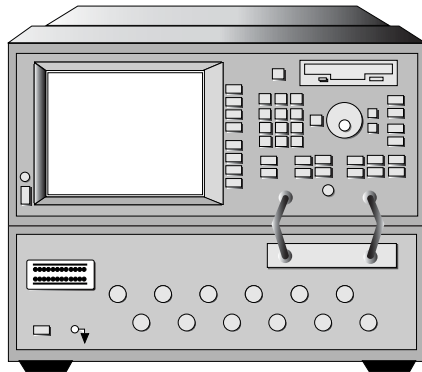


Agilent 87050 50 ohm Multiport Test Sets Configuration Guide



87050 50 ohm multiport test sets, 3 MHz to 2.2 GHz

This configuration guide describes standard configurations, options, accessories, firmware upgrades, and service and support products. Agilent 87050E multiport test sets are designed to operate with the 8712E series of network analyzers. Selected information on the 50 ohm 8712ET, 8712ES, 8714ET, and 8714ES is included. For more information about these test sets and network analyzers, please read the following documents:

87050E Technical Specifications	5968-4764E
87050E Brochure (color)	5968-4763E
8712E series RF VNA Technical Specifications:	5967-6314E
8712E series RF VNA Configuration Guide:	5967-6315E
8712E series RF VNA Brochure:	5967-6316E

For additional information, please contact an Agilent representative at one of the offices listed on the back page of this guide.



Agilent Technologies

Agilent 87050E 50 ohm multiport test sets

Standard test sets include:

Three-year return-to-Agilent warranty, power cord,
test-set calibration disk, as well as:

87050-60058	interconnect cable (reflection port)
87050-60060	interconnect cable (transmission port)
8120-6818	parallel port interface cable
87050-90026	87050E/87075C User's and Service Guide

Standard test set options

(Must order one of the following options with the
87050E)

- ☐ Option 004 (4 ports)
- ☐ Option 008 (8 ports)
- ☐ Option 012 (12 ports)

Additional test set options

☐ Option 1CM rack-mount kit

Includes:

- 87050-60059** interconnect cable (reflection port)
 - 87050-60061** interconnect cable (transmission port)
- (These cables are shipped with Option 1CM only. Use
these cables if you are rack-mounting your system, or
if the bottom feet of the analyzer have been removed)

☐ Option UK6 commercial calibration certificate with data

Test set documentation

- ☐ Option 0B0 delete manual
- ☐ Option 0B1 add additional manual

Localization

Agilent often provides localized user guides in many
languages for no additional charge. The user guides
include information on installation, instrument func-
tions, measurement optimization, and calibration. Check
with your local Agilent sales representative to find out if
a localized user guide is available for your multiport test
set.

Agilent 8712E series RF vector network analyzers

- ☐ **8712ET** transmission/reflection vector network
analyzer, 300 kHz to 1.3 GHz
- ☐ **8712ES** S-parameter vector network analyzer,
300 kHz to 1.3 GHz
- ☐ **8714ET** transmission/reflection vector network
analyzer, 300 kHz to 3.0 GHz
- ☐ **8714ES** S-parameter vector network analyzer,
300 kHz to 3.0 GHz

Standard network analyzers include:

- Fully integrated synthesized source and test set
- Built-in 3.5 inch floppy disk drive
- Narrowband and broadband receivers
- LAN interface
- IBASIC programming language
- 50 ohm system impedance
- Type-N economy test-port cable
- 175 MHz demonstration bandpass filter
- Operating and programming manuals (in binder and
CD-ROM format)
- Example program disks
- Three-year return-to-Agilent warranty

Network analyzer options¹

- ❑ **Option 1E1** 60 dB step attenuator
Adds a built-in 60 dB step attenuator to extend the output-power range down to -60 dBm. This option only applies to the transmission/reflection analyzers (ET models), as the attenuator is standard in the S-parameter analyzers (ES models).
- ❑ **Option 1CL** keyboard
Adds a full-size, standard PC keyboard with a mini-DIN cable (model number D4950B, Option ABA). A keyboard overlay is also included (part number 08712-80028) to aid in instrument operation using the keyboard.
- ❑ **Option 1CM** rack mount kit
Adds a rack mount kit (without handles) for installation in a test rack.
- ❑ **Option AFN** extra 50 ohm economy cable
Adds an extra 50 ohm economy cable and a type-N female-to-female adapter (for high-volume applications, Option B20 is recommended).
- ❑ **Option B20** extra 50 ohm precision cable
Adds a (m-m) type-N 50 ohm precision cable. This rugged cable is recommended for high-volume applications. To replace the standard 50 ohm economy cable with a precision cable, order Option B22.
- ❑ **Option B22** replace 50 ohm economy cable
Replaces standard 50 ohm economy cable with a rugged (m-m) type-N 50 ohm precision cable. This durable cable is recommended for high-volume applications.
- ❑ **Option 1FP** performance-test software
(used for recalibrating instruments)
- ❑ **Option UK6** commercial calibration certificate with test data
- ❑ **Option 0Q8** factory-delivered service training

Network analyzer documentation

- ❑ **Option 0B0** delete manual set
- ❑ **Option 0B1** add additional manual set
- ❑ **Option AVB** delete service guide
- ❑ **Option AV7** delete programming guides

The following options provide manuals that are partially or completely translated into the specified languages, depending on the region.

- ❑ **Option AB0** Traditional Chinese (Taiwan) manual
- ❑ **Option AB2** Simplified Chinese (PRC) manual
- ❑ **Option ABD** German manual
- ❑ **Option ABE** Spanish manual
- ❑ **Option ABF** French manual
- ❑ **Option ABJ** Japanese manual
- ❑ **Option ABZ** Italian manual

System 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 at www.agilent.com/find/mta.

Calibration kits

Calibration kits include mechanical standards such as opens, shorts and precision loads, which are measured by the multiport system during calibration. After a calibration has been performed, subsequent measurements are more accurate.

- ❑ **85032B** type-N standard calibration kit
Contains both male and female 50 ohm precision load, open, and short standards. To delete the 7-mm-to-type-N adapters, order Option 001.
- ❑ **85032E** type-N economy calibration kit
Contains only male 50 ohm precision load, open, and short standards.
- ❑ **85033D** 3.5 mm calibration kit
Contains both male and female 50 ohm precision load, open, and short standards. Order Option 002 to replace the 7-mm-to-3.5-mm adapters with type-N-to-3.5-mm adapters.
- ❑ **85038A** 7-16 calibration kit
Contains both male and female open, short, and fixed termination standards. No adapters are included. An 11906B 7-16-to-type-N adapter kit is recommended.
- ❑ **85038M** 7-16 calibration kit
Contains only male open, short, and fixed termination standards. No adapters are included. An 11906B 7-16-to-type-N adapter kit is recommended.
- ❑ **85038F** 7-16 calibration kit
Contains only female open, short, and fixed termination standards. No adapters are included. An 11906B 7-16-to-type-N adapter kit is recommended.

Cables

Test port cables are used to connect the test set to the device under test. One economy test port cable is shipped with each 8712E series network analyzer as a standard accessory. Test port cables are not shipped with 87050E test sets. Agilent precision test port cables are recommended to ensure high measurement accuracy.

- ❑ **Economy (m-m) test port cable**
(part number 8120-6469)
Economy 50 ohm 0.61 m (2 ft.) cable. Comes with male type-N connectors on both ends.
- ❑ **Precision (m-m) test port cable**
(part number 8120-8862)
Precision 50 ohm 0.61 m (2 ft.) cable. Comes with male type-N connectors on both ends. RF performance includes SWR < 1.1 (up to 3 GHz).

1. This configuration guide lists only those network analyzer options that are applicable for use when measuring multiport devices. For a full list of network analyzer options, refer to the 8712E series RF VNA configuration guide, publication number 5967-6315E.

Adapters

- **11852B Option 004** type-N 50 to-75 ohm minimum-loss pad
This impedance-matching attenuator is used to convert a 50 ohm test port to 75 ohms. One end has a 50 ohm male type-N connector and the other end has a 75 ohm female type-N connector. Nominal insertion loss is 5.7 dB.
- **11853A** type-N accessory kit
Contains 50 ohm type-N (m-m) and (f-f) adapters, and type-N male and female shorts.
- **11854A** BNC accessory kit
Provides the components generally required for measuring devices with 50 ohm BNC connectors (up to 3 GHz). Contains four type-N to BNC adapters in all combinations of connector sexes, plus a male BNC short.
- **11878A** 3.5 mm accessory kit
Contains 50 ohm type-N-to-3.5-mm adapters, in all combinations of connector sexes.
- **Type-N female-to-female adapter**
(part number 1250-0777)
Can be used to connect two 50 ohm male type-N cables together. Suitable for use with economy and precision cables.
- **11906B** 7-16-to-type-N adapter kit
Includes adapters for 7-16 (m) to type-N (m), 7-16 (m) to type-N (f), 7-16 (f) to type-N (m), and 7-16 (f) to type-N (f).

Test fixtures and device handlers

Inter-Continental Microwave offers an extensive line of standard RF and microwave test fixtures and non-coaxial calibration standards. They also provide custom design services to satisfy unique customer requirements. ICM also designs and manufactures custom automatic-device-handling systems to maximize production throughput.

Phone: (408) 727-1596 E-mail: icmfixture@aol.com
Fax: (408) 727-0105 Web: www.icmicrowave.com

Manuals

Extra copies of the CD-ROM containing all the manuals for the 8712E series of vector network analyzers and the 87050E multiport test sets can be ordered as part number 08714-90051. For the latest list of instrument manuals available online, please visit our web page at www.agilent.com/find/8712.

General accessories

- **Anti-static mat kit** (part number 85043-80013)
Agilent recommends using the multiport system on an anti-static mat that has been grounded properly, to minimize the risk of damage due to electrostatic discharge (ESD).
- **Barcode readers**
For more information about Agilent's line of barcode readers, including a worldwide list of distributors, please visit our web page at:
www.semiconductor.agilent.com/barcode.
- **Foot/hand switches**
A rugged footswitch with a 2.4 m (8 ft.) BNC cable is available as Special Option 8714B-K87. Other custom foot or hand switches can be fabricated to suit your particular needs. Please contact your local Agilent sales representative for more information.

Peripherals

Monitors

For enhanced viewing, any external VGA-compatible color monitor can easily be connected to the network analyzer to provide operators with a clear, full-color view of all display information, such as trace data and pass/fail indicators. For information about HP monitors, please visit the web page at www.hp.com/go/monitors.

Printers

Hardcopy measurement results can be obtained from printers with LAN, parallel, serial and GPIB interfaces. Most PCL-based printers are supported. Windows® - only printers are not supported. For more information about HP printers, please visit the web page at www.hp.com/go/printers.
For a list of HP printers compatible with the RF vector network analyzers, please visit our web page at www.agilent.com/find/pcg.

Interface accessories

- **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.)
- **HP C2950A** parallel (Centronics) printer cable, 2.0 m (6.6 ft.)
- **HP C2913A** serial (RS-232C) printer cable, 1.2 m (3.9 ft.)
- **HP 92268A** Ethertwist "straight-through" LAN cable, 4.0 m (13.1 ft.)

System service and support products

A three-year, return-to-Agilent warranty is standard. Customers may convert the standard three-year warranty to a one-year on-site warranty (at no additional charge) by ordering Option W01. This option must be ordered separately for the test set and network analyzer at the time of the initial purchase. Please note that on-site support is not available everywhere (check with your local Agilent sales or service office for availability in your area).

Selected service and support products are listed below. The options are available with both the 87050E multi-port test sets and the 8712E series of RF vector network analyzers. For more information on the full range of service, support, and training products available, please consult your local Agilent sales or service office.

- ❑ **8712E series service kit** (part number 08712-60012)
Service kit includes extender board, extender cables, voltage reference, and special wrench.

Calibration options

- ❑ **Option W32** three-year return-to-Agilent commercial calibration agreement
- ❑ **Option W34** three-year return-to-Agilent mil-standard (standards-compliant) calibration agreement
- ❑ **Option UK6** commercial calibration certificate with test data
- ❑ **Option 1FP** performance-test software (used for recalibrating instruments)

Service options

- ❑ **Option W01** converts three-year return-to-Agilent service to one-year on-site service (check with your local Agilent sales or service office for availability in your area)
- ❑ **Option W50** five-year return-to-Agilent service

Training options

- ❑ **Option 0Q8** factory-delivered service training

Firmware upgrades via LAN

To download the latest instrument firmware via LAN, please visit our web page at www.agilent.com/find/enasupport.

VXIplug&play driver

To download a free VXIplug&play driver, please visit our web page at www.agilent.com/find/8712.

Recommended test equipment

The following test equipment is recommended for self support, adjustments, and performance tests to verify proper instrument operation.

Power meters and sensors

- **437B** power meter (discontinued), or
- **438A** dual-channel power meter (discontinued), or
- **E4118** (EPM-441A) power meter, or
- **E4419A** (EPM-442A) dual-channel power meter
- **8482A** power sensor
- **8481D** diode power sensor (for models with step attenuators only)

Function generators

- **8116A** function generator (discontinued) or
- **33120A** function generator

Instrument controllers and computers

- PC with an GPIB interface card (**82350A**) and **HP BASIC for Windows** (model number **E2060C**) or
- **HP 9000 series 200, 300 or 700** (discontinued)

Calibration kits

- **85032B** 50 ohm type-N

Accessories

- **8496A or 8496G** 10 dB step attenuator
- **8491A series** 20 dB fixed attenuator
- **Voltage reference** (part number 08712-60031)
For service of VNA. Note: this part is included in the service kit (part number 08712-60012)

Additional test equipment and accessories that may be helpful include Agilent 8560 series or 8566A/B spectrum analyzers, plus miscellaneous fixed attenuators, cables, adapters and RF power splitters.

Additional information

For online information on Agilent's 8712E series of RF vector network analyzers and multiport test sets, please visit our web page at www.agilent.com/find/8712.



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Agilent Direct

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Quickly choose and use your test equipment solutions with confidence.



Agilent Open

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Agilent Open simplifies the process of connecting and programming test systems to help engineers design, validate and manufacture electronic products. Agilent offers open connectivity for a broad range of system-ready instruments, open industry software, PC-standard I/O and global support, which are combined to more easily integrate test system development.

www.agilent.com

Agilent Technologies' Test and Measurement Support, Services, and Assistance

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. 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.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and onsite education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office.

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www.agilent.com/find/contactus

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Printed in USA, June 28, 2005

5968-4765E



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