PASTERNACK
an INFINITE brand

6 GHz to 18 GHz, Log Amplifier, 25 mV/dB Log Slope, 70 dBm Log Range, SMA

TECHNICAL DATA SHEET PE15A2002

The PE15A2002 is a DLVA (Detection Logarithmic Video Amplifier) designed to operate over the 6 GHz to 18 GHz Frequency Range. The SDLVA utilizes GaAs semiconductor technology whoch is beneficial for high speed applications while maintaining flatness and accuracy throughout the desired frequency band. The PE15A2002 can process up to 70 dB of dynamic range with log linearity of +/- 4 dB. The log slope is 25 mV/dB with a fast recovery time of 70 nsec typical. The 50 ohm hybrid circuit assembly is enclosed in a rugged metal package with SMA connectors. The design is highly reliable and designed to meet MIL-STD-202 enviromental test conditions including humidity, shock and vibration.

Features

- Ultra-High Speed Applications
- 6 GHz to 18 GHz Frequency Range
- 70 dBm Log Range
- 25 mV/dB Log Slope
- ± 4 dB Max Log Accuracy
- 50 ns Typ Rise Time
- 70 ns Typ Recovery Time
- TSS -72 dB Min
- Designed for MIL-STD-202F Conditions

Applications

- Electronic Warfare
- Test & Measurement
- Military & Space
- Radar
- Military Communications Systems
- Telecommunications
- Data Communications

Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range	6		18	GHz
Video Output Range @ 50 Ohms Load	0		2.2	V
Video Output			2.4	V
Tangential Signal Sensitivity	-72			dB
Input Power			+20	dBm
Log Range	-70		+0	dBm
Log Accuracy			±4	dB
Log Linearity			±2.5	dB
Log Slope (± 10% Tolerance)		25		mV/dB
Log Slope Intercept Point @ -70 dBm RF Input	350			mV
Pulse Range To CW	100			ns
Rise Time (10% to 90%)			50	ns
Overshoot with 50 Ohms Load			1	dB
Fall Time (90% to 10%)			70	ns
Recovery Time			70	ns
Propagation Delay Time			15	dB
Input VSWR			3:1	
Positive Power Supply 400 mA			12	Volts

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: 6 GHz to 18 GHz, Log Amplifier, 25 mV/dB Log Slope, 70 dBm Log Range, SMA PE15A2002

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Negative Power Supply 250 mA			-12	Volts
Operating Temperature Range	-35		+90	deg C
Storage Temperature Range	-65		+125	deg C

*Note: Do Not Supply +V Without -V Supplied, As Well As This May Destroy The Unit.

Mechanical Specifications

Size

Length	3.2 in [81.28 mm]
Width	2.05 in [52.07 mm]
Height	0.4 in [10.16 mm]
Weight	0.189 lbs [85.73 g]

Environmental Specifications

Humidity	MIL-STD-810, METHOD 507
Shock	MIL-STD-810, METHOD 516, Fig. 5a,5b,5c,8a,8b,8c,9
Vibration	MIL-STD-810, METHOD 514, Fig. 3, 4a, 4b
Altitude	0-31,000 Feet
Temperature Cycle	MIL-STD-202F, METHOD 107
Salt Fog	MIL-STD-202F, METHOD 107D COND. A
Fungus	MIL-STD-810C, METHOD 508, (Notes:A, B, & C)
Acceleration	MIL-STD-810, METHOD 513, (NON-OPERATIONAL)
Explosive Atmosphere	MIL-STD-810, METHOD 511

Compliance Certifications (see product page for current document)

Plotted and Other Data

Notes:

- Values at +25 °C, sea level

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Amplifier Power-up Precautions

1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.

2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational temperature range stated in the Amplifier datasheet. Depending on the design and thermal requirements, using a heatsink with cooling fan is always recommended for safe reliable operation. A heat sink without a cooling fan may also be used. Damage caused from overheating will void the warranty.

3.) Confirm adequate system grounding is established. The DC power supply and Amplifier must have a common ground in order to operate properly.

4.) Power Amplifiers may require additional DC Current when initially powered-up. Depending on the design, the input current draw could range from an additional 10% to 100% above the maximum rated DC current of the Amplifier. This varies based on product part number.

5.) Confirm the DC power supply, if limited, is set to allow for additional start-up current that's rated for the Power Amplifier.

6.) Confirm the system is designed and calibrated for 50 ohms. Any impedance mismatch may cause performance issues.

7.) Preform a CALIBRATION (if required) with the loads before connecting the Amplifier to the Network Analyzer to ensure proper performance.

8.) Use a fixed attenuator between the signal source and input port of the Amplifier to optimize the input VSWR match.

9.) Confirm the input power level at the input port of the amplifier does not exceed the maximum rated limit for input power (as stated in the Amplifier datasheet).
P_{in} for Small Signal Gain = P1dB-SSG-10 dB
P_{in} for P1dB = P1dB-SSG+1 dB

10.) Confirm the Network Analyzer is always connected to the Amplifier first before DC power is applied to the Amplifier.

11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.

12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.

13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.

14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

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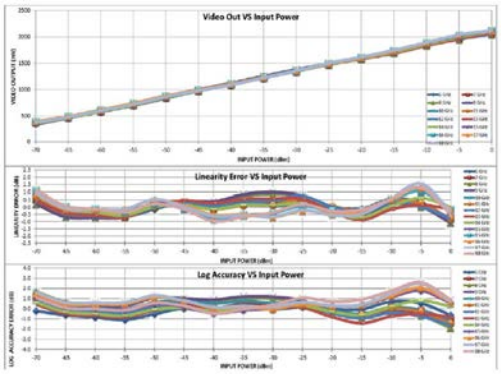
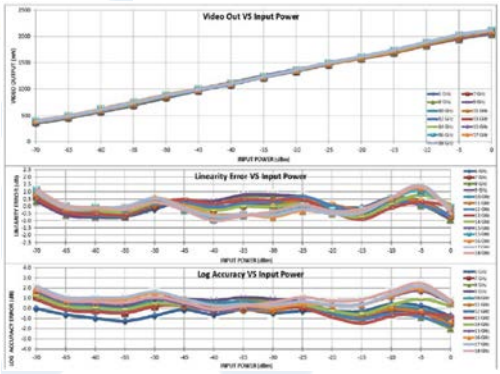
TECHNICAL DATA SHEET PE15A2002

Typical Performance Data

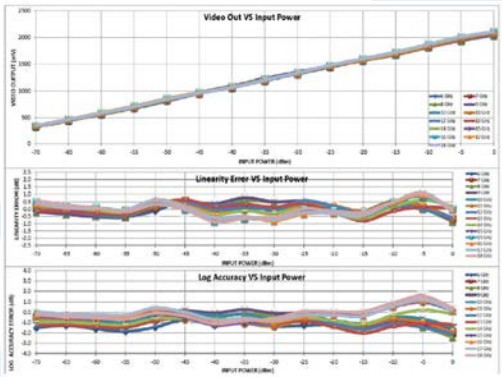
DLVA-6G18G-50 (Graphs) @ -35°C



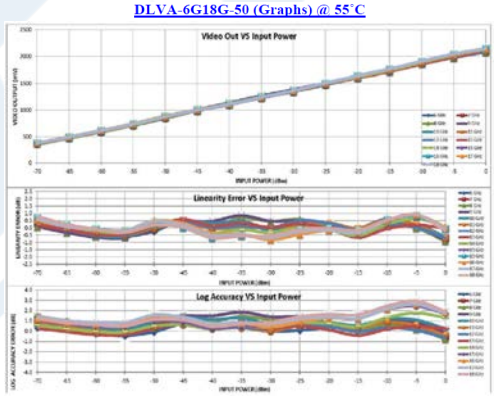
DLVA-6G18G-50 (Graphs) @ -5°C



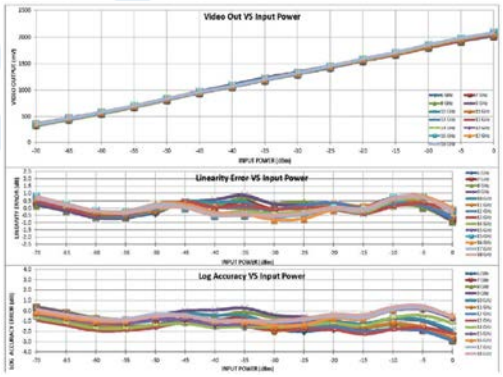
DLVA-6G18G-50 (Graphs) @ 25°C



DLVA-6G18G-50 (Graphs) @ 55°C



DLVA-6G18G-50 (Graphs) @ 90°C



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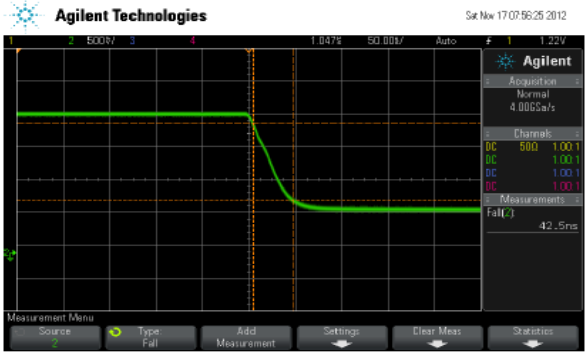
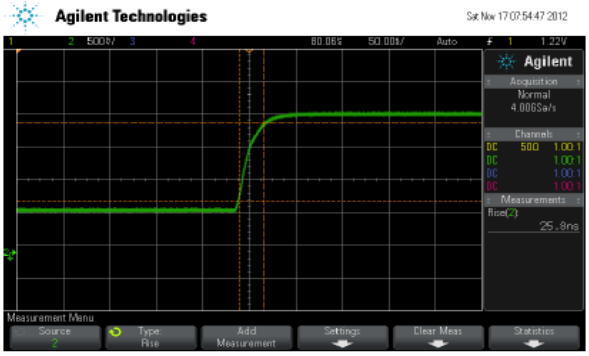
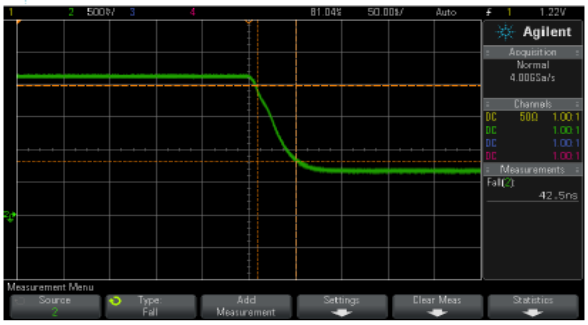
Fall & Recovery Time, 18GHz @ 25°C



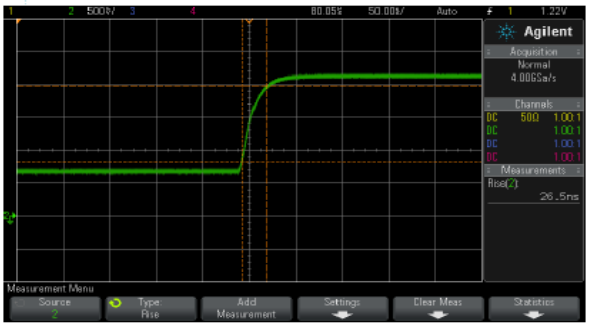
Rise Time, 18GHz @ 25°C



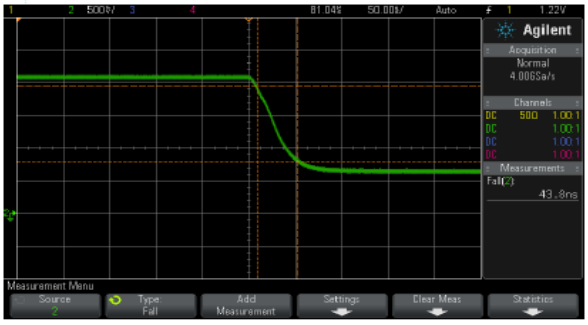
Fall & Recovery Time, 18GHz @ -35°C



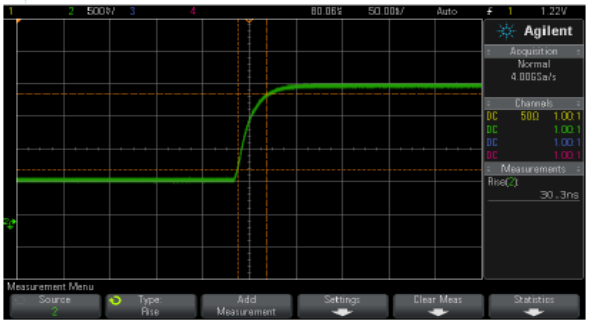
Rise Time, 18GHz @ -35°C



Fall & Recovery Time, 18GHz @ 90°C



Rise Time, 18GHz @ 90°C



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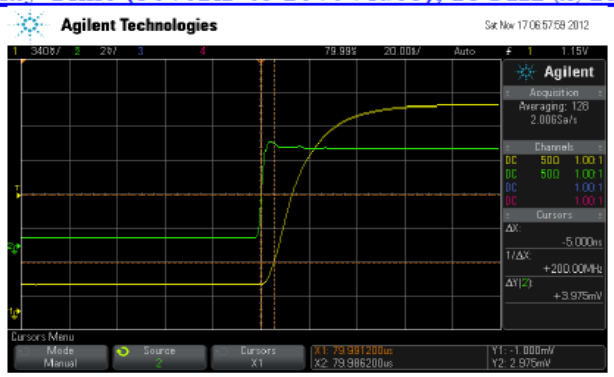
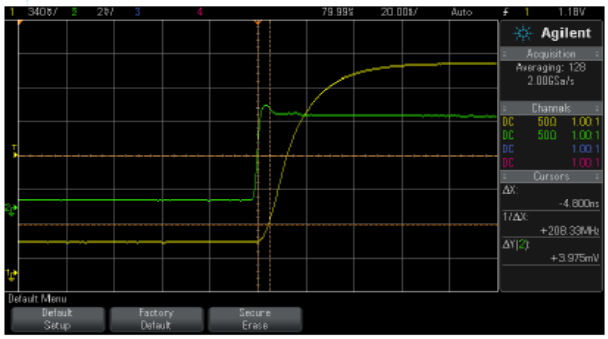
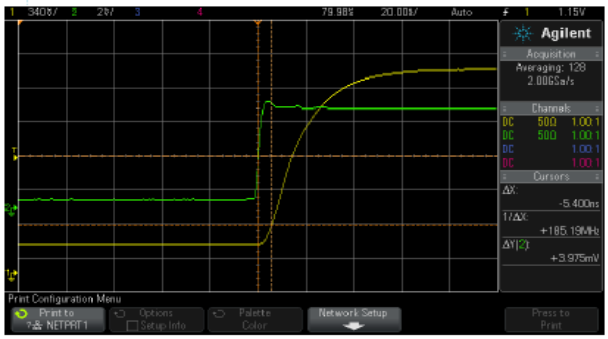
Delay Time (50%RF to 10%Video), 18GHz @ 25˚C



Delay Time (50%RF to 10%Video), 18GHz @ -35˚C



Delay Time (50%RF to 10%Video), 18GHz @ 90˚C



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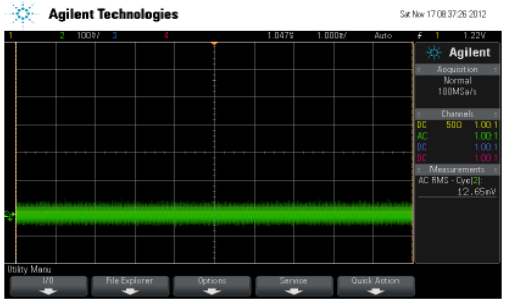
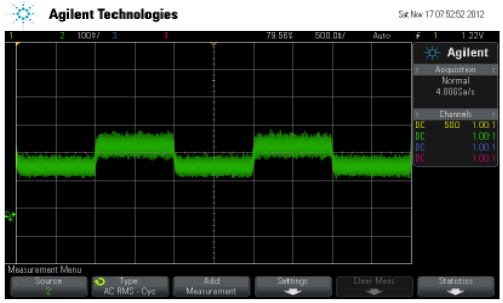
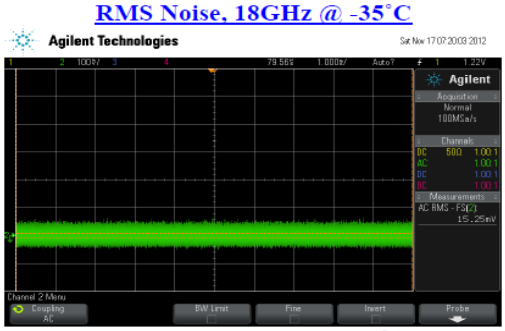
RMS Noise, 18GHz @ 25˚C



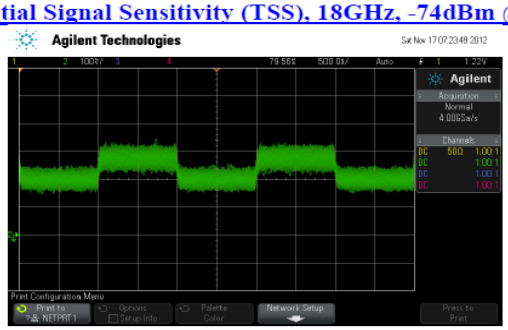
Tangential Signal Sensitivity (TSS), 18GHz, -74dBm @ 25˚C



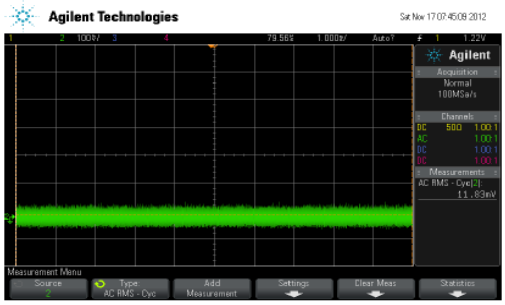
RMS Noise, 18GHz @ -35˚C



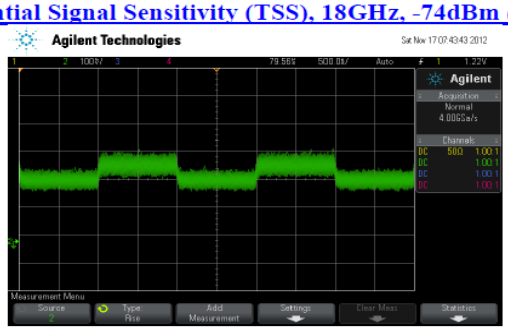
Tangential Signal Sensitivity (TSS), 18GHz, -74dBm @ -35˚C



RMS Noise, 18GHz @ 90˚C



Tangential Signal Sensitivity (TSS), 18GHz, -74dBm @ 90˚C



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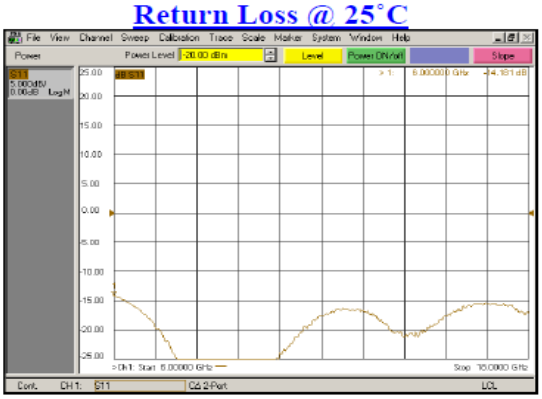
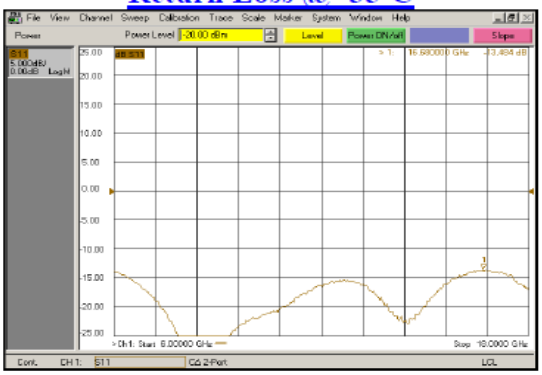
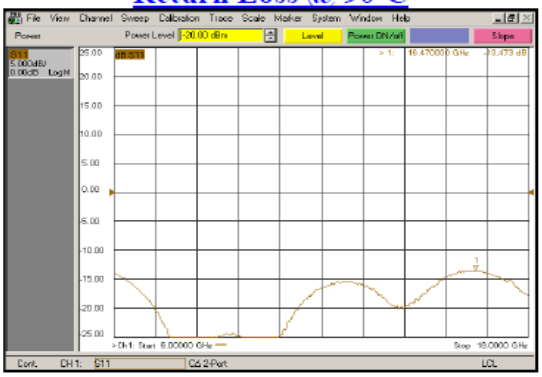
Return Loss @ 25°C



Return Loss @ -35°C



Return Loss @ 90°C



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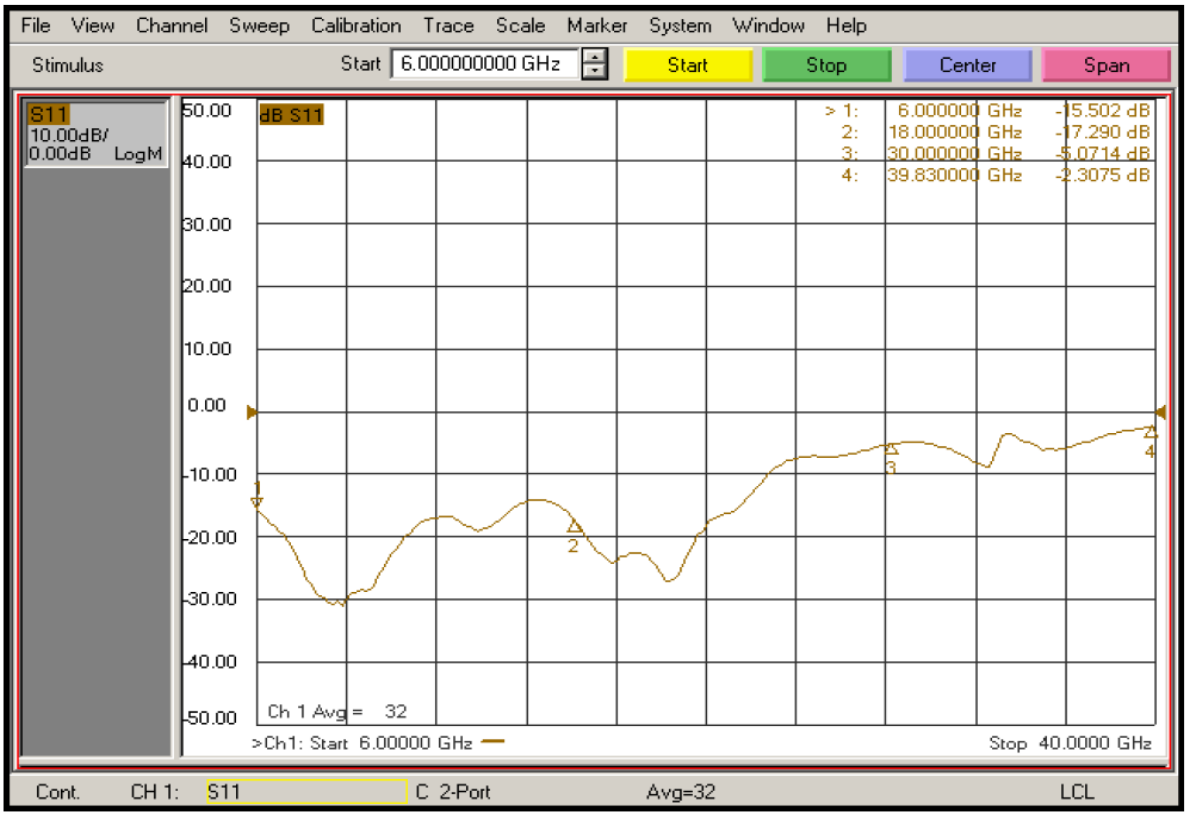
Out of Band Return Loss @ 25°C



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URL: https://www.pasternack.com/6-18-ghz-log-amplifier-25-mv-db-70-dbm-sma-pe15a2002-p.aspx

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PE15A2002 CAD Drawing

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