



# Agilent PNA RF Network Analyzers

## Configuration Guide

<b>E8356A/E8801A/N3381A</b>	<b>300 kHz to 3 GHz</b>
<b>E8357A/E8802A/N3382A</b>	<b>300 kHz to 6 GHz</b>
<b>E8358A/E8803A/N3383A</b>	<b>300 kHz to 9 GHz</b>

### System configuration summary

This summary lists the main components required to form a basic measurement system. Options or peripherals may be added to provide enhanced measurement and data storage capability.

### Full S-parameter measurements

- **Agilent RF PNA network analyzer**
- **Test port cables, 50 ohms**
- **Calibration kit for applicable connector type**



This configuration guide describes standard configuration, options, accessories, upgrade kits and compatible peripherals for RF PNA vector network analyzers. This guide should be used with the Agilent RF PNA Data Sheet for a complete description of these analyzers.



# Ordering information for RF PNA Network Analyzer

## PNA Series RF Network Analyzers

<b>E8356/7/8A</b>	<b>2-port, 4 receiver, 300kHz – 3/6/9GHz</b>
<b>E8801/2/3A</b>	<b>2-port, 3 receiver, 300kHz – 3/6/9GHz</b>
<b>N3381/2/3A</b>	<b>3-port, 4 receiver, 300kHz – 3/6/9GHz</b>

### Options

To add options to a product, use the following ordering scheme

**Model:**                   **Model# (ex: E8358A)**  
**Model Options:**       **Model#-opt# (ex: E8356A-015)**

	Description	E8356/7/8A Availability	E8801/2/3A Availability	N3381/2/3A Availability
<b>Test Set</b>				
Model#-015	Configurable test set	X		
Model#-014	Configurable test set		X	X
<b>Power Configuration</b>				
Model#-1E1	Extended power range	Standard	X	X
<b>Timebase Stability</b>				
Model#-1E5	Add high stability timebase	Standard	X	X
<b>Measurement Features</b>				
Model#-010	Time domain capability	X	X	X
<b>Accessories</b>				
Model#-1CM	Rack mount kit without handles	X	X	X
Model#-1CP	Rack mount kit with handles	X	X	X
N4688A	USB CD R/W drive	X	X	X
N4689A	USB Hub	X	X	X
<b>Calibration Documentation</b>				
Model#-UK6	Commercial calibration certificate with test data	X	X	X

### Warranty and Service

One, three and five year warranty and service plans are available. Contact your local Agilent sales office for details.

### Calibration

Calibration is available in three or five year plans. Contact your local Agilent sales office for details.

# Agilent RF PNA Network Analyzer

Each RF PNA instrument is an integrated network analyzer with a built-in LCD display, hard and floppy disk drives, S-parameter test set and synthesized source. The analyzer has two or three 50-ohm Type-N (f) test ports. Included with each instrument is a mouse, keyboard, CD-ROM containing a copy of online help and programming documentation, and a 1-year return-to-Agilent service warranty.

- E8356A** network analyzer, 300 kHz to 3 GHz, 2 port, 4 receiver
- E8357A** network analyzer, 300 kHz to 6 GHz, 2 port, 4 receiver
- E8358A** network analyzer, 300 kHz to 9 GHz, 2 port, 4 receiver
- E8801A** network analyzer, 300 kHz to 3 GHz, 2 port, 3 receiver
- E8802A** network analyzer, 300 kHz to 6 GHz, 2 port, 3 receiver
- E8803A** network analyzer, 300 kHz to 9 GHz, 2 port, 3 receiver
- N3381A** network analyzer, 300 kHz to 3 GHz, 3 port, 4 receiver
- N3382A** network analyzer, 300 kHz to 6 GHz, 3 port, 4 receiver
- N3383A** network analyzer, 300 kHz to 9 GHz, 3 port, 4 receiver

## Options

- Option 010** time-domain capability  
For viewing reflection and transmission responses in time or distance domain.
- Option 014** configurable test set (except E8356/7/8A)  
Adds front panel access to the source, the receivers and couplers. This provides the ability to improve measurement sensitivity for measuring low-level signals, or to add components and other peripheral instruments for a variety of measurement applications.
- Option 015** configurable test set (E8356/7/8A only)  
Adds front panel access to the source output and coupler input on both ports 1 and 2. Also, 35 dB step attenuators are added between the couplers and receivers. This capability provides the ability to improve measurement sensitivity for measuring low-level signals, or to add components and other peripheral instruments for a variety of measurement applications.
- Option 1CM** rack mount kit  
Adds a rack mount (part number 5063-9216) and rail kit (E3663AC) for use without handles.
- Option 1CP** rack mount kit  
Adds a rack mount (part number 5063-9236) and rail kit (E3663AC) for use with previously supplied handles.
- Option 1E1** 70 dB step attenuator (Included as standard equipment on E8356/7/8A)  
Adds a built-in 70 dB step attenuator to extend the output power range down to -85 dBm.
- Option 1E5** high-stability time base (Included as standard equipment on E8356/7/8A)  
Replaces standard time base reference with a higher stability unit.

## Documentation

The PNA Online Help system is available within PNA instrument in the following languages: English, German, Spanish, French, Japanese, and Chinese.

The PNA Service Guide and Online Help system are available on the Web: [www.na.tm.agilent.com/pna](http://www.na.tm.agilent.com/pna)

## Certification options

- Option UK6** Commercial calibration certificate with test data

For online information about Agilent's service and support products visit:  
[www.agilent.com/find/tm\\_services](http://www.agilent.com/find/tm_services)

# Measurement accessories

A complete line of RF test accessories can be found in the Agilent RF and Microwave Test Accessories Catalog (literature number 5968-4314EN) or by visiting [www.agilent.com/find/mta](http://www.agilent.com/find/mta)

Accessories are available in these connector types: 50 ohm Type-N, 3.5 mm, 7 mm, and 7-16. Test port cables and a calibration kit should be added for a complete measurement system. A verification kit is used to verify corrected system performance.

## Test-port cables

Test port cables are used to connect the network analyzer to the device under test.

- **N6314A** 50 ohm Type-N RF cable, 300 kHz to 9 GHz  
Includes one 610 mm (24 in) cable with male connectors (part number 8120-8862)
- **N6315A** 50 ohm Type-N RF cable, 300 kHz to 9 GHz  
Includes one 610 mm (24 in) cable with both female and male connectors (part number 8121-0027)

## Calibration kits

Mechanical calibration kits include standards, such as opens, shorts and loads, which are measured by the network analyzer for increased measurement accuracy.

Electronic calibration (ECal) kits replace mechanical calibration standards with one solid-state calibration module that is controlled by the network analyzer to present many different impedances to the test ports. A full two-port calibration can be performed quickly with a single connection. This technique reduces operator errors and connector wear and abrasion.

Choose a calibration kit for each connector type to be used.

**Economy**, includes:

- open standards (male and female)
- short standards (male and female)
- fixed-termination standards (male and female)
- in-series adapters

**Standard**, includes the devices in the economy kit and adds:

- connector tools

**Precision**, includes the devices in the economy kit and adds:

- 50 ohm airline for TRL calibration
- TRL adapters
- connector tools

## For devices with Type-N connectors

### Mechanical calibration kits

- **85032F** economy: 30 kHz to 9 GHz. Includes:
  - 85032-60017 Type-N (m) fixed load
  - 85032-60018 Type-N (f) fixed load
  - 85032-60013 Type-N (m) open
  - 85032-60014 Type-N (f) open
  - 85032-60016 Type-N (m) short
  - 85032-60015 Type-N (f) short
- **Option 100** adds:
  - 85032-60021 Type-N (f) to Type-N (f) adapter
- **Option 200** adds:
  - 85032-60019 Type-N (m) to Type-N (m) adapter
- **Option 300** adds:
  - 85032-60020 Type-N (m) to Type-N (f) adapter
- **Option 500** adds:
  - 85054-60001 Type-N (f) to 7 mm adapter (two included)
  - 85054-60009 Type-N (m) to 7 mm adapter (two included)
- **85054D** economy: 45 MHz to 18 GHz. Includes:
  - 85054-60025 Type-N (m) short
  - 85054-60026 Type-N (f) short
  - 85054-60027 Type-N (m) open
  - 85054-60028 Type-N (f) open
  - 85054-60031 Type-N (f) to 7 mm adapter
  - 85054-60032 Type-N (m) to 7 mm adapter
  - 85054-60037 Type-N (f) to Type-N (f) adapter
  - 85054-60038 Type-N (m) to Type-N (m) adapter
  - 85054-60046 Type-N (m) fixed load
  - 85054-60047 Type-N (f) fixed load

### Electronic calibration kits

- **85092C** RF ECal: 300 kHz to 9 GHz, 2 ports. Includes:
  - **Option MOF** module with:
    - 85092-60008 Type-N (f) to Type-N (m) RF ECal module
  - **Option 00M** module with:
    - 85092-60009 Type-N (m) to Type-N (m) RF ECal module
  - **Option 00F** module with:
    - 85092-60010 Type-N (f) to Type-N (f) RF ECal module
  - **Option 00A** adds:
    - 85054-60037 Type-N (f) to Type-N (f) adapter
    - 85054-60038 Type-N (m) to Type-N (m) adapter

## For devices with 3.5 mm or SMA connectors

(see **Adapters** section for information about the Agilent 11878A 3.5 mm adapter kit)

### **Mechanical calibration kits**

- **85033E** economy: 30 kHz to 9 GHz. Includes:
  - 85033-60016 3.5 mm (m) load
  - 85033-60017 3.5 mm (f) load
  - 85033-60018 3.5 mm (m) open
  - 85033-60019 3.5 mm (f) open
  - 85033-60020 3.5 mm (m) short
  - 85033-60021 3.5 mm (f) short
  - 8710-1761 torque wrench
- **Option 100** adds:
  - 85027-60005 3.5 mm (f) to 3.5 mm (f) adapter
- **Option 200** adds:
  - 85027-60007 3.5 mm (m) to 3.5 mm (m) adapter
- **Option 300** adds:
  - 85027-60006 3.5 mm (m) to 3.5 mm (f) adapter
- **Option 400** adds:
  - 1250-1744 3.5 mm (f) to Type- N 50 ohm (m) adapter
  - 1250-1743 3.5 mm (m) to Type- N 50 ohm (m) adapter
  - 1250-1745 3.5 mm (f) to Type- N 50 ohm (f) adapter
  - 1250-1750 3.5 mm (m) to Type- N 50 ohm (f) adapter
- **Option 500** adds:
  - 1250-1746 3.5 mm (m) to 7 mm adapter (two included)
  - 1250-1747 3.5 mm (f) to 7 mm adapter (two included)

- **85052C** precision TRL: 45 MHz to 26.5 GHz. Includes:

- 00902-60003 3.5 mm (m) fixed load
- 00902-60004 3.5 mm (f) fixed load
- 85052-60006 3.5 mm (m) short
- 85052-60007 3.5 mm (f) short
- 85052-60008 3.5 mm (m) open
- 85052-60009 3.5 mm (f) open
- 85052-60032 3.5 mm (f) to 3.5 mm (f) adapter
- 85052-60033 3.5 mm (m) to 3.5 mm (m) adapter
- 85052-60034 3.5 mm (f) to 3.5 mm (m) adapter
- 85052-60035 3.5 mm short TRL line
- 85052-60036 3.5 mm long TRL line

- **85052D** economy: 45 MHz to 26.5 GHz. Includes:

- 00902-60003 3.5 mm (m) fixed load
- 00902-60004 3.5 mm (f) fixed load
- 85052-60006 3.5 mm (m) short
- 85052-60007 3.5 mm (f) short
- 85052-60008 3.5 mm (m) open
- 85052-60009 3.5 mm (f) open
- 85052-60012 3.5 mm (f) to 3.5 mm (f) adapter
- 85052-60013 3.5 mm (f) to 3.5 mm (m) adapter
- 85052-60014 3.5 mm (m) to 3.5 mm (m) adapter

### **Electronic calibration kits**

- **85093C** RF ECal: 300 kHz to 9 GHz, 2 ports. Includes:
  - 85093-60008 3.5 mm (f) to 3.5 mm (m) RF ECal module
- **Option 00M** module with:
  - 85093-60009 3.5 mm (m) to 3.5 mm (m) RF ECal module
- **Option 00F** module with:
  - 85093-60010 3.5 mm (f) to 3.5 mm (f) RF ECal module
- **Option 00A** adds:
  - 85052-60012 3.5 mm (f) to 3.5 mm (f) adapter
  - 85052-60014 3.5 mm (m) to 3.5 mm (m) adapter

## For devices with 7 mm connectors

(see **Adapters** section for information about Agilent 7 mm adapters)

### **Mechanical calibration kits**

- **85031B** economy: 30 kHz to 6 GHz. Includes:
  - 00909-60008 7 mm coax termination
  - 85031-60001 7 mm open/short
- **85050C** precision TRL: 45 MHz to 18 GHz. Includes:
  - 00909-60008 7 mm coax termination
  - 85050-60003 7 mm to 7 mm airline
  - 85050-60005 7 mm to 7 mm TRL adapter
  - 85050-60006 7 mm fixed broadband load
  - 85050-80008 7 mm short
  - 85050-80009 7 mm short collet
  - 85050-80010 7 mm open
- **85050D** economy: 45 MHz to 18 GHz. Includes:
  - 85050-60006 7 mm fixed broadband load
  - 85050-80007 7 mm short
  - 85050-80010 7 mm open

### **Electronic calibration kits**

- **85091C** RF ECal: 300 kHz to 9 GHz, 2 ports. Includes:
  - 85091-60004 7 mm to 7 mm RF ECal module

## For devices with 7-16 connectors

(see **Adapters** section for information about the Agilent 11906B 7-16 to Type-N adapter kit)

### **Mechanical calibration kits**

□ **85038A** standard: 30 kHz to 7.5 GHz. Includes:

- 85038-80002 7-16 (f) open
- 85038-80003 7-16 (m) open
- 85038-80004 7-16 (f) short
- 85038-80005 7-16 (m) short
- 85038-80006 7-16 (f) fixed load
- 85038-80007 7-16 (m) fixed load
- 8710-2175 torque wrench
- 8710-2174 open-end wrench

□ **85038F** economy: 30 kHz to 7.5 GHz. Includes:

- 85038-80002 7-16 (f) open
- 85038-80004 7-16 (f) short
- 85038-80006 7-16 (f) fixed load
- 11906-80016 7-16 (f) to 7-16 (f) adapter

□ **85038M** economy: 30 kHz to 7.5 GHz. Includes:

- 85038-80003 7-16 (m) open
- 85038-80005 7-16 (m) short
- 85038-80007 7-16 (m) fixed load
- 11906-80015 7-16 (m) to 7-16 (m) adapter

### **Electronic calibration kits**

□ **85098C** RF ECal: 300 kHz to 7.5 GHz, 2 ports. Includes:

- **Option MOF** module with:
  - 85098-60007 7-16 (m) to 7-16 (f) RF ECal module
- **Option 00F** module with:
  - 85098-60009 7-16 (f) to 7-16 (f) RF ECal module
- **Option 00M** module with:
  - 85098-60008 7-16 (m) to 7-16 (m) RF ECal module
- **Option 00A** adds:
  - 11906-80015 7-16 (m) to 7-16 (m) adapter
  - 11906-80016 7-16 (f) to 7-16 (f) adapter

## Verification kits

All Agilent Technologies verification kits include:

- precision  $Z_0$  airline
- mismatched airline
- fixed attenuators
- traceable measured data and uncertainties

□ **85055A** 300 kHz to 18 GHz Type-N kit

Includes attenuators, airlines and mismatch airline with data on a 3.5 inch disk for use in confirming accuracy enhanced system measurement performance, traceable to national standards. Test procedure is provided in the service manual.

□ **85053B** 300 kHz to 26.5 GHz 3.5 mm kit

Includes attenuators, airlines and mismatch airline with data on a 3.5 inch disk for use in confirming accuracy enhanced system measurement performance, traceable to national standards. Test procedure is provided in the service manual.

## Adapters

- **11853A** 50 ohm Type-N accessory kit. Includes:
  - 1250-1472 Type-N (f) to Type-N (f) adapter (two included)
  - 1250-1475 Type-N (m) to Type-N (m) adapter (two included)
  - 11511A Type-N (f) short
  - 11512A Type-N (m) short
- **11878A** Type-N to 3.5 mm adapter kit. Includes:
  - 1250-1744 3.5 mm (f) to Type-N 50 ohm (m) adapter
  - 1250-1743 3.5 mm (m) to Type-N 50 ohm (m) adapter
  - 1250-1745 3.5 mm (f) to Type-N 50 ohm (f) adapter
  - 1250-1750 3.5 mm (m) to Type-N 50 ohm (f) adapter
- **11524A** 7 mm to Type-N (f) adapter
- **11525A** 7 mm to Type-N (m) adapter
- **11906A** 7-16 to 7-16. Includes:
  - 7-16 (m) to 7-16 (m) adapter
  - 7-16 (f) to 7-16 (f) adapter
  - 7-16 (m) to 7-16 (f) adapter (two included)
- **11906B** 7-16 to Type-N. Includes:
  - Type-N (m) to 7-16 (m) adapter
  - Type-N (f) to 7-16 (f) adapter
  - Type-N (f) to 7-16 (m) adapter
  - Type-N (m) to 7-16 (f) adapter
- **11854A** 50 ohm BNC accessory kit. Includes:
  - 1250-0929 BNC (m) short
  - 1250-1473 BNC (m) to Type-N (m) adapter (two included)
  - 1250-1474 BNC (f) to Type-N (f) adapter (two included)
  - 1250-1476 BNC (f) to Type-N (m) adapter (two included)
  - 1250-1477 BNC (m) to Type-N (f) adapter (two included)

# General accessories

## USB

- ❑ **N4688A** CD read/write drive  
Provides an external read/write CD drive with a USB cable.
- ❑ **N4489** USB Hub  
Provides an external USB hub with at least 4-ports and a USB cable.

## Probe

- ❑ **85024A** high-frequency probe  
Provides high-impedance in-circuit test capability from 300 kHz to 3 GHz.

## Power meters and sensors

Recommended for self support, adjustments and performance tests to verify proper instrument operation.

- ❑ **E4418B** single-channel power meter
- ❑ **E4419B** dual-channel power meter
- ❑ **8482A** power sensor, 100 kHz to 4.2 GHz, Type-N (m), 100 mW
- ❑ **E4412A** CW power sensor, 10 MHz to 18 GHz, Type-N (m), 200 mW

## Amplifiers<sup>1</sup>

- ❑ **8347A** RF power amplifier, 100 kHz to 3 GHz, 25 dB gain, power out: +20 dBm
- ❑ **83006A** power amplifier, 10 MHz to 26.5 GHz, 20 dB gain, power out: +18dBm to 10 GHz or +16 dBm to 20 GHz or +14 dBm to 26.5 GHz
- ❑ **83017A** power amplifier, 50 MHz to 26.5 GHz, 25 dB gain, power out: +20 dBm to 20 GHz, or +15 dBm to 26.5 GHz
- ❑ **83018A** power amplifier, 2 to 26.5 GHz, 27 dB gain to 20 GHz or 23 dB to 26.5 GHz, power out: +24 dBm to 20 GHz or +21 dBm to 26.5 GHz
- ❑ **83020A** power amplifier, 2 to 26.5 GHz, 30 dB gain to 20 GHz or 27 dB to 26.5 GHz, power out: +30 dBm to 20 GHz or +26 dBm to 26.5 GHz

## Couplers

- ❑ **87300B** coaxial coupler, 1 to 20 GHz, SMA (f), 10 dB coupling
- ❑ **87300C** coaxial coupler, 1 to 26.5 GHz, 3.5 mm (f), 10 dB coupling

## Equipment racks and case

- ❑ **5063-9223** rack mount flange kit, for use with handles; includes handles<sup>2</sup>
- ❑ **5063-9216** rack mount kit, for use without handles; may be ordered as option 1CM
- ❑ **5063-9236** rack mount kit, for use with previously supplied handles; may be ordered as option 1CP
- ❑ **E3663AC** rail kit, included with option 1CM and 1CP.
- ❑ **9211-2658** transit case

1. RF connectors: 3.5 mm (f) on RF input and output; BNC (f) detector out.

Type-N (f) on RF input and output for 8347A

2. A PNA Series analyzer is supplied with handles.



# Applications

## Material measurement

### □ 85070D High-temperature dielectric probe kit

The 85070D allow the measurement of the dielectric properties of materials quickly and conveniently.

Measurements made with this probe are nondestructive and require no sample preparation. The dielectric probe is well suited for measurements of liquid, semisolid and flat solid materials. Measurement results can be viewed in a variety of formats ( $\epsilon_r'$ ,  $\epsilon_r''$ ,  $\tan \delta$  or Cole-Cole).

The supplied software can be run in the PNA analyzer or on a PC.

### □ 85071D Materials measurement software

The material software calculates the permittivity and permeability of material samples placed in a coaxial airline or a rectangular waveguide. The measurement technique works well for solid materials that can be machined to fit precisely inside a transmission line.

Measurement results can be viewed in a variety of formats ( $\epsilon_r'$ ,  $\epsilon_r''$ ,  $\tan \delta$ ,  $\mu_r'$ ,  $\mu_r''$ ,  $\tan \delta_m$  or Cole-Cole).

The software can be run in the PNA analyzer or on a PC.

## Filter tuning

### □ N4261A Filter tuning software

This software will significantly reduce filter tuning training times and increase manufacturing throughput.

Through the graphical user interface, visual training indicators show when the individual resonators and couplers in a filter have been tuned within specifications. The indicators also show the user when and how to tune each filter element, reducing the number of times each element has to be re-tuned before the filter meets specifications.

# Peripherals

The following peripherals may be used with all RF PNAs. Other peripherals not listed here may also be compatible with these instruments.

## Monitors

- VGA-compatible monitor

## Printers

- USB, LAN, parallel or serial printers with Microsoft® Windows® 2000 printer driver

## Interface cables

Choose the appropriate cables to connect each peripheral to the network analyzer.

- 10833A GPIB** cable, 1.0 m (3.3 ft)
- 10833B GPIB** cable, 2.0 m (6.6 ft)
- 10833D GPIB** cable, 0.5 m (1.6 ft)

# Upgrade kits

## Upgrade kits for the E8356/7/8A, E8801/2/3A, and N3381/2/3A

Upgrade kits are available to add options after initial purchase. To order an upgrade kit for a PNA, order the analyzer's model number followed by a "U", then indicate the option to be added:

### PNA Series RF Network Analyzer Upgrade Kits

E8356/7/8AU 2-port, 4 receiver, 300kHz – 3/6/9GHz Upgrade Kits  
E8801/2/3AU 2-port, 3 receiver, 300kHz – 3/6/9GHz Upgrade Kits  
N3381/2/3AU 3-port, 4 receiver, 300kHz – 3/6/9GHz Upgrade Kits

### Options

To add options to a product, use the following ordering scheme

**Model:** Model#U (ex: E8358AU)

**Model Options:** Model#U-opt# (ex: E8356AU-015)

- Option 006** for E8356A, E8801A or N3381A only.  
Adds 6 GHz operation. Includes installation at an Agilent service center. Instrument calibration is required for an additional fee.
- Option 009** for E8356A, E8357A E8801A, E8802A, N3381A or N3382A only.  
Adds 9 GHz operation. Includes installation at an Agilent service center. Instrument calibration is required for an additional fee.
- Option 010** time-domain upgrade kit (part number E8356-60101)  
The serial number of the PNA to be retrofitted must be specified when ordering this kit. Installation is not included.
- Option 014** for E8801/2/3A and N3381/2/3A only.  
Configurable test set upgrade kit (part number E8801-60103 or N3381-60101, depending on model number). Includes installation at an Agilent service center.
- Option 015** for E8356A, E8357A or E8358A only.  
Configurable test set upgrade kit (part number E8356-60102). Includes installation at an Agilent service center.
- Option 098** CPU board upgrade for E8356/7/8A built before November, 2001 (part number E8356-60103). Includes installation at an Agilent service center.
- Option 099** firmware upgrade (part number E8356-60103)  
Provides the latest revision of firmware for the PNA Series on CD-ROM. Firmware is user-installable. Installation requires USB CD-ROM drive or external computer connected via LAN. The latest firmware is also available from our web site. Visit our web page at [www.agilent.com/find/pna](http://www.agilent.com/find/pna)
- Option 1E1** for E8801/2/3A and N3381/2/3A only.  
Adds a built-in step attenuator to extend the output power range down to -85 dBm (part number E8801-60104). Includes installation at an Agilent service center.
- Option 1E5** for E8801/2/3A and N3381/2/3A only.  
Replaces standard frequency reference with a higher stability unit (part number E8801-60105). Includes installation at an Agilent service center.

Contact your local Agilent sales or service office for further information.

## Literature and information

### **PNA RF and Microwave Brochure**

literature number 5968-8472E

### **RF PNA Data Sheet**

literature number 5980-1236E

## Key web resources

Visit the PNA network analyzer home page at:

**[www.agilent.com/find/pna](http://www.agilent.com/find/pna)**

For additional application information and to download application notes, visit:

**[www.agilent.com/find/appcentral](http://www.agilent.com/find/appcentral)**



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Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

**Our Promise**

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you receive your new Agilent equipment, we can help verify that it works properly and help with initial product operation.

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