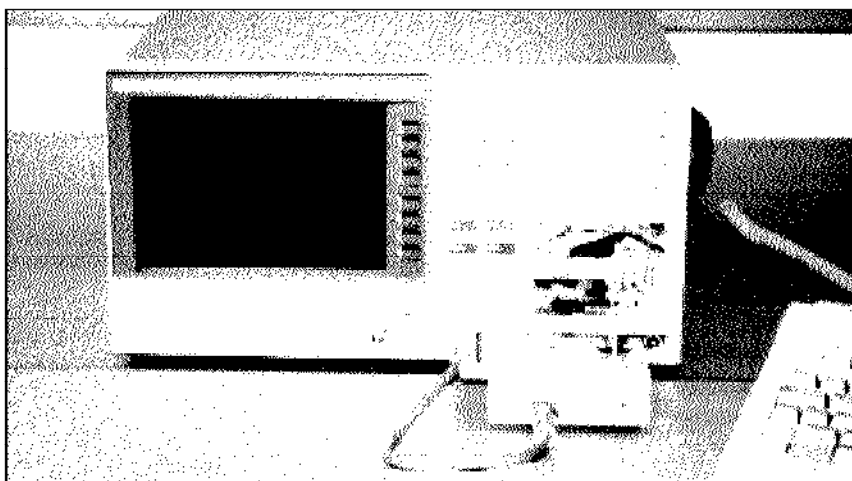

HP 4396A Option 010 Impedance Measurement Function and HP 43961A RF Impedance Test Kit

Technical Data and Ordering Information

**For convenient RF
impedance measurements
100 kHz–1.8 GHz**



**HP 4396A with Option 010 and HP 43961A RF Impedance Test Kit.
The HP 16192A SMD test fixture is shown mounted on the HP 43961A.**

Introduction

The HP 4396A combination RF network and spectrum analyzer now can perform direct impedance measurements by the addition of Option 010 and the HP 43961A RF impedance test kit. The kit enables the use of many test fixtures, simplifying impedance testing.

Option 010 Impedance Measurement Function

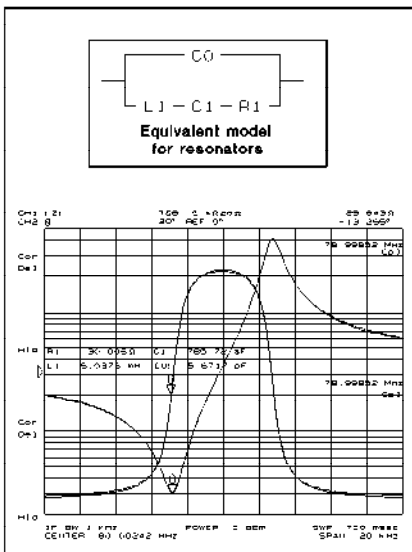
Option 010 adds the impedance measurement function to the HP 4396A. Covering from 100 kHz to 1.8 GHz, impedance parameters $|Z|$, θ , C , L , Q , D , and more are measured and displayed directly on the CRT. Basic accuracy of 3%, fast impedance measurements and convenient display of parameters improve measurement quality and speed analysis of components and circuit elements.

HP 43961A RF Impedance Test Kit

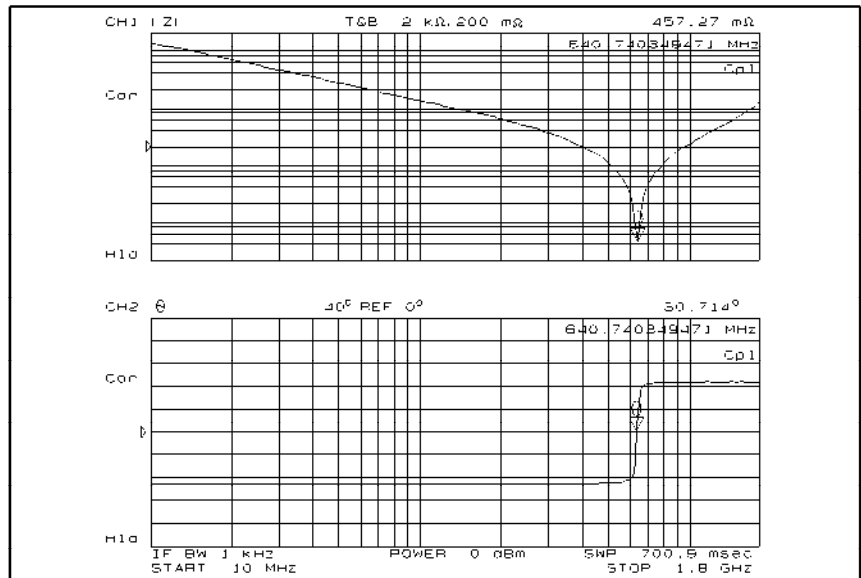
HP 43961A RF Impedance Test Kit is designed for the HP 4396A and is required to utilize the features of Option 010. An APC-7® connector is mounted on this kit for easy connection to an appropriate impedance test fixture. (See Ordering Information for available HP test fixtures.)

Direct Display of Impedance Data

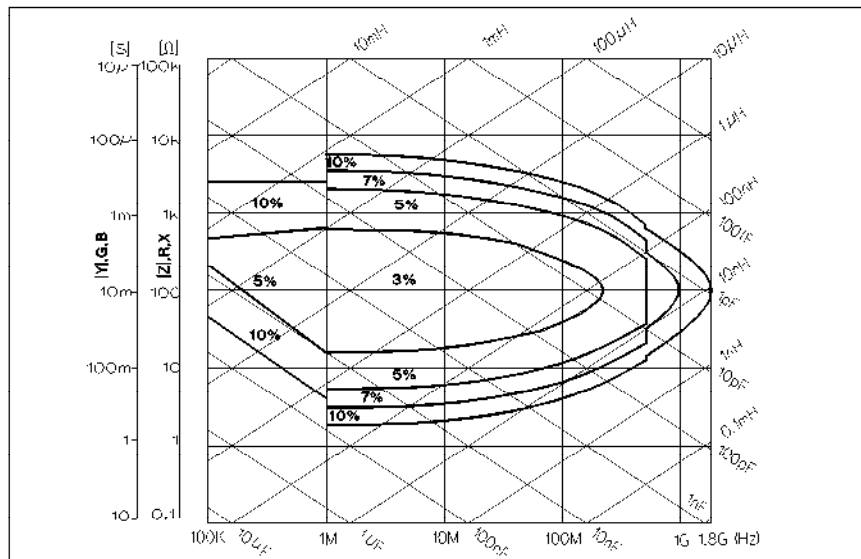
The impedance measurement firmware provides powerful display choices, allowing direct parameter versus frequency display. See capacitance, inductance impedance magnitude and phase, and more, as a function of frequency. In addition, a lumped equivalent circuit function (HP 4194A circuit models) aids circuit modeling and simulation.



The equivalent circuit function calculates equivalent circuit parameters and simulates your devices. A resonator example is shown.



Two independent measurement channels add flexibility to impedance analysis.



Impedance Measurement Accuracy (Supplemental Performance Characteristic)

Specifications

Following specifications are applied only when the HP 4396A is used with the HP 43961A RF Impedance Test Kit.

Measurement Parameters: $|Z|$, θ_z , $|Y|$, θ_y , R, X, G, B, C_p, C_s, L_p, L_s, R_p, R_s, D, Q, $|\Gamma|$, θ_γ , Γ_x , Γ_y

Operating Frequency/Resolution: 100 kHz to 1.8 GHz/
1 mHz

Source Level at DUT: -66 to +14 dBm

Measurement Range: 2 Ω to 5 k Ω (@ 10% measurement accuracy)

Sweep Parameters:
Linear/logarithmic frequency, list frequency, power sweep

Measurement Port: APC-7 on the HP 43961A

Calibration: OPEN(0S)/SHORT(0 Ω)/LOAD(50 Ω) calibration, OPEN/SHORT/LOAD compensation on test fixtures, port extension compensation

DC Bias: ± 40 V (20 mA(max)) (2 k $\Omega \pm 5\%$ resistor is inserted for DC bias current limitation. External DC bias source is required)

DC Bias Input Port: BNC (f)

Supplemental Performance Characteristics

Measurement Accuracy : 3%
(Basic accuracy at 23 $\pm 5^\circ$ C, after OPEN/SHORT/LOAD calibration)

Ordering Information

Impedance Measurement Function:

HP 4396A RF Network/Spectrum Analyzer

– Option 010 Impedance Measurement Function

Test Kit:

HP 43961A RF Impedance Test Kit

Includes: Test adapter, N(m)-N(m) cable, 0S/0 Ω /50 Ω calibration standards, and carrying case

Available Test Fixtures

- HP 16191A Side electrode SMD test fixture (dc to 2 GHz)
- HP 16192A Parallel electrode SMD test fixture (dc to 2 GHz)
- HP 16193A Small side electrode SMD test fixture (dc to 2 GHz)
- HP 16194A High temperature component test fixtures (dc to 2 GHz)
- HP 16092A Spring clip fixture (dc to 500 MHz)

Note: HP 16191A/192A/193A have Option 001 to delete the magnifying lens and tweezers.

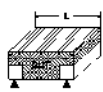
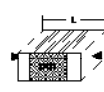
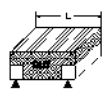
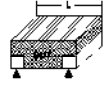
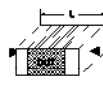
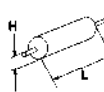
Upgrade Information

The impedance function (Option 010) is retrofitable.

Order HP 4396U Upgrade Kit for the HP 4396A

– Option 010 Add Impedance Measurement Function

Note: The test kit and installation are not included in Option 010. Contact your nearest HP sales office for more information on upgrading your HP 4396A.

HP 16191A	HP 16192A	HP 16193A
L=2.0 - 12.0mm	L=1.0 - 20.0mm	L=0.5 - 3.2mm
		
HP 16194A		
L=2.0 - 15.0mm	L $\leq$ 15mm H $\leq$ 4.5mm	W=8.0 - 21.0mm
		
HP 16092A		
L $\leq$ 18mm	L $\leq$ 13mm H $\leq$ 2.5mm	W = 2 - 24mm
		

Test fixtures and DUT sizes.

HP 4396A Literature

For more information on the HP 4396A, ask for the following literature:

5091-5189E HP 4396A 1.8 GHz Network/Spectrum Analyzer (Datasheet)

5091-5836E Technical Datasheet (Specifications)

5091-5835E Ordering Guide

For more information, call your local HP sales office listed in your telephone directory or an HP regional office listed below for the location of your nearest sales office.

United States of America:

800-452-4844

Rockville, MD
(301) 258-2000

Rolling Meadows, IL
(708) 255-9800

Fullerton, CA
(714) 999-6700

Atlanta, GA
(404) 955-1500

Canada:
(416) 678-9430

Japan:
(813) 3335 8192

Latin America:
Miami, Florida
(305) 267-4245/4220

Australia/New Zealand:
(008) 13 1347
Melbourne Caller
272 2555

Far East:
Hong Kong
(852) 848 7070

Korea
(2) 769 0800

Taiwan
(2) 717 9524

Singapore
(65) 291 8554

India
(11) 690 355

PRC
(1) 505-3888

In Europe, please call your local HP sales office or representative:

Austria/East Central Europe:
(0222) 2500-0

Belgium and Luxembourg:
(02) 778 31 11

Denmark:
45 99 10 00

Finland:
(90) 88 721

France:
(1) 69.82.65.00

Germany:
(06172) 16 0

Greece:
(01) 68 96 411

Ireland:
(01) 284 4633

Israel:
(03) 5380 333

Italy:
(02) 92 122 241

Netherlands:
(020) 547 6669

Norway:
(67) 159 700

Portugal:
(11) 301 73 30

South Africa:
(011) 806 1000

Spain:
900 123 123

Sweden:
(08) 750 20 00

Switzerland:
(057) 31 21 11

Turkey:
(04) 125 83 13

U.K.:
(0344) 362 867

For countries not listed, contact
Hewlett-Packard, International Sales
Branch, Geneva, Switzerland
Tel: +41-22-780-4111
FAX: +41-22-780-4770