



TEST REPORT

ON

1 GHz \pm 300 MHz

SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER

PMI MODEL No:
SDLVA-0120-70
Option A02, A04, A05

Serial Numbers: PM202010 THRU PM202012

**DESIGNED
BY
R. Afable**

**TESTED
BY
R. Afable**

**REPORTED
BY
E. Elder**

April 28, 2005

PLANAR MONOLITHICS INDUSTRIES, INC., 7311-G Grove Road, Frederick, MD 21704 • USA
TEL: 301-631-1579 • FAX: 301-662-2029 • EMAIL: sales@planarmonolithics.com
WEBSITE: <http://www.planarmonolithicsindustries.com>

ISO 9001 : 1994 CERTIFIED



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1.0 GHz \pm 300 MHz, 65 – 70 dB DYNAMIC RANGE SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER PMI MODEL No: SDLVA-0120-70 OPTION A02, A04, A05

FEATURES:

- 1.0 GHz \pm 300 MHz FREQUENCY RANGE
- 65 TO 70 dB DYNAMIC RANGE
- -65 dBm TANGENTIAL SENSITIVITY
- DESIGNED USING CUTTING EDGE GaAs TECHNOLOGY



SPECIFICATIONS:

● FREQUENCY	:	1.0 GHz \pm 300 MHz
● DYNAMIC RANGE	:	>65 dB
● LOG LINEARITY (-60 dBm TO +5 dBm)	:	\pm 1.2 dB MAXIMUM, \pm 0.6 dB TYPICAL
● MINIMUM LOGGING RANGE	:	-60 dBm (-65 dBm TYPICAL)
● MAXIMUM LOGGING RANGE	:	+5 dBm (+8 dBm TYPICAL)
● VSWR INPUT	:	1.8:1 MAXIMUM (1.5:1 TYPICAL)
● TANGENTIAL SENSITIVITY	:	-65 dBm TYPICAL
● LIMITED IF OUTPUT	:	-3 dBm TYPICAL
● MAXIMUM RF INPUT POWER	:	+10 dBm
● LOG VIDEO OUTPUT	:	
OUTPUT COUPLING	:	DC
MAXIMUM OUTPUT VOLTAGE	:	2.7 V
RISE TIME	:	25 nS MAXIMUM
FALL TIME	:	30 nS MAXIMUM
SETTLING TIME	:	40 nS MAXIMUM
DC OFFSET	:	0.1 V NOMINAL (ADJUSTABLE)
SLOPE	:	25 mV/dB NOMINAL (ADJUSTABLE)
LOG SLOPE VARIATION WITH FREQUENCY	:	\pm 0.5 mV/dB OVER 80 MHz RF BANDWIDTH
LOG SLOPE VARIATION WITH TEMP	:	\pm 1 mW MAXIMUM
PROPAGATION DELAY	:	10 nS MAXIMUM, 7 nS TYPICAL
VIDEO LOAD	:	100 Ω \pm 10% TYPICAL, 50 Ω MINIMUM
● DC POWER SUPPLY	:	+9 TO +15V @ 100 mA(120 mA EXTENDED RANGE) -9 TO -15V @ 190 mA



PRODUCT FEATURE

REVISIONS	DESCRIPTION	DATE	APPROVED
—	ORIGINAL JOB # P112041	1/11/02	

MECHANICAL OUTLINE

DESCRIPTION

THE MODEL SDLVA-0120-70 OPTION A02, A04, A05 SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER (SDLVA) OPERATES OVER THE 1.0 GHz \pm 300 MHz RANGE THESE UNITS HAVE A DYNAMIC RANGE OF 65 TO 70 dB, A TSS OF -65 dBm TYPICALLY AND A NOMINAL VIDEO BANDWIDTH OF 20 MHz. FURTHERMORE, THESE UNITS ARE 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. THESE UNITS OFFER TYPICAL FAST RISE TIME \leq 20ns, RAPID FALL TIME \leq 25ns AS WELL AS SUPERIOR DELAY TIME OF 8 nsec. THE LOG SLOPE IS 25mV/dB AND THE ACCURACY IS LESS THAN \pm 1.0 dB OVER THE -60 TO 0 dBm POWER INPUT RANGE. DYNAMIC RANGE CAN BE EXTENDED TO -65/+5 WITH LOG ERROR OF \pm 1.5 dB. AVAILABLE WITH ADJUSTABLE LOGGING SLOPE AND DC OFFSETS. GUARANTEED RISE TIMES ARE LESS THAN 25 ns AND MAXIMUM RECOVERY TIMES ARE LESS THAN 30 ns. RECOVERY TIMES AT LOWER POWER ARE FASTER. THE SDLVA-0120-70 SDLVA IS COMMERCIALY SCREENED AND CHARACTERIZED FROM -55° TO +85°C. SIZES AVAILABLE ARE 3.75 x 1.50 x 0.50" OR TO ANY OTHER CUSTOMIZED CONFIGURATION DESIRED.

SPECIFICATIONS

- FREQUENCY RANGE: 1 GHz \pm 300 MHz
- DYNAMIC RANGE: > 65 dB
- LOG LINEARITY: \pm 1.2 dB MAX (-60 dBm TO +5 dBm) \pm 0.6dB TYPICAL
- MINIMUM LOGGING RANGE: -60 dBm (-65 dBm TYPICAL)
- MAXIMUM LOGGING RANGE: +5 dBm (+8 dBm TYPICAL)
- VSWR INPUT: 1.8:1 MAXIMUM (1.5:1 TYPICAL)
- TANGENTIAL SENSITIVITY: -65 dBm (TYPICAL)
- LIMITED IF OUTPUT: -3 dBm TYPICAL (WITH OPTION A02)
- MAXIMUM RF INPUT POWER: +10 dBm
- LOG VIDEO OUTPUT:
 - DC COUPLING: DC
 - MAXIMUM OUTPUT VOLTAGE: 2.7 VOLTS
 - RISE TIME: 25 ns MAXIMUM
 - FALL TIME: 30 ns MAXIMUM
 - SETTILING TIME: 40 ns MAXIMUM
 - DC OFFSET: 0.1 V NOMINAL (ADJUSTABLE WITH OPTION A05)
 - SLOPE: 25 mV/dB NOMINAL (ADJUSTABLE TO 30mV/dB WITH OPTION A04)
 - LOG SLOPE VARIATION WITH FREQUENCY: \pm 0.5 mV/dB (OVER 80 MHz RF BANDWIDTH)
 - LOG SLOPE VARIATION WITH TEMPERATURE: \pm 1 mV MAXIMUM
 - PROPAGATION DELAY: 10 ns MAXIMUM, 7 ns TYPICAL
 - VIDEO LOAD: 100 Ω \pm 10% TYPICAL, 50 Ω MINIMUM
- DC POWER SUPPLY:
 - +V: +8 TO +15 VOLTS @ 100mA (120 mA FOR EXTENDED DYNAMIC RANGE)
 - -V: -9 TO -15 VOLTS @ 190mA
 - SIZE: 3.75 x 1.50 x 0.50

ENVIRONMENTAL RATINGS

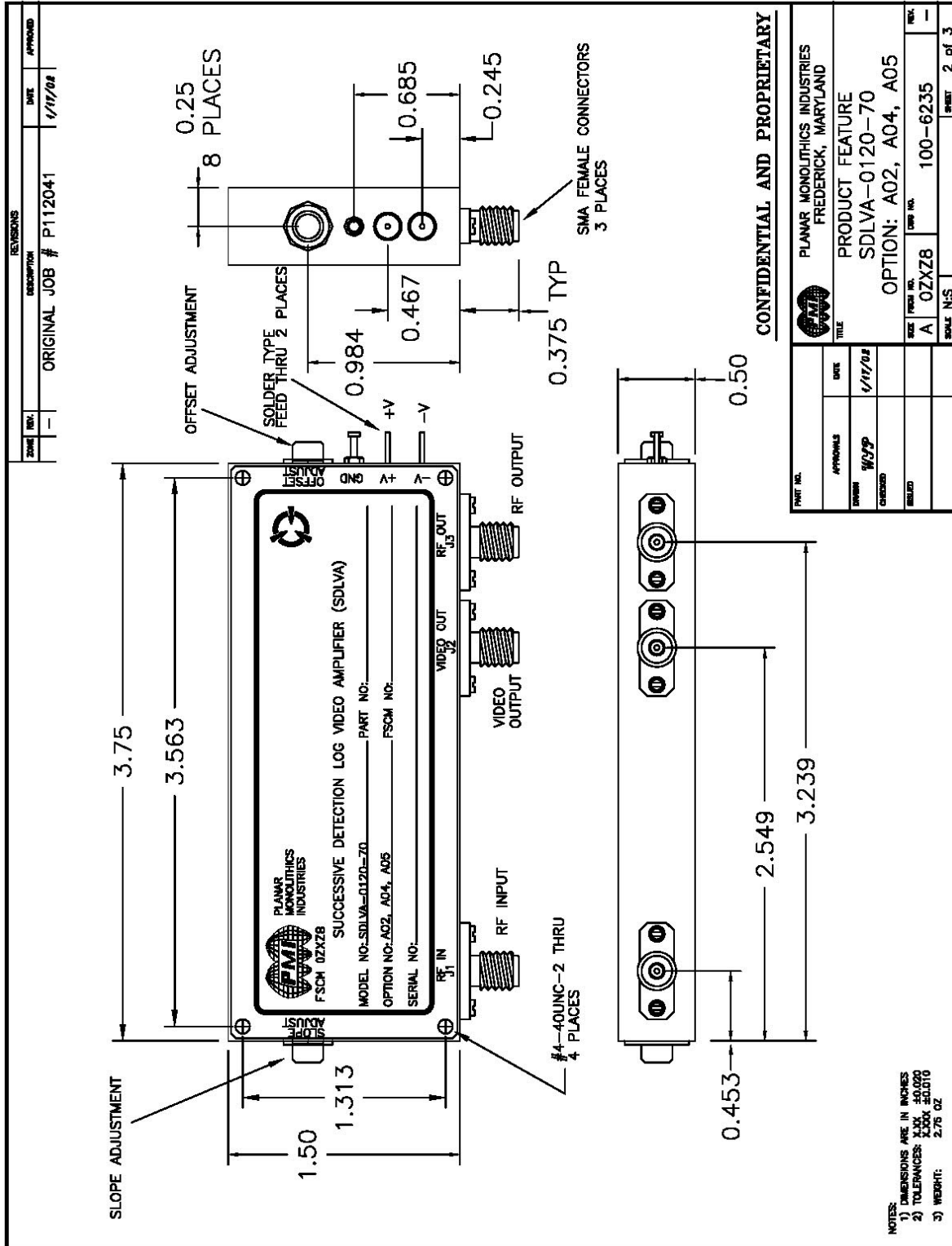
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +100°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

CONFIDENTIAL AND PROPRIETARY

PART NO.	PLANAR MONOLITHICS INDUSTRIES FREDERICK, MARYLAND	DATE	APPROVED
—	PRODUCT FEATURE SDLVA-0120-70 OPTION: A02, A04, A05	1/11/02	
SIZE	FORM NO.	REV.	SHEET
A	OZXXZB	100-6235	1 of 3

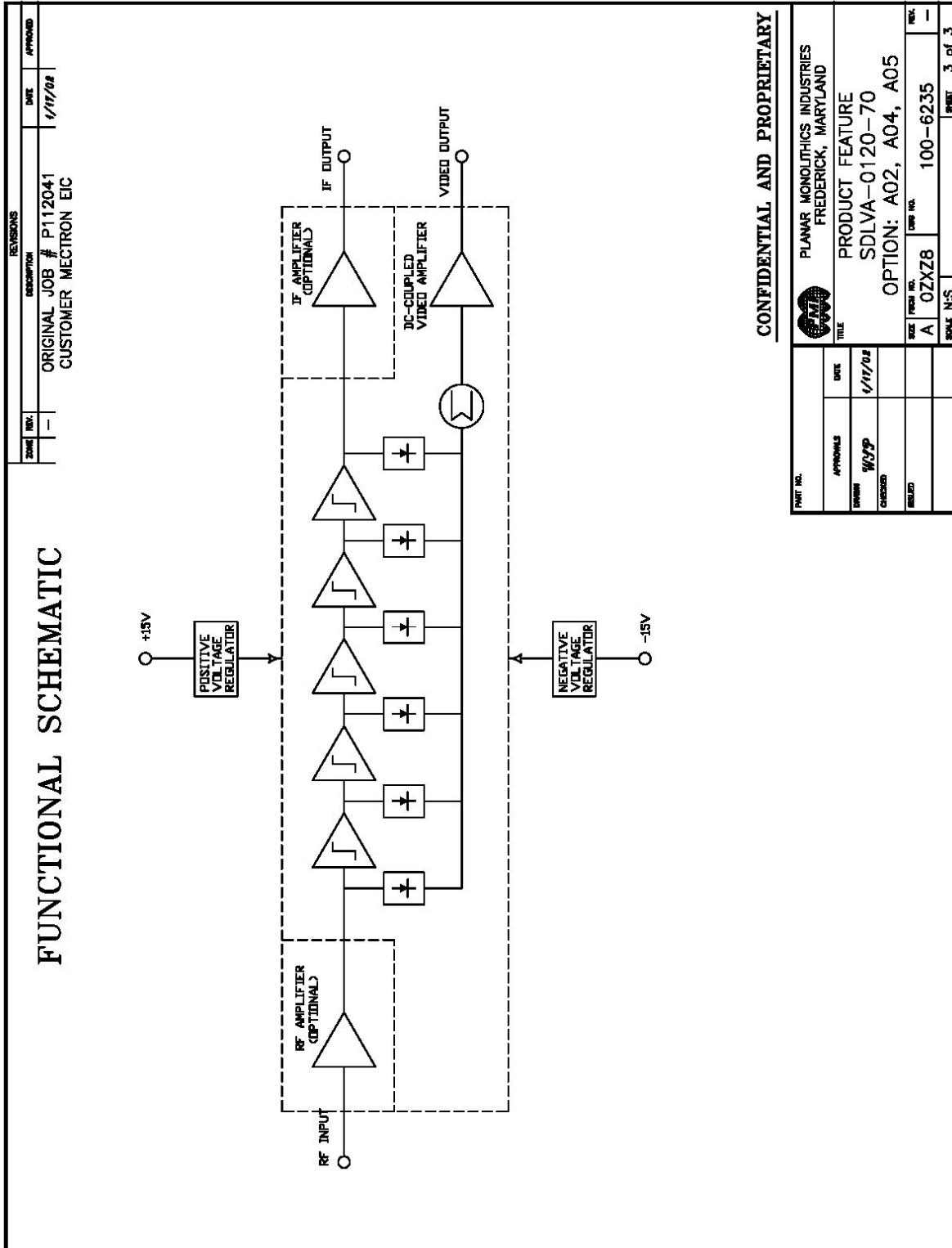


OUTLINE DRAWING





FUNCTIONAL SCHEMATIC



FINAL TEST DATA

FINAL TEST DATA SHEETS

FOR

PMI MODEL NUMBER

SDLVA-0120-70
Option A02, A04, A05

Serial Numbers:

PM202010 THRU PM202012



FINAL TEST DATA

PMI MODEL NO: SDLVA-0120-70 OPTION A02, A04, A05 SERIAL NUMBER: PM202010

FORM: 361-SD 01/21/02



PLANAR MONOLITHIC INDUSTRIES
 7311 G GROVE ROAD, FREDERICK, MD 21704
 TEL: (301)662-4937 FAX: (301)662-4938

JOB NO: PI12041

SUMMARY TEST DATA
 ON
 SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER--SDLVA

CUSTOMER: MECTRON
 JOB NO: PI12041
 MODEL NO: SDLVA-0120-70 A02, A04, A05
 SERIAL NO: PM202010

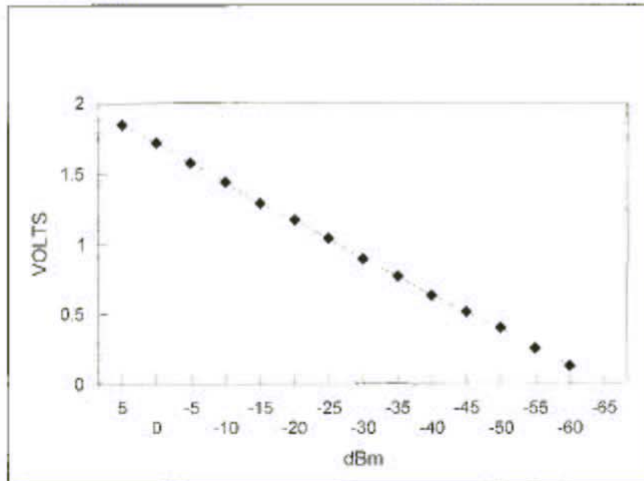
TESTED BY: R. Afoable
 TEMPERATURE: 0°C TO 60°C
 DATE: 4/23/02

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	MEASURED VALUE	REMARKS QA/QC
1	FREQUENCY RANGE	1.0 Ghz ± 300 MHz	PASS	Set ✓
2	INPUT VSWR @ -23 dBm	2.5:1 (TYPICAL)	1.21:1	✓
3	LOGGING RANGE	-60 TO +5 dBm (MIN) PLOTS ATTACHED	SEE PLOT	✓
4	TSS (TYPICAL)	-65 dBm (TYPICAL)	-65 dBm	✓
5	LOG SLOPE (±10%)	25 mV/dB PLOTS ATTACHED	23.74 mV/dB 26.37 mV/dB	✓
6	LOG LINEARITY @-60 TO +5 dBm	±1.2 dB (MAX) PLOTS ATTACHED	+0.57 dB -0.75 dB	✓
7	RISE TIME (10% to 90% POINTS)	30 nsec (MAX)	30 nS	✓
8	FALL TIME (90% TO 10% POINTS)	30 nsec (MAX)	30 nS	✓
9	LIMITED IF OUTPUT	-3 dBm (TYPICAL)	~ -30 dBm	✓
10	DC POWER @ +15V NO LOAD	100 mA (MAX)	79 mA	✓
11	DC POWER @ -15V NO LOAD	190 mA (MAX)	157 mA	✓

PRODUCTION MANAGER APPROVAL: Raymond Buckley DATED: 4/25/02
 QA/QC APPROVAL: _____ INSP. BY 01 DATED: 4/25/02

SDLVA-0120-70 OPT: A02,A04,A05 700 MHz
 S/N: SDL202010

RF IN	V OUT
5 dBm	1.847 VOLTS
0 dBm	1.719 VOLTS
-5 dBm	1.574 VOLTS
-10 dBm	1.442 VOLTS
-15 dBm	1.293 VOLTS
-20 dBm	1.175 VOLTS
-25 dBm	1.041 VOLTS
-30 dBm	0.893 VOLTS
-35 dBm	0.773 VOLTS
-40 dBm	0.633 VOLTS
-45 dBm	0.517 VOLTS
-50 dBm	0.4 VOLTS
-55 dBm	0.253 VOLTS
-60 dBm	0.128 VOLTS
-65 dBm	VOLTS

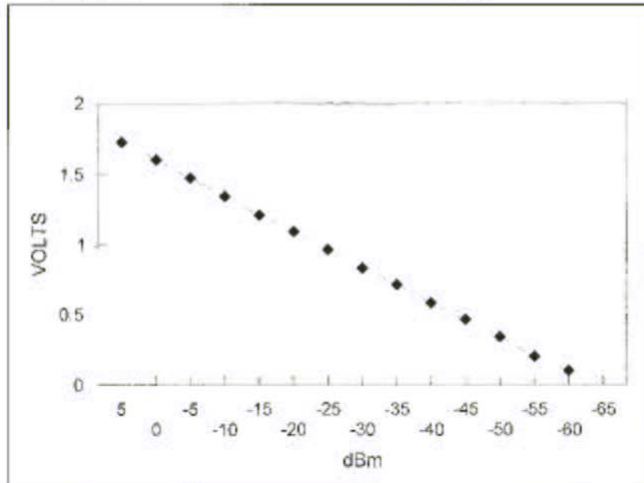


LOG SLOPE 26.3771 mv/dB
 BEST FIT 0.0264
 STRAIGHT 0.57 dB
 LINE -0.74 dB



SDLVA-0120-70 OPT A02,A04,A05 1.0 GHz
 S/N: SDL202010

RF IN	V OUT
5 dBm	1.729 VOLTS
0 dBm	1.607 VOLTS
-5 dBm	1.474 VOLTS
-10 dBm	1.347 VOLTS
-15 dBm	1.209 VOLTS
-20 dBm	1.096 VOLTS
-25 dBm	0.969 VOLTS
-30 dBm	0.833 VOLTS
-35 dBm	0.717 VOLTS
-40 dBm	0.581 VOLTS
-45 dBm	0.464 VOLTS
-50 dBm	0.341 VOLTS
-55 dBm	0.202 VOLTS
-60 dBm	0.102 VOLTS
-65 dBm	VOLTS

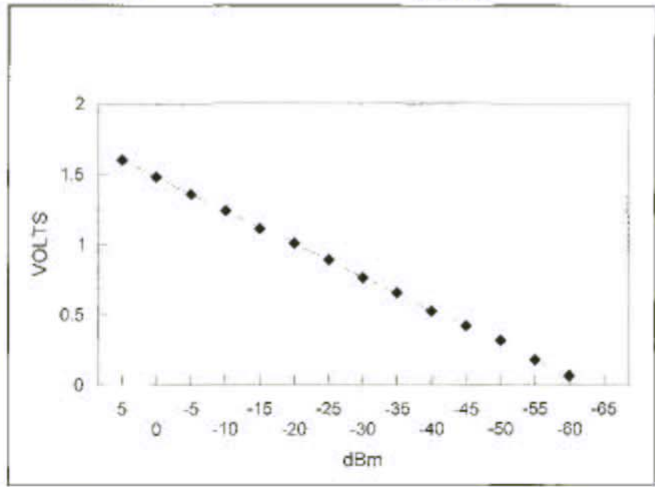


LOG SLOPE 25.0243 mv/dB
 BEST FIT 0.0250
 STRAIGHT 0.46 dB
 LINE -0.68 dB



SDLVA-0120-70 OPT. A02,A04,A05 1.3 GHz
 S/N: SDL202010

RF IN	V OUT
5 dBm	1.597 VOLTS
0 dBm	1.48 VOLTS
-5 dBm	1.358 VOLTS
-10 dBm	1.242 VOLTS
-15 dBm	1.116 VOLTS
-20 dBm	1.012 VOLTS
-25 dBm	0.891 VOLTS
-30 dBm	0.767 VOLTS
-35 dBm	0.658 VOLTS
-40 dBm	0.53 VOLTS
-45 dBm	0.425 VOLTS
-50 dBm	0.315 VOLTS
-55 dBm	0.177 VOLTS
-60 dBm	0.066 VOLTS
-65 dBm	VOLTS



LOG SLOPE 23.2471 mv/dB
 BEST FIT 0.0232
 STRAIGHT 0.33 dB
 LINE -0.75 dB

FINAL TEST DATA

PMI MODEL NO: SDLVA-0120-70 OPTION A02, A04, A05 SERIAL NUMBER: PM202011

FORM: 361-SD 01/21/02



JOB NO: P112041

SUMMARY TEST DATA
 ON
 SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER--SDLVA

CUSTOMER: MECTRON
 JOB NO: P112041
 MODEL NO: SDLVA-0120-70 A02, A04, A05
 SERIAL NO: PM202011

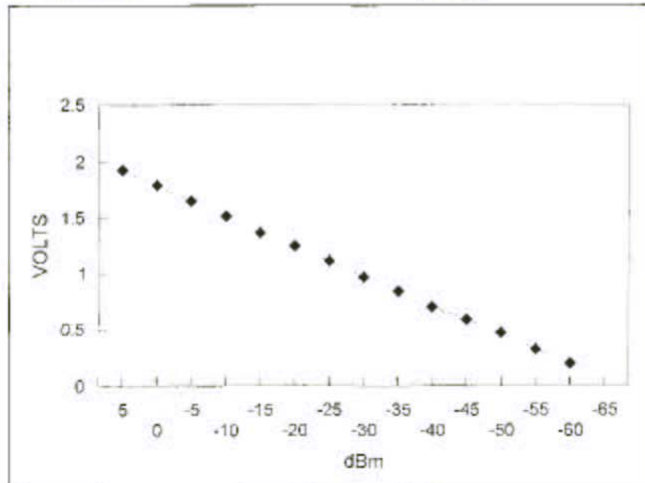
TESTED BY: R. A. Fable
 TEMPERATURE: 0°C TO 60°C
 DATE: 4/22/02

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	MEASURED VALUE	REMARKS QA/QC
1	FREQUENCY RANGE	1.0 Ghz ± 300 MHz	PASS	Set ✓
2	INPUT VSWR @ -23 dBm	2.5:1 (TYPICAL)	1.19:1	✓
3	LOGGING RANGE	-60 TO +5 dBm (MIN) PLOTS ATTACHED	SEE PLOT	✓
4	TSS (TYPICAL)	- 65 dBm (TYPICAL)	-65 dBm	✓
5	LOG SLOPE (±10%)	25 mV/dB PLOTS ATTACHED	23.72 mV/dB 26.80 mV/dB	✓
6	LOG LINEARITY @-60 TO +5 dBm	±1.2 dB (MAX) PLOTS ATTACHED	+1.04 dB -0.73 dB	✓
7	RISE TIME (10% to 90% POINTS)	30 nsec (MAX)	30 nS	✓
8	FALL TIME (90% TO 10% POINTS)	30 nsec (MAX)	30 nS	✓
9	LIMITED IF OUTPUT	-3 dBm (TYPICAL)	~ -3 dBm	✓
10	DC POWER @ +15V NO LOAD	100 mA (MAX)	80 mA	✓
11	DC POWER @ -15V NO LOAD	190 mA (MAX)	148 mA	✓

PRODUCTION MANAGER APPROVAL: Roy DATED: 4/25/02
 QA/QC APPROVAL: INSP. BY Q1 DATED: 4/25/02

SDLVA-0120-70 OPT. A02,A04,A05 700 MHz
 S/N: SDL202011

RF IN	V OUT
5 dBm	1.924 VOLTS
0 dBm	1.794 VOLTS
-5 dBm	1.649 VOLTS
-10 dBm	1.514 VOLTS
-15 dBm	1.366 VOLTS
-20 dBm	1.249 VOLTS
-25 dBm	1.113 VOLTS
-30 dBm	0.965 VOLTS
-35 dBm	0.842 VOLTS
-40 dBm	0.701 VOLTS
-45 dBm	0.688 VOLTS
-50 dBm	0.472 VOLTS
-55 dBm	0.324 VOLTS
-60 dBm	0.201 VOLTS
-65 dBm	VOLTS

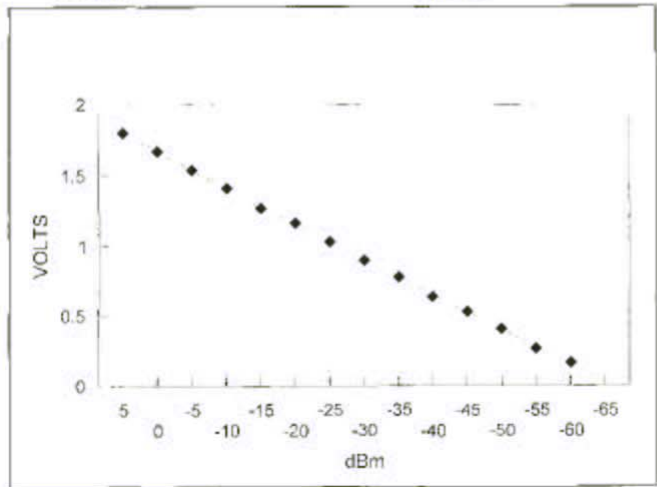


LOG SLOPE 26.8000 mv/dB
 BEST FIT 0.0268
 STRAIGHT 1.04 dB
 LINE -0.60 dB



SDLVA-0120-70 OPT: A02,A04,A05 1.0 GHz
 S/N: SDL202011

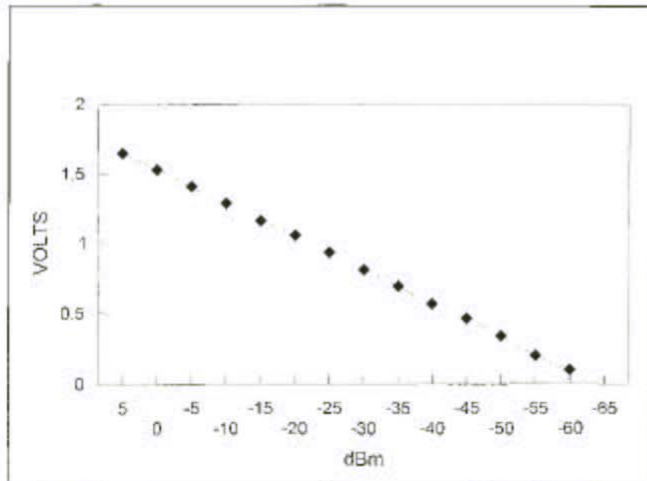
RF IN	V OUT
5 dBm	1.798 VOLTS
0 dBm	1.675 VOLTS
-5 dBm	1.54 VOLTS
-10 dBm	1.411 VOLTS
-15 dBm	1.273 VOLTS
-20 dBm	1.162 VOLTS
-25 dBm	1.031 VOLTS
-30 dBm	0.896 VOLTS
-35 dBm	0.777 VOLTS
-40 dBm	0.641 VOLTS
-45 dBm	0.528 VOLTS
-50 dBm	0.405 VOLTS
-55 dBm	0.265 VOLTS
-60 dBm	0.165 VOLTS
-65 dBm	VOLTS



LOG SLOPE 25.4114 mv/dB
 BEST FIT 0.0254
 STRAIGHT LINE 0.90 dB
 LINE -0.50 dB

SDLVA-0120-70 OPT. A02,A04,A05 1.3 GHz
 S/N: SDL202011

RF IN	V OUT
5 dBm	1.65 VOLTS
0 dBm	1.531 VOLTS
-5 dBm	1.409 VOLTS
-10 dBm	1.289 VOLTS
-15 dBm	1.164 VOLTS
-20 dBm	1.059 VOLTS
-25 dBm	0.934 VOLTS
-30 dBm	0.812 VOLTS
-35 dBm	0.698 VOLTS
-40 dBm	0.569 VOLTS
-45 dBm	0.467 VOLTS
-50 dBm	0.345 VOLTS
-55 dBm	0.205 VOLTS
-60 dBm	0.103 VOLTS
-65 dBm	VOLTS



LOG SLOPE 23.7293 mv/dB
 BEST FIT 0.0237
 STRAIGHT LINE 0.31 dB
 LINE -0.73 dB



FINAL TEST DATA

PMI MODEL NO: SDLVA-0120-70 OPTION A02, A04, A05 SERIAL NUMBER: PM202012

FORM: 361-SD 01/21/02



PLANAR MONOLITHIC INDUSTRIES
 7311 GROVE ROAD, FREDERICK, MD 21704
 TEL: (301)851-4263 FAX: (301)862-4938

JOB NO: P112041

SUMMARY TEST DATA
 ON
 SUCCESSIVE DETECTION LOG VIDEO AMPLIFIER--SDLVA

CUSTOMER: MECTRON
 JOB NO: P112041
 MODEL NO: SDLVA-0120-70 A02, A04, A05
 SERIAL NO: PM202012

TESTED BY: R. A. Able
 TEMPERATURE: 0°C TO 60°C
 DATE: 4/22/02

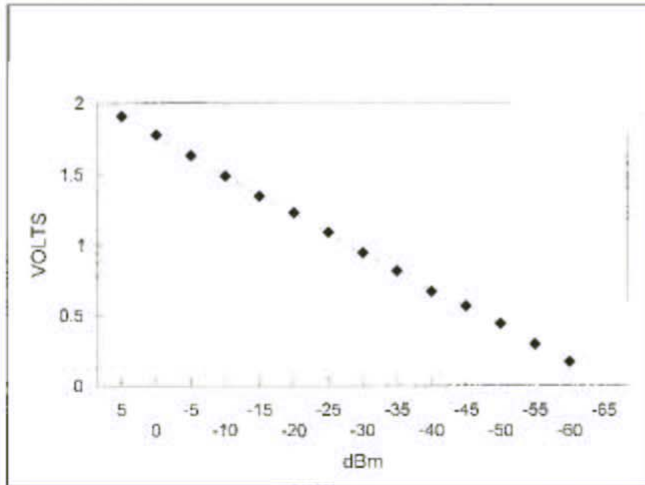
TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	MEASURED VALUE	REMARKS QA/QC
1	FREQUENCY RANGE	1.0 GHz \pm 300 MHz	PASS	Set \checkmark
2	INPUT VSWR @ -23 dBm	2.5:1 (TYPICAL)	1.23:1	\checkmark
3	LOGGING RANGE	-60 TO +5 dBm (MIN) PLOTS ATTACHED	SEE PLOT	\checkmark
4	TSS (TYPICAL)	-65 dBm (TYPICAL)	-65 dBm	\checkmark
5	LOG SLOPE (\pm 10%)	25 mV/dB PLOTS ATTACHED	23.60 mV/dB 26.78 mV/dB	\checkmark
6	LOG LINEARITY @ -60 TO +5 dBm	\pm 1.2 dB (MAX) PLOTS ATTACHED	+0.79 dB -0.75 dB	\checkmark
7	RISE TIME (10% to 90% POINTS)	30 nsec (MAX)	30 nS	\checkmark
8	FALL TIME (90% TO 10% POINTS)	30 nsec (MAX)	30 nS	\checkmark
9	LIMITED IF OUTPUT	-3 dBm (TYPICAL)	\approx -3 dBm	\checkmark
10	DC POWER @ +15V NO LOAD	100 mA (MAX)	81 mA	\checkmark
11	DC POWER @ -15V NO LOAD	190 mA (MAX)	151 mA	\checkmark

PRODUCTION MANAGER APPROVAL: Raymond Purkley DATED: 4/25/02
 QA/QC APPROVAL: _____ DATED: 4/25/02

INSP. BY QI

SDLVA-0120-70 OPT. A02,A04,A05 700 MHz
 S/N: SDL202012

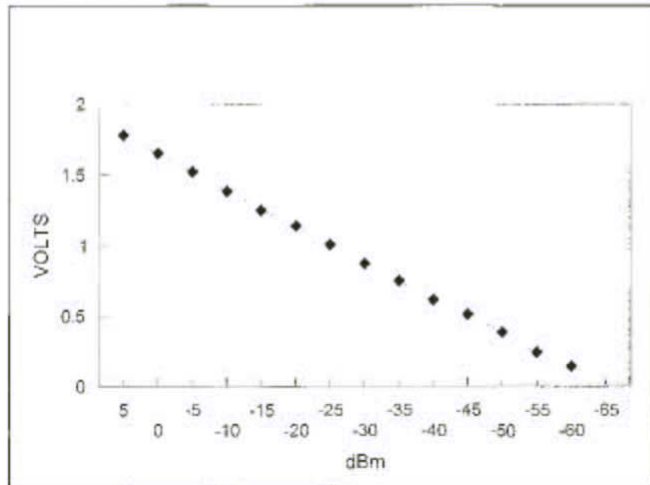
RF IN	V OUT
5 dBm	1.908 VOLTS
0 dBm	1.776 VOLTS
-5 dBm	1.631 VOLTS
-10 dBm	1.492 VOLTS
-15 dBm	1.346 VOLTS
-20 dBm	1.231 VOLTS
-25 dBm	1.09 VOLTS
-30 dBm	0.945 VOLTS
-35 dBm	0.82 VOLTS
-40 dBm	0.678 VOLTS
-45 dBm	0.568 VOLTS
-50 dBm	0.445 VOLTS
-55 dBm	0.299 VOLTS
-60 dBm	0.178 VOLTS
-65 dBm	VOLTS



LOG SLOPE 26.7871 mv/dB
 BEST FIT 0.0268
 STRAIGHT 0.79 dB
 LINE -0.61 dB

SDLVA-0120-70 OPT. A02,A04,A05 1.0 GHz
 S/N: SDL202012

RF IN	V OUT
5 dBm	1.779 VOLTS
0 dBm	1.654 VOLTS
-5 dBm	1.52 VOLTS
-10 dBm	1.387 VOLTS
-15 dBm	1.252 VOLTS
-20 dBm	1.143 VOLTS
-25 dBm	1.01 VOLTS
-30 dBm	0.877 VOLTS
-35 dBm	0.755 VOLTS
-40 dBm	0.618 VOLTS
-45 dBm	0.508 VOLTS
-50 dBm	0.385 VOLTS
-55 dBm	0.246 VOLTS
-60 dBm	0.144 VOLTS
-65 dBm	VOLTS

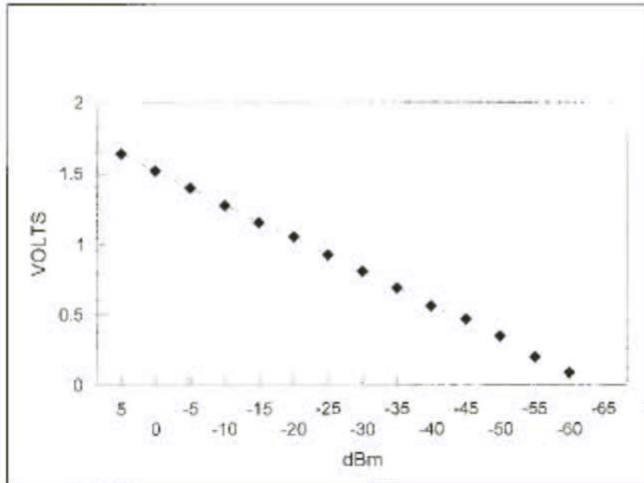


LOG SLOPE 25.3057 mv/dB
 BEST FIT 0.0253
 STRAIGHT 0.71 dB
 LINE -0.56 dB



SDLVA-0120-70 OPT. A02,A04,A05 1.3 GHz
 S/N: SDL202012

RF IN	V OUT
5 dBm	1.638 VOLTS
0 dBm	1.518 VOLTS
-5 dBm	1.398 VOLTS
-10 dBm	1.276 VOLTS
-15 dBm	1.153 VOLTS
-20 dBm	1.052 VOLTS
-25 dBm	0.926 VOLTS
-30 dBm	0.805 VOLTS
-35 dBm	0.69 VOLTS
-40 dBm	0.563 VOLTS
-45 dBm	0.467 VOLTS
-50 dBm	0.343 VOLTS
-55 dBm	0.2 VOLTS
-60 dBm	0.088 VOLTS
-65 dBm	VOLTS



LOG SLOPE 23.6000 mv/dB
 BEST FIT 0.0236
 STRAIGHT 0.56 dB
 LINE -0.75 dB