Agilent portable equipment for testing optical networks
Agilent Modular Network Tester

The Agilent Technologies modular network tester was designed and developed according to the requirements we learned from our existing customers and other prospective owners and users. It combines answers for the needs of the field (battery life, brilliant display, lightness and ruggedness) with highest technology advances (speed, connectability, and best in class Agilent measurement accuracy and reliability). This is not our product, this is your solution. If you have an optical network to look after, this is the tool you were looking for.

Optical time domain reflectometer

Optical spectrum analyzer

Polarization mode dispersion and differential group delay analyzer

Chromatic dispersion analyzer and 4-λ OTDR
The Agilent N3900A Modular Network Tester

- The modular network tester is designed to be a natural extension of your arm: the lightest platform on the market, with a powerful measurement processor, and an adaptable user interface to match the tool to the task.
- A working day of battery life.
- Softkeys and cursor control, or touchscreen, full functionality at your fingertips, however you want it.

**Display**
SVGA-LCD 10.4” TFT display 800 x 600 pixels

**Weight**
3.3 kg (including battery pack)

**Battery**
5 hours of continuous measurement
< 3 hours charging time

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**Agilent N3988A Video Microscope Camera**
- 200 – 500 optical magnification
- One button image capture
- No need for external power supply
- 0.2 kg weight
- Standard PC format for pictures (JPG, BMP)
- Can be directly connected to any PC with USB support

**Available connector tips**
- FC/PC, FC/APC, SC, SC/APC
- 2.5 mm ferrule
- LC, MU, 1.25 mm ferrule

**Agilent N3940AA 1x 12 optical switch module**
- Snaps onto the Modular Network Tester behind the OTDR modules. The OTDR is connected to the input port of the switch.
- The ”Multi-fiber Test Routine” automatically tests 12 fibers in a row.

**Wavelength range**
- 1280-1650 nm

**Insertion Loss**
- 2.7 dB

**Return Loss**
- 40 dB (straight connector), 50 dB (angled connector)

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**Agilent N3900A connectivity options**
- Universal serial bus (USB 1.1) for Video microscope camera
- USB 1.1 peripheral, transmission up to 12 Mbit/s
- RS232C
- Parallel port
- LAN: RJ-45 jack, Ethernet 10/100
- Keyboard
- Analog monitor output (SVGA)
- Floppy disk
OTDR test engines
Agilent N3910AM, N3911AL, N3914AL & N3910AL

• Each OTDR engine has built-in RISC processing power for fast and accurate trace acquisition.
• For long haul links, Agilent N3910AL (1310 & 1550 nm) and N3911AL (1550 & 1625 nm).
• For metro links: Agilent N3914AL (1310, 1550 & 1625 nm).

Minimum sample spacing:
4 cm
Pulse width:
Selectable, from 10 ns to 20 µs
Event dead zone
(For all single mode modules) 3 m
Attenuation dead zone
10 m @ 1310 nm / 12 m @ 1550 nm
14 m @ 1625 nm
Linearity
± 0.03 dB (1-100 nm)

Built-in applications
• OTDR mode
• Pass/fail test
• Macro bending finder
• Multi-fiber test
• Accumulated optical return loss and end to end loss
• Loop back fiber testing mode
• CW and source mode

Chromatic dispersion analyzer
Agilent N3916AL

• Powerful built-in measurement algorithms provide the user with fiber type and accurate chromatic dispersion information.
• Access to just one fiber end is necessary.
• This engine combines the CD analyzer with the capabilities of a 4-Wavelength OTDR.

Zero dispersion wavelength
Repeatability ± 0.6 nm
Dispersion coefficient
Accuracy ± 0.5 ps/nm/km
Repeatability ± 0.05 ps/nm/km
Dispersion range
± 2500 ps/nm
Wavelength range
1250 nm to 1700 nm

Fiber loss test and chromatic dispersion in one go.
For easy dispersion compensation planning, the user directly gets dispersion values and dispersion slope ratios as a function of the wavelength.
Polarization mode dispersion analyzer
Agilent N3909A

- Agilent Technologies is first again to implement state of the art measurement technology: A field PMD analyzer based on the “golden standard” Jones Matrix Eigenanalysis method.
- Minimize effects of PMD using the most robust PMD measurement available with a single button push and optimize revenues through fiber plant capacity and repeater distance optimization.
- DGD distribution over the transmission band enables PMD troubleshooting.
- Femto second resolution and repeatability as well as 2nd-order PMD over wavelength for future proof.
- Link loss over wavelength to enable L-band transmission.

Wavelength range
1525 nm to 1620 nm
Wavelength resolution
50 pm
DGD range
0 ps to 150 ps
PMD range
0 ps to 50 ps
PMD accuracy
± (0.03 ps + 2% of PMD)
Link loss accuracy
± 0.4 dB

Optical spectrum analyzer engine
Agilent N3935A

- Designed for use in systems with channel spacing down to 25 GHz.
- Like all the modular network test engines, built for the rigors of the outside plant environment, to be shared and above all to be reliable.
- Enough dynamic range to detect any fault.
- One button completion of predefined jobs.

Built-in test routines and applications:
- Channel planning tool.
- Spectral analysis with real time (continuous) and average measurements.
- Automatic detection of missing and/or unexpected channels.
- Pass/fail test for all parameters (OSNR, power, channel frequency and drift, total power).

Dynamic range
45 dBC @ 100 GHz and 40 dBC @ 50 GHz
Resolution Bandwidth (FWHM)
< 100 pm
Scanning Resolution
0.005 nm
PDL
± 0.05 dB
Wavelength accuracy
± 40 pm
Power Noise Level
- 70 dBm
The Agilent Mini-OTDR
The lightest, smartest OTDR on the market

The Agilent Mini OTDR family offers you the most advanced technology for portable equipment: measurements that are simultaneously fast, reliable and accurate, best trace resolution from the connector to the end of the link, 8 hours of battery operation and just 2.9 kg. It makes your work easier before you even switch it on.

**Minimum sample space**
- 4 cm

**Pulse width**
- 10 ns to 20 µs

**Event dead zone**
- 3 m

**Attenuation dead zone**
- 10/12/14 m at 1310/1550/1625 nm

**Built-in applications**
- OTDR expert mode
- Multi-fiber test
- Pass fail test and event table
- Optical return loss and end to end loss
- Traffic detection
- Fiber break locator
- OTDR wizard and auto-text for novice operators

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**Mini OTDR E6000C**

<table>
<thead>
<tr>
<th>Wavelength SM OTDR Modules</th>
<th>Deadzone</th>
<th>30 dB</th>
<th>35 dB</th>
<th>40 dB</th>
<th>43 dB</th>
<th>45 dB</th>
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<tbody>
<tr>
<td>1310/1550 nm</td>
<td>3 m</td>
<td>E6004A</td>
<td>E6003A</td>
<td>E6003B</td>
<td>E6008B</td>
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<td>1310/1550 nm</td>
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<td>E6003C</td>
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<tr>
<td>1550/1625 nm</td>
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<td>E6012A</td>
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<tr>
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<td>E6013A</td>
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<table>
<thead>
<tr>
<th>Wavelength MM OTDR Modules</th>
<th>Deadzone</th>
<th>23 dB</th>
<th>35 dB</th>
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<tbody>
<tr>
<td>850/1300 nm</td>
<td>3 m</td>
<td>E6005A</td>
<td></td>
</tr>
<tr>
<td>850/1300 nm</td>
<td>3 m</td>
<td>E6009A</td>
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<table>
<thead>
<tr>
<th>Wavelength Power Meter Sub module E6006A</th>
<th>Power Range</th>
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<tbody>
<tr>
<td>800 – 1650 nm</td>
<td>-70 dBm to +10 dBm</td>
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</table>

<table>
<thead>
<tr>
<th>Visual Fault Locator Sub module E6007A</th>
<th>Distance range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Visible Light (635 nm)</td>
<td>up to 5 km</td>
</tr>
</tbody>
</table>

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Visual fault finder (red laser) and built-in laser source

Optical power meter and loss test
Hand-held equipment
High end series

Optical power meter N3970A
• Dynamic range +5 to -70 dBm
Optical power meter N3971A
• Dynamic range +27 to -40 dBm
• Accuracy ±3% (also N3970A)
Dual Laser Source N3974A
• Output power -5 dBm
• Power stability ±0.15 dB
• No warm up time
Optical attenuator N3977A
• Attenuation range 2.5 to 60 dB
• High precision (0.05 dB calibration step)

Trace analysis and documentation software
Agilent E6092A OTDR toolkit III plus

OTDR trace management
• The Agilent tool kit is a powerful tool to manage, analyze and post-process, organize and store the result of your work with the OTDR engines.
• It can access and process the data to make two-way averages and analyze events such as splices, connectors or fiber attenuation.

Acceptance test documentation
• Automatic trace labeling, powerful trace loading filters and batch processing.
• Automatically transfers the data information into PC compatible MS EXCEL© format.
• Built-in editing and print tools to produce work orders for splice crews and acceptance reports in whatever format you need, including your customer’s design.

Remote Control
Monitoring
• Viewer can remotely connect to and control both Mini-OTDR and Modular Network Tester OTDRs.
• Trace Connection can be established via LAN, USB or RS232C (serial port).

“On-line assistance”
• There is a problem or a challenging situation at the test site, a more experienced person can take control of the instrument to make sure you finish the work successfully.
Connector interfaces
Full range of standard connector interfaces (FC/PC, FC/APC, SC, ST, E2000, DIN, LC and MU)

Calibration Warranty
Agilent offers a standard 2 years calibration for all its optical equipment and 3 years or 5 years calibration warranty options depending on the instrument. Contact your Agilent sales representative for further information.

Sales and Support
Agilent has offices in the main cities worldwide and offers you 24 hours Online assistance support.

Related Literature
"Agilent N3900A Modular Network Tester” data sheet
Part No. 5988-8190EN

Training Materials
"Agilent Cleaning Procedures for Lightwave Test and Measurement Equipment”
Part No. N3900-90AJ1

"Agilent OTDR’s Pocket Guide”
Part No. E6000-91017

Web Based Training
“OTDR Solution User’s Course”
Web tutorial (delivered with equipment)

www.agilent.com/comms/XPI
You’re expected to do more with less – provide results faster with fewer resources, increase network performance, boost ROI, rapidly roll out new services – deliver extreme productivity improvements (XPI). Agilent XPI solutions help you drastically cut the time and cost of installing, testing and maintaining your communications networks. Reduce your operating costs by squeezing cost and time out of testing, increase revenues by rolling out new services more quickly, and, improve your network uptime by troubleshooting network problems faster. Together with Agilent, gain the extreme productivity improvements (XPI) that your business demands!

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