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Data Sheet

August 15, 2026

AGILENT / KEYSIGHT

Agilent/Keysight 85070E

Keysight 85070E Dielectric Probe Kit 200 MHz to 50 GHz The Keysight 85070E dielectric probe kit measures complex permittivity of liquids, semi-solids, and flat solids using a network analyzer and dedicated software, with Performance, Slim Form, and High Temperature probe options per Agilent Technical Overview 5989-0222EN. Materials dielectric characterization, process monitoring of liquids, food and chemical permittivity versus frequency and temperature, and R&D materials studies. Instrument Type: Dielectric probe kit with software

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Frequency Range Performance Probe: 500 MHz to 50 GHz

**MODEL****Agilent / Keysight
85070E****CALIBRATION****Available on
request****CONDITION****Used****STATUS****In stock****RFQ / SKU****85070E****LISTING**<https://aumictechlabs.com/products/85070e-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 • 811210 • 541380

This unit

The Keysight 85070E Dielectric Probe Kit measures complex permittivity of materials across broad frequency ranges, operating in conjunction with a Keysight network analyzer and specialized software. It determines intrinsic electromagnetic properties - dielectric constant (ϵ'),

dielectric loss factor (ϵ''), loss tangent, and Cole-Cole parameters - correlating results to material characteristics including biomass, bulk density, chemical concentration, and bacterial content. The coaxial probe method enables non-destructive, real-time measurements on liquids, semi-solids, and flat-surfaced solids, serving research, development, quality assurance, and process monitoring in RF/microwave electronics, food, medical, and chemical industries.

Technical Specifications

Frequency Range: 200 MHz to 50 GHz (configuration-dependent; certain probes rated to 20 GHz)

Measurement Parameters: Complex permittivity; dielectric constant; dielectric loss factor; loss tangent; Cole-Cole representation

Sensing Volume: 3.5 mm aperture provides enlarged sensing volume relative to alternative probes

Accuracy: Performance dependent on material under test; typical accuracy measured at 23 ± 3 °C, excluding probe contact and cable flexure effects

Repeatability: For granular materials, repeatability contingent on density variation

Temperature Operating Range: -40 °C to +200 °C

Key Features

Probe Configurations:

- Performance Probe (Option 050):** High-temperature, high-frequency capability in slim design
- High-Temperature Probe (Option 020):** Rated -40 °C to +200 °C
- Slim Form Probe (Option 030):** Compact profile for small apertures in fermentation tanks and reaction chambers

Hermetic Construction: Glass-to-metal seal resists corrosive and abrasive chemicals

Sterilization: Autoclavable for food, medical, and chemical sector requirements

Connector Options: 3.5 mm male (standard configurations); 2.4 mm male (50 GHz coverage); adapters available (Type-N female to 3.5 mm male; 3.5 mm male to 2.4 mm female)

Typical Applications

- Quality assurance and process monitoring in food and beverage production
- Medical device and pharmaceutical development
- Chemical concentration and composition analysis
- RF and microwave material characterization
- Bacterial and biomass content assessment

Compatibility & Integration

The 85070E integrates with Keysight network analyzers and companion measurement software for comprehensive dielectric characterization across the 200 MHz to 50 GHz spectrum.

85070E Characteristics / Specifications

PARAMETER	VALUE
Instrument Type	Dielectric probe kit with software
Frequency Range Performance Probe	500 MHz to 50 GHz
Frequency Range Slim Form Probe	500 MHz to 50 GHz
Frequency Range High Temperature Probe	200 MHz to 20 GHz
Performance Probe Connector	2.4 mm male
Slim Form Probe Connector	2.4 mm male
High Temperature Probe Connector	3.5 mm male
Performance Probe Temperature Range	minus 40 to plus 200 C
Slim Form Probe Temperature Range	0 to plus 125 C
High Temperature Probe Temperature Range	minus 40 to plus 200 C
Temperature Slew Rate All Probes	less than 10 degrees per minute
Performance Probe Immersable Length Approximate	140 mm
Slim Form Probe Immersable Length Approximate	200 mm
High Temperature Probe Immersable Length Approximate	35 mm
Typical Accuracy Dielectric Constant	$\epsilon' \text{ prime equals } \epsilon' \text{ prime plus or minus } 0.05 \text{ times absolute } \epsilon' \text{ star}$
Typical Accuracy Loss Factor	$\epsilon'' \text{ double prime equals } \epsilon'' \text{ double prime plus or minus } 0.05 \text{ times absolute } \epsilon' \text{ star}$
Maximum Recommended Er Prime	less than 100
Minimum Recommended Loss Tangent	greater than 0.05
Performance Sample Insertion Minimum	5 mm with 1 mm around tip
Slim Form Sample Insertion Minimum	5 mm with 5 mm around tip
High Temp Solid Diameter Minimum	greater than 20 mm
Granule Size Maximum	less than 0.3 mm

PARAMETER	VALUE
Software Display Formats	er prime er double prime loss tangent Cole Cole
Warranted Temperature Span Software Specs	0 to 55 C
High Temp Cable Temperature Rating	minus 40 to plus 200 C
Probe Stand Base	13 by 7 inch porcelain
Probe Stand Height	24 inch by 0.5 inch diameter support

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Performance, Slim Form, and High Temperature probe options per Agilent Technical Overview 5989-0222EN.

Applications

Materials dielectric characterization, process monitoring of liquids, food and chemical permittivity versus frequency and temperature, and R&D materials studies.

Key Features

Complex permittivity software

Electronic Calibration refresh

Performance Slim and High Temp probes

GPIO and LAN analyzer control

Cole Cole and loss tangent displays

Technical Specifications

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Notes

Numeric rows from Agilent 85070E Dielectric Probe Kit Technical Overview 5989-0222EN. Accuracy is typical at 23 plus or minus 3 C excluding probe contact and cable flexure.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.