HP 11947A Operation and Service Manual

1. General Information

Introduction

The Hewlett-Packard Model 11947A Transient Limiter is an instrument accessory that protects input circuitry from transients and accidental overloads. This operation and service manual explains how to use the limiter, briefly describes tests that can be used to verify its specifications, and suggests the actions to take should the limiter need repair.

Specifications

Specifications and characteristics are listed in Table 1-1. These are performance standards or limits against which the instrument may be tested.

Table 1-1. Specifications and Characteristics

SPECIFICATIONS:	
Frequency Range	9 kHz to 200 MHz
Insertion Loss	
> 30 dB	below 2 KHz
10 dB ±0.5 dB	9 kHz to 50 MHz
10 dB +2.2 dB—0.5 dB	50 MHz to 200 MHz
Calibration Accuracy	±0.2 dB at 25 °C
Maximum Input Level	
Continuous	2.5 W average (+34 dBm)
Pulse	10 kW for 10 μs
DC Voltage	±12 V
Connectors	
Input	BNC (female)
Output	Type N (male)

Table 1-1. Specifications and Characteristics (continued)

CHARACTERISTICS:	
Insertion Loss	
13 dB	<6 kHz, >400 MHz
Impedance	50Ω
Reflection Coefficient	
Input	
<0.13 (1.3 SWR)	9 kHz to 50 MHz
<0.26 (1.7 SWR)	50 MHz to 200 MHz
Output	
<0.09 (1.2 SWR)	9 kHz to 50 MHz
<0.29 (1.8 SWR)	50 MHz to 200 MHz
Limiting Threshold	50 mW (+17 dBm)
Overall Length	138 mm (5.4 inches)

Description

The HP 11947A Transient Limiter is a unidirectional, solid-state, passive device for use from 9 kHz to 200 MHz. It consists of a diode limiter, a 10 dB attenuator, and a high-pass filter integrated into a 50Ω transmission line. The transient limiter has no adjustments.

The SWR characteristics in Table 1-1 apply below the limiting threshold. SWR above the threshold is unpredictable, since the HP 11947A effects its limiting by reflecting some of the input power.

Limiting is nonlinear and depends on input power and ambient temperature. The typical limiting curves shown in Figure 1-1 apply at an ambient temperature of 25°C.
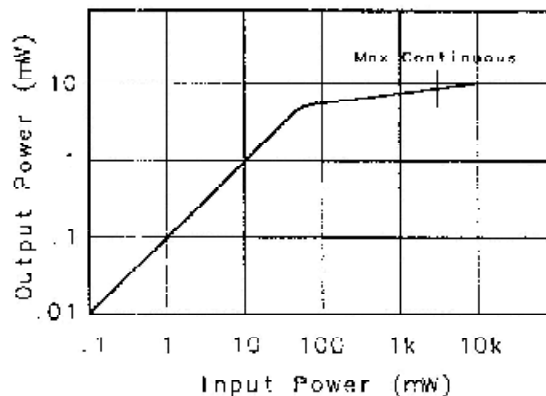
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Figure 1-1. Typical Limiting Characteristics