1

General Information

Introduction

The purpose of this manual is to enable you to use your 41900A PI-Network Test Fixture efficiently and confidently. This manual contains the following:

- The specifications of the 41900A (see this chapter).
- Installing the 41900A (see chapter 2).
- Operating the 41900A (see chapter 3).
- Ordering replaceable parts for the 41900A (see chapter 4).

Specifications

This section lists the complete 41900A specifications. These specifications are the performance standards and limits against which the 41900A is tested. When shipped from the factory, the 41900A meets the following specifications:

For the 41900A

Available Test Device .....Leaded Crystal Resonator
Available Measurement Configuration .... Direct Measurement or Measurement with Load Capacitor
Dimensions
PI-Network Test Fixture Main Assembly ..... approx. 30 (H) × 50 (W) × 110 (D) mm
Weight
PI-Network Test Fixture Main Assembly ..... approx. 0.4 kg

For the 41900A used with the 87510A

The following specifications show the performance when the 41900A is used with the 87510A Gain-Phase Analyzer:

Calibration method ..... 3-term calibration (OPEN/SHORT/LOAD) (at the measurement terminal to which a device under test (DUT) is connected)
Circuit model of the calibration standards
OPEN Capacitance : C_0
SHORT and LOAD Impedance @ frequency f:

$$R_0 + R_0 \left(\frac{f}{f_C} \right)^2 + j2\pi f L_0$$

Parameters:

Table 1-1. Parameters

Standard	Value
OPEN	C_0 = 0.1 pF
SHORT	R_0 = 1 μΩ
	L_0 = 0.6 nH
	f_C = 1.1 GHz
LOAD	R_0 = 50 Ω
	L_0 = 14 nH
	f_C = 1.1 GHz

For the 41900A used with the E5100A/B

The following specifications show the performance when the 41900A is used with the E5100A/B Network Analyzer:

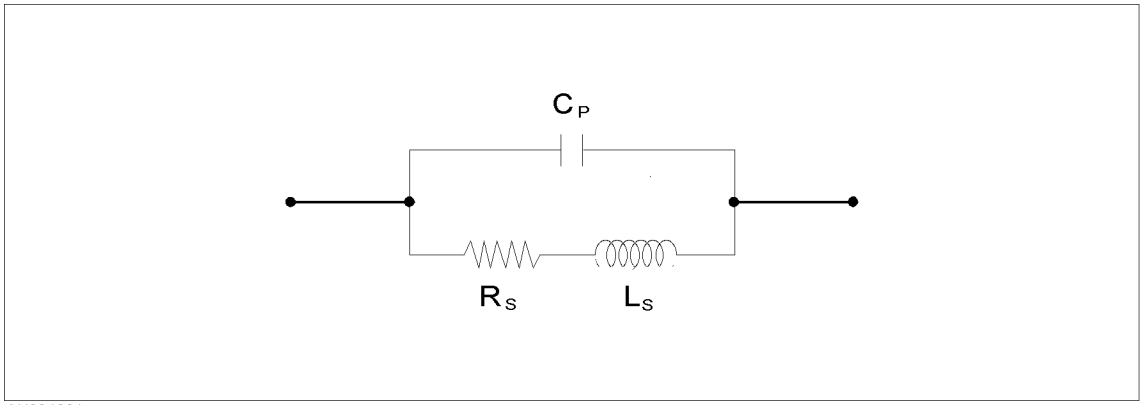

Figure 1-1. Circuit model of the calibration standards

Parameters:

Table 1-2. Parameters

Standard	Value
OPEN	C_P = 0.1 pF
	R_S = 1 TΩ
	L_S = 0 nH
SHORT	C_P = 17.409 pF
	R_S = 1 μΩ
	L_S = 0.6 nH
LOAD	C_P = 0.703 pF
	R_S = 50 Ω
	L_S = 15.7587 nH

Supplemental Performance Characteristics

This section lists supplemental performance characteristics. Supplemental performance characteristics are not specifications, but do provide additional information for the operator. Supplemental performance characteristics are not guaranteed.

For the 41900A

Maximum Input Level ..... 500 mW @ Input BNC Connector
(approx. 7 mW @ device under test)
Frequency Range ..... 1 MHz to 200 MHz

Repeatability
Connection of the Shorting Plate ..... ± (0.1 Ω + 0.6 nH)
Connection of a leaded crystal resonator ..... ± (0.1 Ω +2 nH)