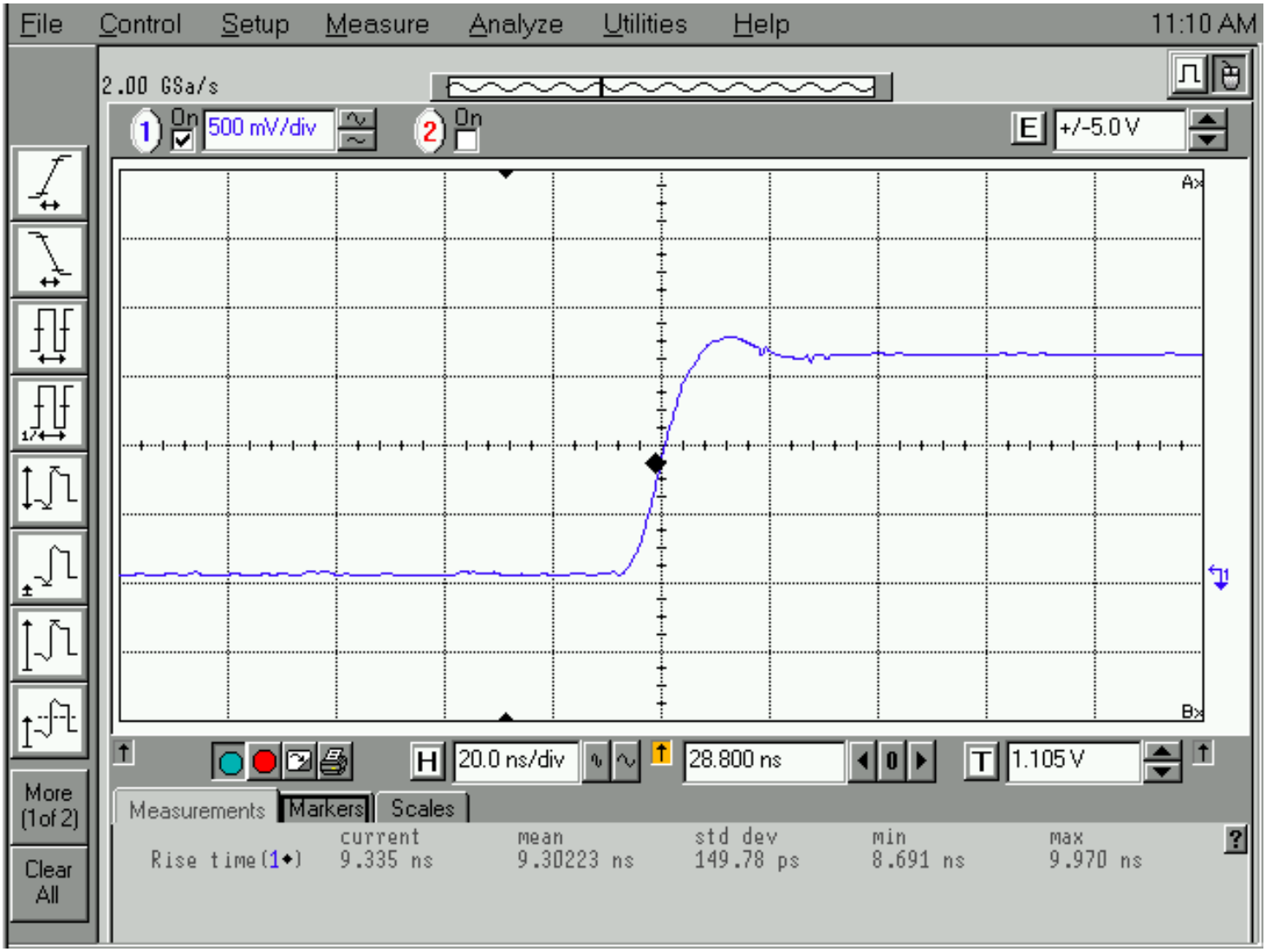
SDLVA-26R540G-65-CD-1

Photo #2

Rise Time 930 ns @+25C & +2dBm



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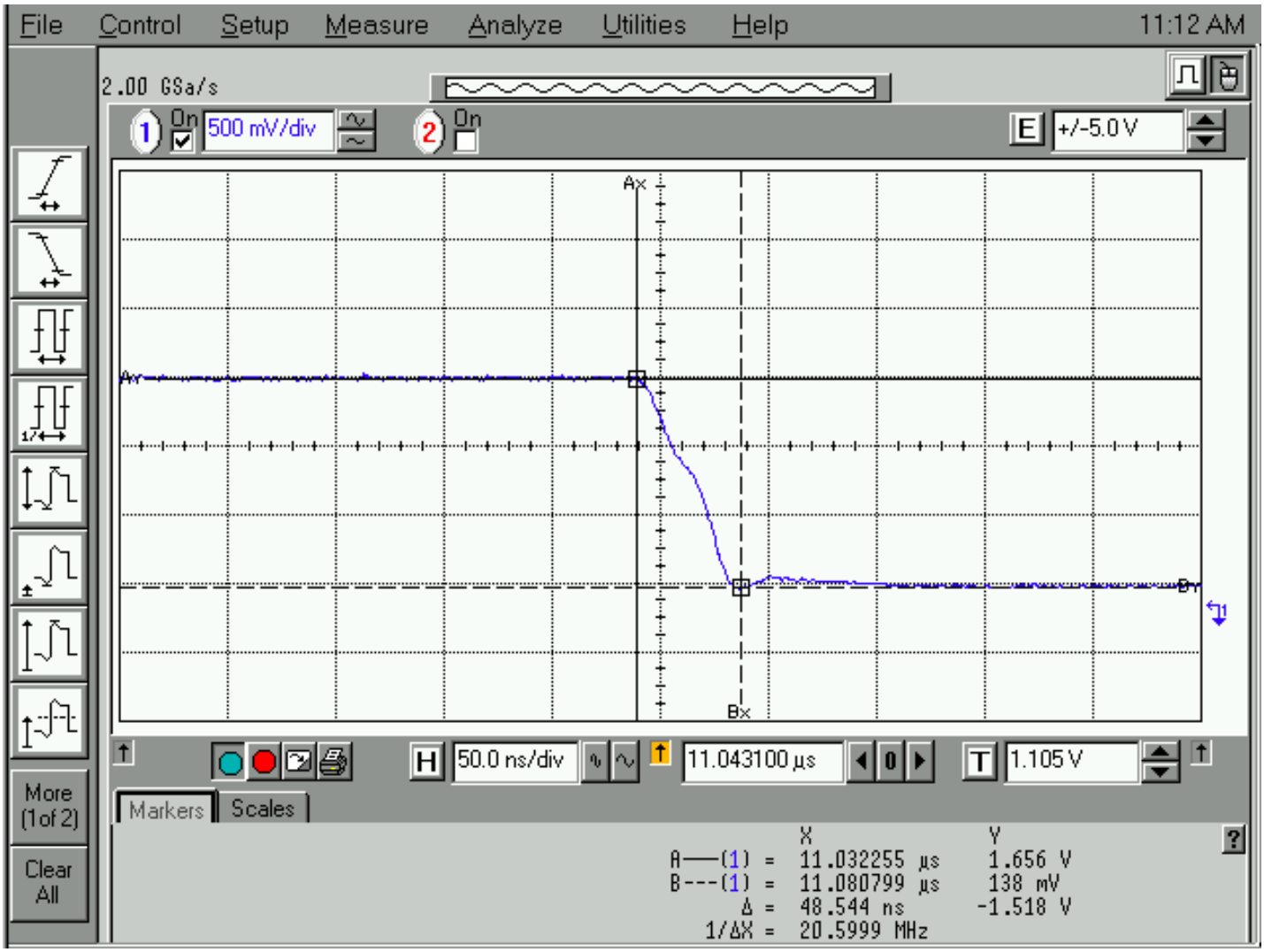
TYPICAL CHARACTERISTICS
FOR
SDLVA-26R540G-65-CD-1

Photo #3

Recovery Time 48.54 ns @+25C & +2dBm



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TYPICAL CHARACTERISTICS FOR SDLVA-26R540G-65-CD-1

Log Transfer vs Frequency Tabulated Data @ -54C

MODEL: SDLVA-26R540G-65-CD-1
SERIAL NO: PL21607
DATE: 09-27-2017
TESTED BY: E.Benson
Test Temp: -54C

GRAPH #1

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Frequency			-63	-58	-53	-48	-43	-38	-33	-28	-23	-18	-13	-8	-3	2	RF Input Power (dBm)		
26.5 GHz	INTERCEPT (mV)	1765	227	352	479	607	734	822	924	1039	1171	1339	1456	1571	1701	1835	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	24.5	4	7	12	17	22	-13	-33	-41	-31	15	9	2	9	21	Error (mV)	MAX	MIN
			0.18	0.28	0.47	0.70	0.89	-0.52	-1.35	-1.66	-1.27	0.60	0.37	0.07	0.38	0.85	LINEARITY ERROR (dB)	0.89	-1.66
29.88 GHz	INTERCEPT (mV)	1755	235	367	496	620	748	842	949	1072	1207	1364	1426	1542	1680	1819	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	23.9	-14	-2	8	12	21	-5	-17	-14	1	39	-19	-22	-4	16	Error (mV)	MAX	MIN
			-0.60	-0.07	0.32	0.51	0.86	-0.21	-0.73	-0.58	0.06	1.63	-0.78	-0.93	-0.15	0.66	LINEARITY ERROR (dB)	1.63	-0.93
33.25 GHz	INTERCEPT (mV)	1786	211	340	471	601	721	827	942	1070	1215	1380	1467	1571	1701	1842	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	24.9	-4	0	6	12	7	-12	-21	-18	2	43	5	-16	-10	6	Error (mV)	MAX	MIN
			-0.17	0.00	0.25	0.47	0.28	-0.47	-0.85	-0.72	0.09	1.71	0.20	-0.63	-0.41	0.24	LINEARITY ERROR (dB)	1.71	-0.85
36.63 GHz	INTERCEPT (mV)	1799	227	361	488	606	717	838	965	1105	1265	1354	1458	1586	1722	1859	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	24.9	-3	6	9	2	-11	-15	-12	3	39	3	-17	-14	-2	11	Error (mV)	MAX	MIN
			-0.13	0.25	0.35	0.09	-0.45	-0.59	-0.49	0.14	1.56	0.14	-0.68	-0.54	-0.08	0.42	LINEARITY ERROR (dB)	1.56	-0.68
40 GHz	INTERCEPT (mV)	1798	214	346	474	591	691	806	945	1101	1281	1349	1454	1582	1717	1858	Measured Value (mV)	Error(dB)	
	SLOPE (mV/dB)	25.2	4	10	12	3	-23	-34	-21	9	63	5	-16	-14	-5	10	Error (mV)	MAX	MIN
			0.15	0.39	0.47	0.11	-0.92	-1.36	-0.84	0.35	2.49	0.19	-0.65	-0.57	-0.21	0.38	LINEARITY ERROR (dB)	2.49	-1.36
	Flatness +/- dB		0.50	0.50	0.50	0.60	1.20	0.70	0.80	1.30	2.20	0.80	0.80	0.90	0.90	0.80			
	Max Video Output Volts		0.235	0.367	0.496	0.620	0.748	0.842	0.965	1.105	1.281	1.380	1.467	1.586	1.722	1.859			
	Min Video Output Volts		0.211	0.340	0.471	0.591	0.691	0.806	0.924	1.039	1.171	1.339	1.426	1.542	1.680	1.819			

Video Output @ -63dBm	Spec.
Min(V)= 0.211	0.065
Max(V)= 0.235	0.280

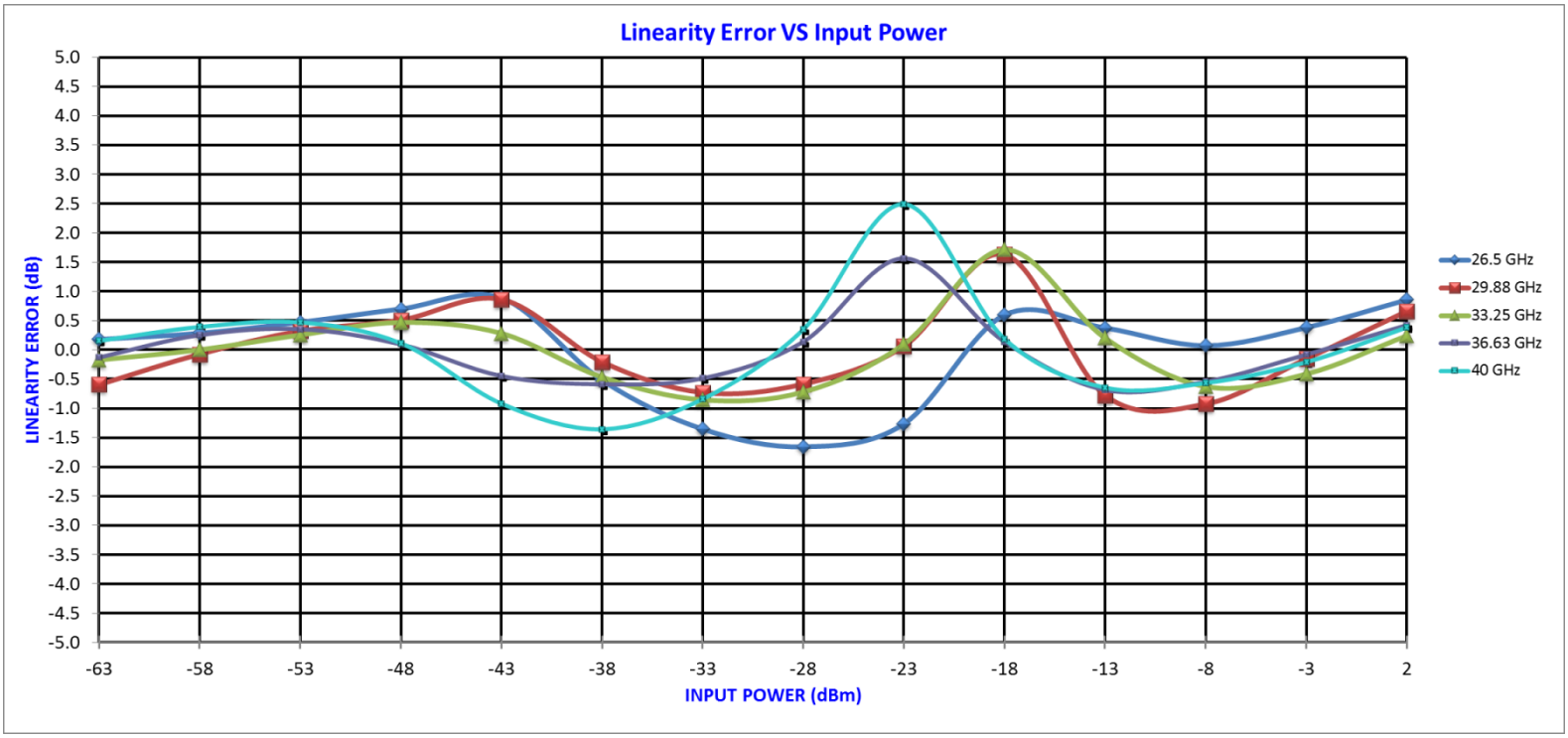
Log Slope Average: mV/dB	24.7
Log Slope Varaition: ± mV/dB	0.65

Video Output @ +2dBm	Spec.
Min(V)= 1.819	1.476
Max(V)= 1.859	1.940

Video Output Voltage With No RF	0.042

TYPICAL CHARACTERISTICS FOR SDLVA-26R540G-65-CD-1

Linearity Graph @ -54C



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TYPICAL CHARACTERISTICS FOR SDLVA-26R540G-65-CD-1

Log Transfer vs Frequency Tabulated Data @+85C

MODEL: SDLVA-26R540G-65-CD-1
SERIAL NO: PL21607
DATE: 09-27-2017
TESTED BY: E.Benson
Test Temp: +85C

GRAPH #1

PLANAR MONOLITHICS INDUSTRIES
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Frequency			-63	-58	-53	-48	-43	-38	-33	-28	-23	-18	-13	-8	-3	2	RF Input Power (dBm)			
26.5 GHz	INTERCEPT (mV)	1789	110	251	381	513	649	787	907	1032	1168	1328	1449	1578	1707	1836	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	26.6	-5	3	0	0	3	8	-5	-13	-10	18	6	2	-2	-6	Error (mV)		MAX	MIN
			-0.18	0.13	0.02	-0.01	0.11	0.30	-0.18	-0.48	-0.36	0.66	0.22	0.07	-0.07	-0.22	LINEARITY ERROR (dB)		0.66	-0.48
29.88 GHz	INTERCEPT (mV)	1794	82	206	339	468	611	769	902	1032	1173	1329	1447	1571	1702	1832	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	27.3	7	-5	-9	-16	-10	12	9	2	7	26	8	-5	-10	-16	Error (mV)		MAX	MIN
			0.26	-0.19	-0.32	-0.59	-0.35	0.44	0.31	0.08	0.25	0.96	0.29	-0.17	-0.37	-0.60	LINEARITY ERROR (dB)		0.96	-0.60
33.25 GHz	INTERCEPT (mV)	1809	94	227	360	496	631	770	904	1039	1190	1350	1467	1587	1716	1850	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	27.3	3	0	-4	-4	-5	-3	-5	-6	8	32	13	-4	-11	-13	Error (mV)		MAX	MIN
			0.11	-0.01	-0.13	-0.15	-0.20	-0.10	-0.18	-0.23	0.30	1.17	0.46	-0.14	-0.41	-0.49	LINEARITY ERROR (dB)		1.17	-0.49
36.63 GHz	INTERCEPT (mV)	1855	69	186	325	476	640	795	937	1085	1245	1365	1488	1617	1747	1881	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	28.4	2	-23	-26	-17	5	18	18	24	42	21	2	-11	-23	-31	Error (mV)		MAX	MIN
			0.06	-0.82	-0.92	-0.60	0.18	0.64	0.64	0.86	1.50	0.72	0.06	-0.40	-0.82	-1.09	LINEARITY ERROR (dB)		1.50	-1.09
40 GHz	INTERCEPT (mV)	1813	140	277	409	538	667	800	941	1092	1248	1348	1467	1592	1720	1852	Measured Value (mV)		Error(dB)	
	SLOPE (mV/dB)	26.5	-7	-2	-2	-6	-9	-8	1	19	43	11	-2	-10	-14	-14	Error (mV)		MAX	MIN
			-0.26	-0.08	-0.09	-0.21	-0.33	-0.31	0.02	0.73	1.63	0.41	-0.09	-0.37	-0.53	-0.54	LINEARITY ERROR (dB)		1.63	-0.54

Flatness +/- dB	1.30	1.70	1.50	1.30	1.00	0.60	0.70	1.10	1.50	0.70	0.80	0.80	0.80	0.90
Max Video Output Volts	0.140	0.277	0.409	0.538	0.667	0.800	0.941	1.092	1.248	1.365	1.488	1.617	1.747	1.881
Min Video Output Volts	0.069	0.186	0.325	0.468	0.611	0.769	0.902	1.032	1.168	1.328	1.447	1.571	1.702	1.832

Video Output @ -63dBm		Spec.
Min(V)=	0.069	0.065
Max(V)=	0.140	0.280

Log Slope Average: mV/dB	27.2
Log Slope Varaition: ± mV/dB	0.96

Video Output @ +2dBm		Spec.
Min(V)=	1.832	1.476
Max(V)=	1.881	1.940

Video Output Voltage With No RF	0.015

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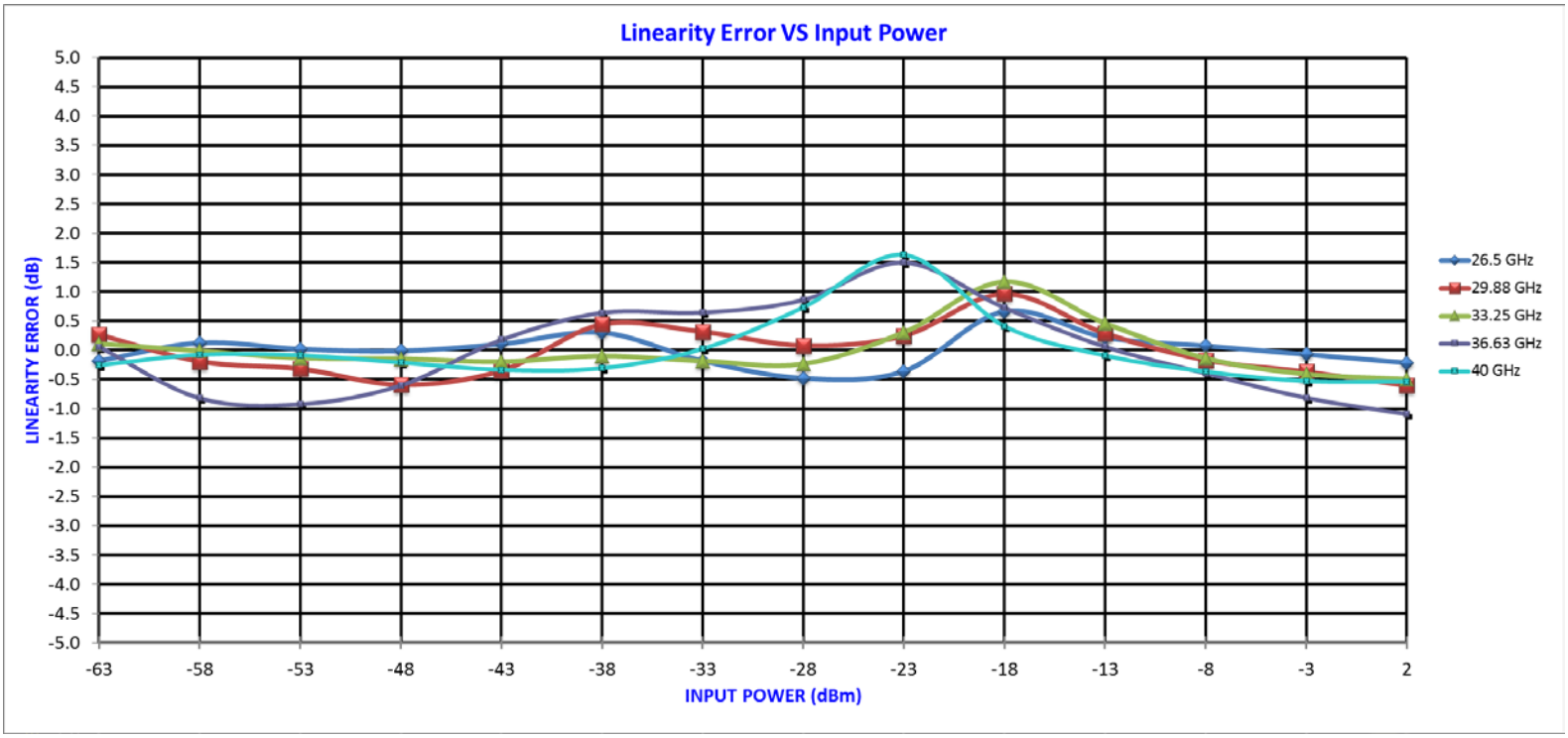
TYPICAL CHARACTERISTICS FOR SDLVA-26R540G-65-CD-1

Linearity Graph @ +85C



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