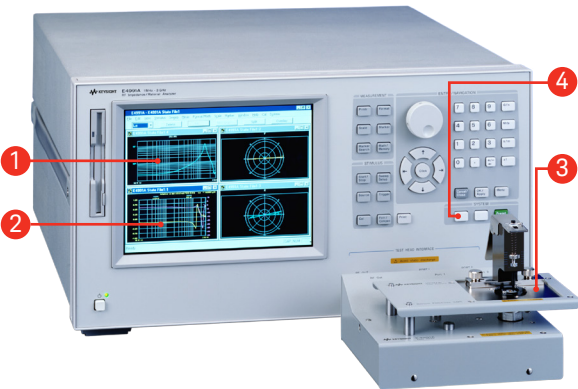


# Keysight E4991A RF Impedance/Material Analyzer

Frequency ranges: 1 MHz to 3 GHz

## An Industrial Standard in RF Impedance and Material Measurements

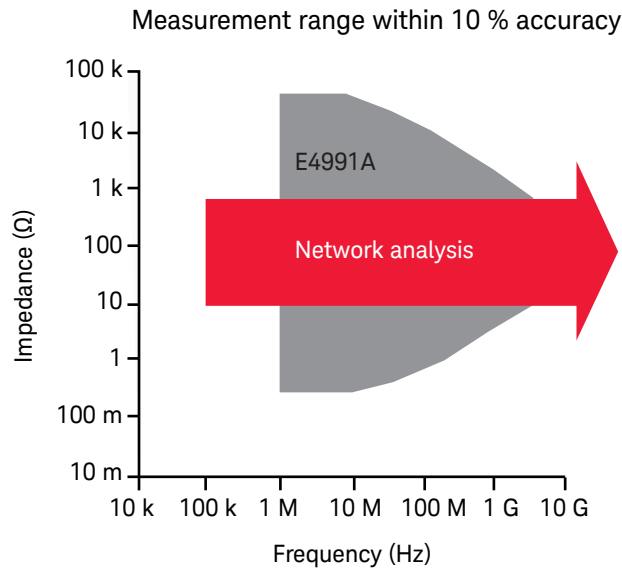
The Keysight Technologies, Inc. E4991A RF impedance/material analyzer provides a total solution for making highly accurate, repeatable, and stable measurements of surface mount devices (SMD) and dielectric/magnetic materials.



1. Max 801 sweep points
2. Equivalent circuit analysis
3. More than 9 test fixtures
4. Built-in VBA LAN/GPIB/USB Interfaces

### Key features

1. High accuracy over a broad impedance measurement range
  - The E4991A enables accurate measurements over a broad range from 1/10 times lower impedance to 10 times higher impedance than network analyzer method.
  - 15 parameters:  $|Z|$ ,  $|Y|$ , L, C, R, X, G, B, D, Q,  $\theta_z$ ,  $|\Gamma|$ ,  $\Gamma_x$ ,  $\Gamma_y$ ,  $\theta\Gamma$
  - Measurement range from 0.13  $\Omega$  to 20 k $\Omega$  (within 10 % accuracy)
  - 0.8 % basic accuracy
  - 0 to  $\pm 40$  V,  $\pm 50$  mA DC bias (Option 001)



2. Material measurement firmware (Option 002)
  - Dielectric and magnetic material measurement firmware for measuring permittivity ( $\epsilon_r$ ) and permeability ( $\mu_r$ ) up to 1 GHz.



1.  $|\epsilon_r|$ ,  $\epsilon_r'$ ,  $\epsilon_r''$  and  $\tan \delta$  measurements by using the 16453A dielectric material test fixture
2.  $|\mu_r|$ ,  $\mu_r'$ ,  $\mu_r''$  and  $\tan \delta$  measurements by using the 16454A magnetic material test fixture

## Models

Model	Description
E4991A	RF Impedance/Material Analyzer, 1 MHz to 3 GHz

## Options

Model	Description	Publication number
E4991A-001	Adds DC bias source, 0 to $\pm 40$ Vdc, $\pm 50$ mAdc	
E4991A-002	Material measurement firmware	
E4991A-007	Temperature characteristic test kit	5988-9772EN
E4991A-010	Probe station connection kit	5988-3279EN
E4991A-800	Standard frequency reference	
E4991A-1D5	High stability frequency reference	
E4991A-810	Keyboard, PS/2	
E4991A-820	Mouse, PS/2	
E4991A-ABA	U.S. – English localization	
E4991A-ABJ	Japan – Japanese localization	
E4991A-1A7	17025 compliant calibration	
E4991A-A6J	ANSI Z540 compliant calibration	

For rack mount/handle kit options and more details on the option configuration, refer to the configuration guide 5989-8521EN.

## Upgrade options

Refer to the configuration guide 5989-8521EN for the upgrades.

## Application support literatures

Literature	Publication number
Impedance Measurement Handbook - 4th Edition - Application Note	5950-3000
New Generation Analyzer Offers Exceptional and Powerful Analysis Functions for RF Impedance Measurement - Configuration Guide	5988-0200EN

For additional literature and product information, refer to the following literatures

Literature	Publication number
E4991A RF Impedance/Material Analyzer - Technical Overview	5980-1234E
E4991A RF Impedance/Material Analyzer - Data Sheet	5980-1233E
E4991A RF Impedance/Material Analyzer - Configuration Guide	5989-8521EN

## Recommended accessories

DUT	Fixture type	Model	Description
Lead	Axial/radial	16092A	$\leq 500$ MHz
		16194A	$\leq 2$ GHz, $-55$ to $+200$ °C
SMD/chip	SMD/chip	16092A	$\geq 1.6 \times 0.8$ (mm), $\leq 500$ MHz
		16192A	$\geq 1.0 \times 0.5$ (mm), $\leq 2$ GHz
		16196A/B/C/D	1608 (A), 1005 (B), 0603 (C), 0402 (D) in mm code, $\leq 3$ GHz
		16194A	$\leq 2$ GHz, $-55$ to $+200$
Material	Dielectric	16197A	$\geq 0.6 \times 0.3$ (mm), $\leq 3$ GHz
		16453A <sup>1</sup>	Permittivity, $\leq 1$ GHz
	Magnetic	16454A <sup>1</sup>	Permeability, $\leq 1$ GHz
	External DC bias	16200B	0 to $\pm 40$ V, $\pm 5$ A, $\leq 1$ GHz

1. E4991A-002 is required to use the 16453A or the 16454A.

For other accessories, refer to the configuration guide 5989-8521EN.

[www.keysight.com/find/lcrmeters](http://www.keysight.com/find/lcrmeters)

## KEYSIGHT SERVICES

*Accelerate Technology Adoption. Lower costs.*

### [www.keysight.com/find/services](http://www.keysight.com/find/services)

Keysight Services helps you improve productivity and product quality with our comprehensive service offerings of one-stop calibration, repair, asset management, technology refresh, consulting, training, and more.