The complete global tester to 2.5 Gb/s

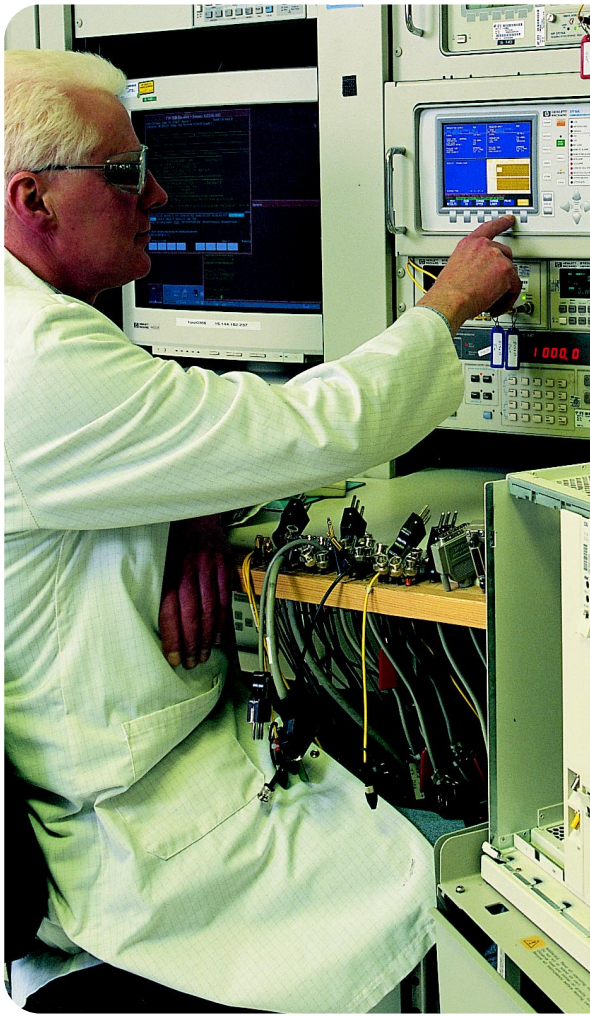
OmniBER 718

Agilent Technologies
Innovating the HP Way

smart, flexible multi-rate testing

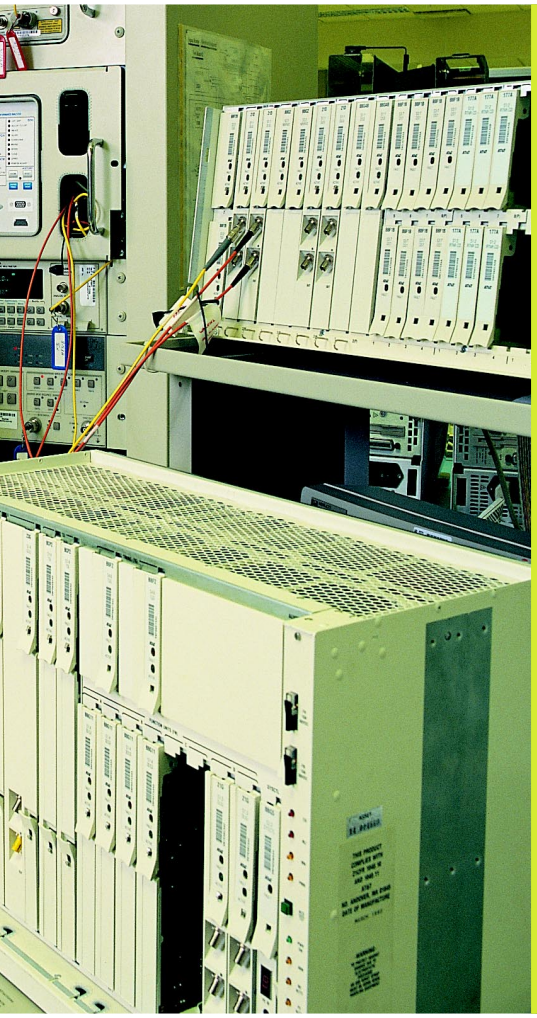
Whether you're manufacturing network equipment, installing network equipment, or operating and maintaining networks, Agilent Technologies' OmniBER 718 communications performance analyzer delivers all the measurement solutions you'll need, in one portable box.

It's the proven dual-standard test solution, providing full functional and jitter test capability for all SDH/SONET and PDH/T-carrier rates to 2.5 Gb/s. It's built for speed too, with a range of SmartTest features designed to help you complete your entire test process in the quickest, most effective way possible. And its flexible architecture means it can adapt to a variety of test situations, and keep pace as your test needs evolve.



[network installation]

If you're installing network equipment, expect to test beyond ITU and Bellcore requirements. The OmniBER 718 includes application-specific tests to help you solve just about any installation problem you're likely to come across. For example, its comprehensive through mode capability makes it the perfect tool for turning up SDH/SONET rings. It's possible to add jitter, and add errors and alarms in through-mode to vigorously stress the ring. Through-mode's unique 'hitless switching' lets you monitor different channels of a through signal without interrupting traffic. And the OmniBER 718's external drop/insert capability lets you test your network with non-standard payloads if required. For testing at all interface rates from 1.5 Mb/s to 2.5 Gb/s (including concatenated payloads), rely on the OmniBER 718.



The OmniBER 718 approach to testing your SDH/SONET/ATM/POS network equipment is to make sure (1) your products are brought to market faster (2) they comply fully with ITU or Bellcore recommendations; and (3) you have performance and flexibility to hand whenever you need it. That way, the full benefits of your SDH/SONET/ATM/POS products will match your customers' requirements and expectations.

Keeping jitter within controlled limits is paramount. The OmniBER 718's extremely low intrinsic jitter performance, along with compliance to the latest ITU-T O.172 recommendation for jitter test equipment, means you can be confident your network equipment will deliver the high quality transmission levels demanded by your customers. And if your customers are happy, your production lines stay busy.

[manufacturing]

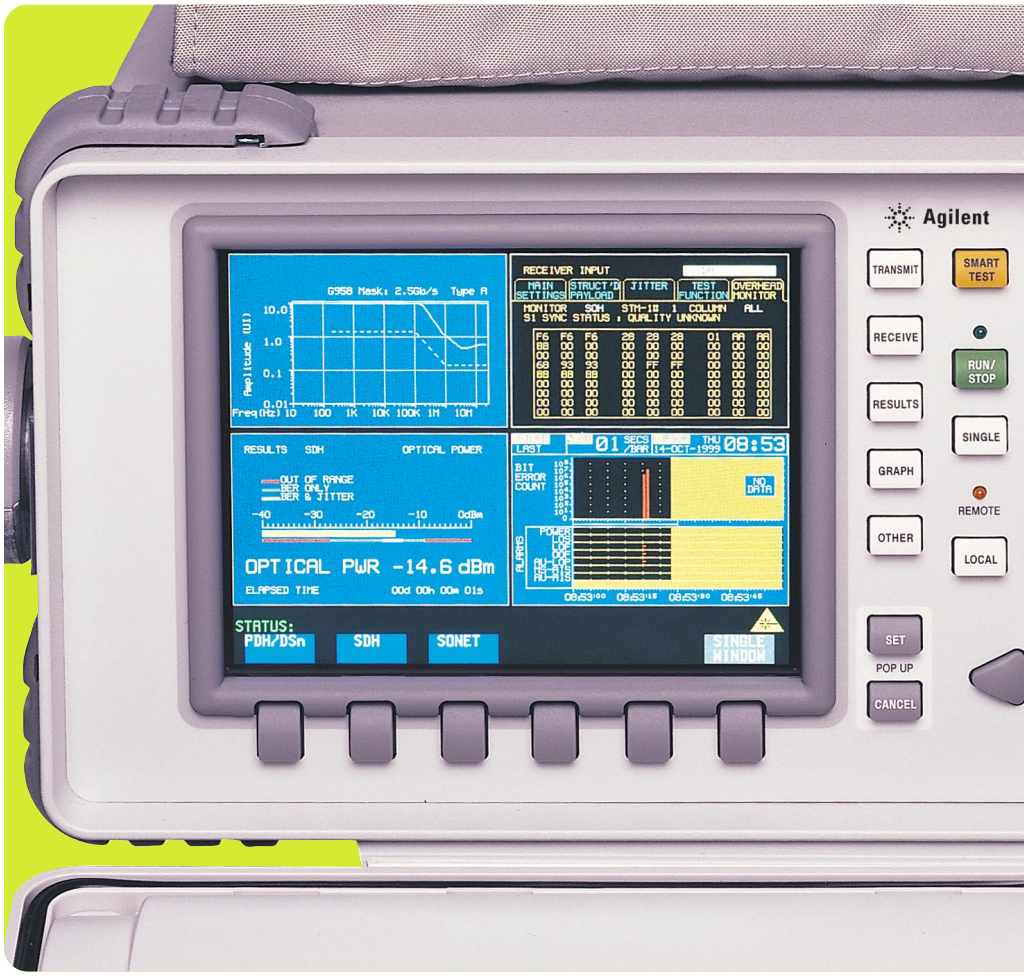
[network maintenance]

Once your network is up and running, you'll want to make sure it stays that way. When problems do arise, restore faulty paths quickly and efficiently using the OmniBER 718's extensive measurement capability. Its powerful results analysis mode allows in-service performance monitoring for convenient and up-to-the minute analysis. Its out-of-service performance analysis lets you easily emulate complex traffic patterns to track down elusive faults. While compliance to ITU-T M.21xx recommendations lets you bring international paths into revenue-earning service in just 15 minutes.

making testing easier and faster

The key to greater productivity is simpler testing. Which is why the OmniBER 718's user interface is designed to get both experienced and novice engineers testing effectively in the shortest possible time. From the easy-to-understand, multi-window color display to the auto-discovery of complex signal structures, the OmniBER 718 offers fast, intuitive operation.

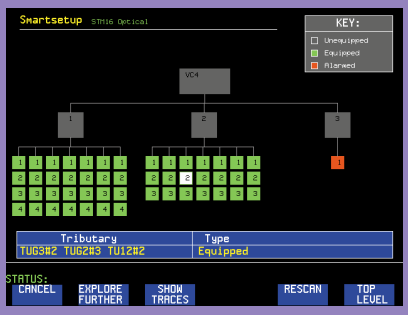
Its SmartTest mode provides a short-cut to many powerful and frequently used test functions. There's auto-mated scanning of alarms and errors, and graphical representation of results for easy interpretation. The integral printer means you'll always have a hard copy of results when you need them. Plus, there's remote control capability, and universal instrument drivers (UIDs) to simplify the generation of automatic test programs.



[SmartTest]

OmniBER 718's SmartTest mode lets you simultaneously display all J1 trace messages within an SDH/SONET signal. In addition, SmartTest now lets you explore further into the payload of a user-selectable tributary and will automatically identify the framing structure and channel status.

In 'smartsetup' mode, the OmniBER 718 automatically configures to the connected link, whether its PDH / T-carrier or SDH/SONET. From there, scroll through displayed channels, find error summary results, even auto-display mixed payload structures and scan for alarms and BIP errors. In short, this mode lets you spend more time testing rather than wasting time setting up the instrument.

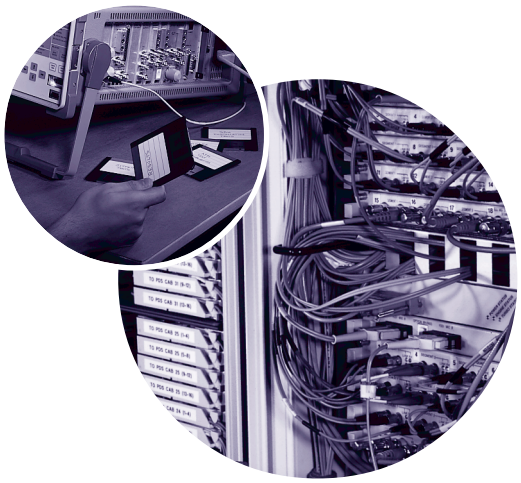


Whatever your application, the OmniBER 718's extensive test coverage complements its time-saving features and easy navigation.

- Full control over SDH/SONET overhead functions to help you thoroughly evaluate network equipment
- Full range of controlled pointer movements to ITU-T G.783 and ANSI T1.105.03, including automatic initialization and cool down sequences
- Measurement filters to O.172, O.171 and GR.499 for tributary jitter measurements
- New mappings including E1 mapped into DS3
- Parametric tests including frequency and optical power measurements
- Automatic detection of mixed payload structures in SDH or SONET environments

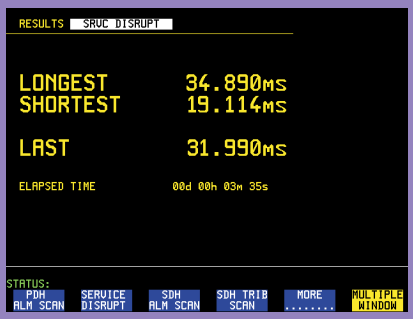
AlarmScan and TroubleScan modes identify problem tributaries, delivering the results graphically for easy analysis. All J1 trace identifiers can be displayed simultaneously making it fast and easy to identify specific channels in a high-bandwidth path. The powerful parallel processing of G.826, M.2100, M.2101, M.2110, and M.2120 makes complete test data available for faster problem resolution. What's more, there's external add-drop of mapped payloads in thru-mode to help you assess the performance of transmission elements. And bi-colour LEDs for positive indication of signal, framing and pattern status.

[the all-round tester that saves you time]



[POS]

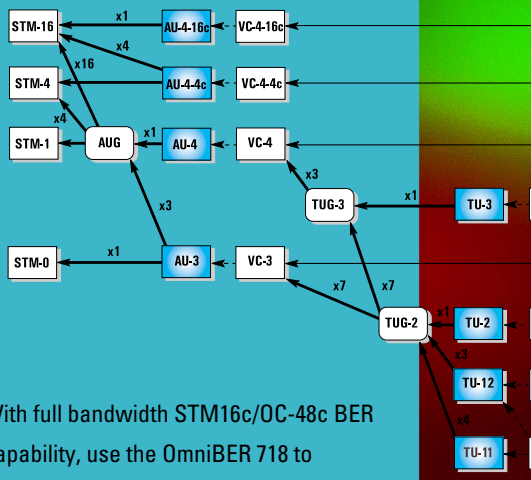
Verify your Packet over SDH/SONET (POS) line card and chipset hardware designs quickly with the OmniBER 718's tailored POS test solution option. It's targeted at physical layer 1 and layer 2 and offers real-time testing of POS payloads at all synchronous rates to 2.5 Gb/s. It also provides POS jitter measurements and, uniquely, channelized POS payload tests.



Easily measure the time it takes for an automatic protection switch to activate. By measuring the payload error burst, the OmniBER 718 provides a highly-accurate measurement through detailed analysis of payload integrity. And checks the switch meets ITU-T and Bellcore recommendations to give you reliable, repeatable results.

[automatic protection switch measurements]

testing down to the wire

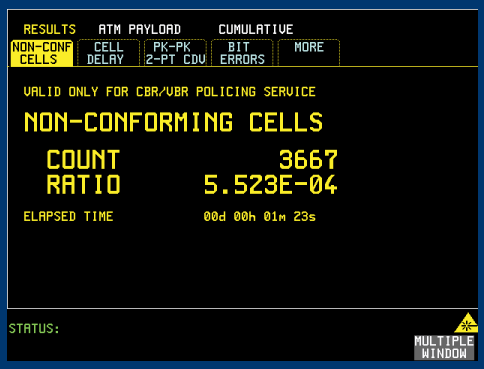


With full bandwidth STM16c/OC-48c BER capability, use the OmniBER 718 to accurately measure low bit error rates up to 16 times faster than a 2.5 Gb/s tester configured with VC-4c/STS-3c payload channels. This capability is ideal for clear-channel testing in preparation for broadband services or for verifying WDM systems.

[concatenated payloads]

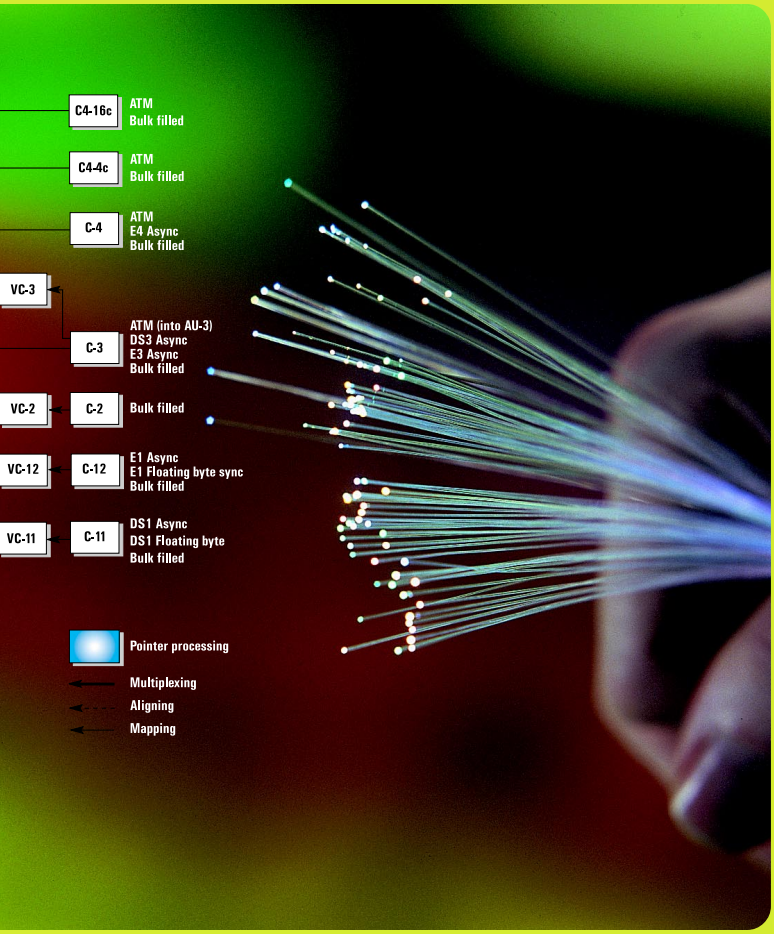
[TCM]

For network operators and service providers operating tandem SDH network paths, the OmniBER 718's TCM test solution can quickly isolate errors and defects to a particular tandem path. This allows fast trouble-shooting and 'finger pointing' between the different operators. The TCM test capability complies with ITU-T G.707 Annex D and Annex E recommendations, and includes alarm generation and detection, error generation and detection, and access point identifier generation and decode.



How can you be sure your network equipment delivers even in the most demanding situations? By testing it with the OmniBER 718. The instrument has unique ATM test capability at the physical and ATM layers at interface rates from 2.5 Gb/s to 1.5 Mb/s. It provides accurate jitter testing with concatenated ATM payloads, including automatic jitter tolerance and transfer testing. Plus, it offers service disruption testing using ATM payloads.

[ATM]



[comprehensive SDH/SONET ring testing]

To get your SDH/SONET rings up and running fast, use the analyzer's flexible thru-mode test capability.

During ring turn-up, inject errors and alarms or use 'selective' overhead overwrite controls to verify operation under fault conditions. To ensure your SDH/SONET ring remains operational, DCC management messages and K1K2 protection switching messages are passed transparently through the analyzer (unless selected for overwriting).

For ring maintenance testing, transparent thru-mode lets you perform in-service monitoring on all levels of the receive signal down to a selected channel.

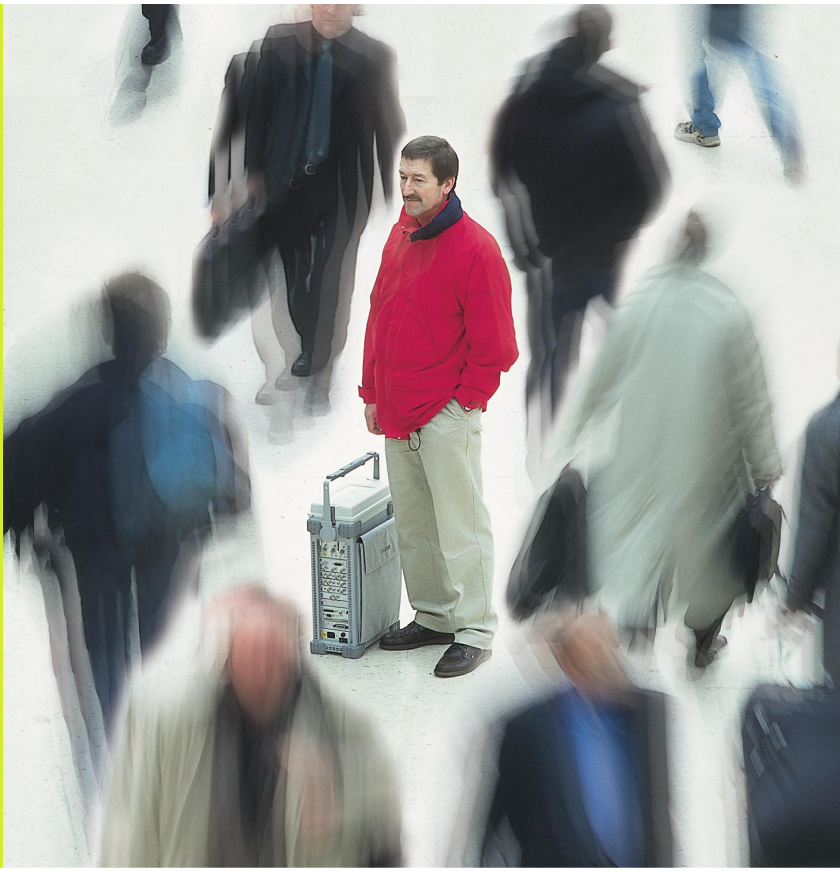
solving jitter and wander . . .

If you're challenged by network jitter and wander look no further than the OmniBER 718. Tests such as tributary jitter and output jitter, along with low jitter intrinsics, will help you identify and pin down high frequency and low frequency jitter problems both in the network and during the manufacture of network elements.

User-definable jitter masks for auto-tolerance and transfer testing allow you to specify precise checkpoints to test known problem areas. Real-time wander measurements* let you pinpoint synchronization problems with masks that comply with the latest ITU-T, Bellcore, ETSI and ANSI standards. Plus, jitter generation and measurement capability at all synchronous rates (52, 155, 622 Mb/s and 2.5 Gb/s) and asynchronous rates (1.5, 2, 8, 34, 45 and 140 Mb/s) can be installed simultaneously.

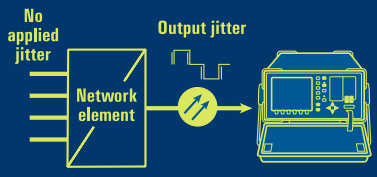
The OmniBER 718 meets all ITU-T and Bellcore equipment recommendations, including ITU-T O.172. You can also switch between ITU-T O.171 and the more precisely defined jitter measurement filters of O.172. This lets you conveniently compare the results of O.171 tested network elements against the latest ITU-T recommendations.

* *Available with optional E4547A wander analyzer software*



. . . with insight

[Output jitter]

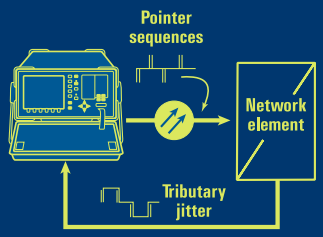


(to ITU-T O.171, O.172, G.823, G.824, G.825 and G.958; Bellcore GR-253 and GR-499)

Meet low intrinsics and tight accuracy ITU-T and Bellcore specifications.

- All SDH/PDH/SONET/T-carrier rates
- Electrical and optical
- 1.6 UI, 16 UI and 64 UI measurement ranges
- Extended receiver range up to 1024 UI
- Measurement filters user-selectable between O.171 and O.172

[Combined pointer and de-mapping jitter]

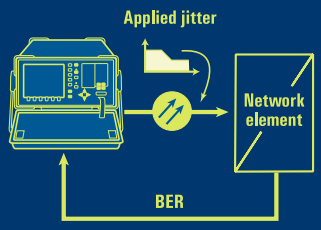


(to ITU-T G.783; Bellcore GR-253)

Measure combined jitter on all PDH/T-carrier interfaces accurately and consistently.

- Full ITU-T and Bellcore pointer sequences with initialization and cool down sequences
- Measure pointer jitter accurately, even in the presence of out-of-band wander
- Instrument intrinsic jitter meets ITU-T O.172
- Measure at all PDH/T-carrier interfaces: 140, 45, 34, 2 and 1.5 Mb/s

[Jitter and wander tolerance]

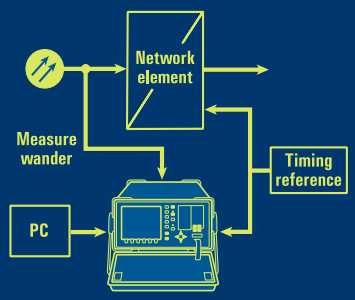


(to ITU-T G.823, G.825 and G.958; Bellcore GR-253 and GR-499)

Automated jitter and wander tolerance testing for checking clock recovery circuits.

- User programmable masks for jitter tolerance testing
- Generate up to 800 UI jitter and up to 57,600 UI wander
- Modulation frequencies from 10 μHz to 20 MHz
- Add line frequency offset during jitter tolerance test

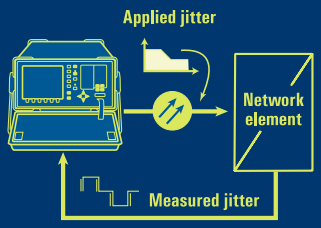
[Wander measurement]



Confidently measure wander at all rates from 1.5 Mb/s to 2.5 Gb/s.

- Measure wander against a reference clock signal
- Display peak-to-peak wander, and maximum positive and negative wander
- Estimated bit slips and frame slips at 1.5 Mb/s and 2 Mb/s
- Measure up to 10^8 UI of wander at 2.5 Gb/s line rate

[Jitter transfer]



(to ITU-T G.823 and G.958; Bellcore GR-253 and GR-499)

Automatic jitter transfer capability for accurate, repeatable results.

- Narrowband, 10 Hz, selective filtering for jitter transfer testing
- Graphical and tabular results presentation

The E4547A wander analysis software provides the following additional capability:

- Real-time analysis is of key performance indices MTIE, TDEV, MRTIE up to 2.5 Gb/s.
- Complies with all relevant ITU-T, Bellcore, ETSI and ANSI standards
- Automatic mask testing with pass/fail indication
- Frequency offset and drift measurement
- Easy to use software with clear presentation

when time is at a premium

[remote control]

In production, use universal instrument drivers (UIDs) to automate your tests and increase throughput. From your PC or workstation, you can program the analyzer without having to learn intricate setup and measurement commands. Moreover, UIDs let you create test programs from your preferred programming environment using platform independent code.

In the field, use the distributed network analysis software (E4540A) to interactively control a remote OmniBER 718 from a central support office for both long-term monitoring and assisting technicians at remote sites. Additionally, create and run your own customized test sequences and transfer results to other Windows®-based applications to provide detailed quality-of-service information for managers and customers.

Configure the OmniBER 718 for multi-rate testing up to 155 Mb/s, 622 Mb/s or 2.5 Gb/s. In other words, buy what you need today and as your test applications evolve, upgrade your instrument when you need to.
For applications that don't require testing of PDH/T-carrier interfaces, the analyzer can be ordered with SDH-only or SDH/SONET-only configurations. Conversely, if you require to test data type payloads add options for ATM and/or POS.

[multi-rates at lower rates]

- **Optical interfaces (choose 1310, 1550 or 1310/1550 nm)**
  For testing BER and/or jitter. Transmit and receive interfaces cover all rates from 52, 155, 622 Mb/s through 2.5 Gb/s (STM-0/OC-1 to STM-16/OC-48).
- **Data communications channel (DCC) port**
  Drop/insert of D1–D3 and D4–D12 bytes for further analysis.
- **Frame pulse, divided clock and trigger outputs**
  Synchronize your oscilloscopes for pulse mask, eye diagram testing etc.
- **Electrical interfaces**
  52/155 Mb/s transmit and receive interfaces support STM-0/STS-1 and STM-1/STS-3.
- **Multiple synchronization inputs**
  10 MHz, 2 and 1.5 Mb/s, and 64 kb/s reference inputs.
- **2 MHz clock output**
  Use as a synchronization source for network element testing.
- **Jitter transmitter** (optional)
  Jitter and wander generation up to 2.5 Gb/s. Auto jitter tolerance/transfer plus external jitter modulation input.
- **DSP-based jitter measurement** (optional)
  ITU-T O.171/O.172 switchable measurement filters. Unrivalled low intrinsics, plus rms/peak-to-peak measurements. LP/HP and 12 kHz HP filters plus 0.001 UI resolution, external demodulated jitter output.
- **E4547A wander analysis software** (optional)
  Real-time analysis of key performance indices MTIE, TDEV, MRTIE. Complies with all relevant ITU-T, Bellcore, ETSI and ANSI standards
- **PDH/T-carrier measurements** (optional)
  Full mux/demux from 64 kb/s to 140 Mb/s and 56/64 kb/s to DS3 (45 Mb/s).
- **Full remote control**
  GP-IB, RS-232-C, LAN programming control. (Universal instrument drivers shipped as standard.)
- **Floppy disk drive**
  Install firmware upgrades, store/recall graphic results, log results, store bitmaps of screen shots.
- **Auto-ranging power supply**
  Global operation without worrying about setting voltage selection switches.
- **Integral in-lid printer** (optional)
  80 column full width graphics printer for results logging, graphics printout and screen dumps.

Product literature

You'll find further details of the OmniBER 718 analyzer's test capability in the product specifications publication no. 5968-8335E and configuration guide publication no. 5968-8012E.

Related Products

[OmniBER 719]

The Agilent Technologies OmniBER 719 communications performance analyzer is a rugged, portable one-box solution for manufacturing, installation and maintenance of SONET networks and network elements. It provides full T-carrier and SONET capability up to OC-48, including OC-48c payloads, plus jitter, ATM and POS. For further information, refer to publication no. 5968-8741E.

[OmniBER 720]

Based on the OmniBER 718, the new OmniBER 720 is a low-price, broadband, optical tributary test set. It is ideally suited to installation, maintenance, commissioning and system verification of high-speed SDH/SONET and DWDM transmission systems to STM-64c/OC-48c. SDH-only, dual SDH/SONET and SONET-only configurations are available. For further information, refer to publication no. 5980-0594E.

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. 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 use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

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 on-site 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.

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