

AuroraForte



ATM Test Equipment

ATM

Broadband testing for Next Generation Networks



TrendCommunications

Full ATM Features

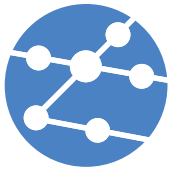
for installation, operation and maintenance

The Aurora Forte provides comprehensive test capabilities for the installation, operation and maintenance of ATM (Asynchronous Transfer Mode) networks.

The complexity of ATM networks and equipment demands a high level of capability from test equipment. Aurora Forte meets that challenge and exceeds expectations.

Whether the test requirement is for commissioning, maintaining or troubleshooting locally or remotely with Remote Viewer, the user of Aurora Forte will be impressed with its ability to quickly and efficiently prove the correct operation of ATM circuits.

Each of the test applications provide easy access to the available test routines, either for pre-programmed use or manually controlling all of the test parameters. This satisfies the needs of the field engineer for a quick, easy-to-use tester, and of the network engineer for a fault-finding analyser.



AuroraForte

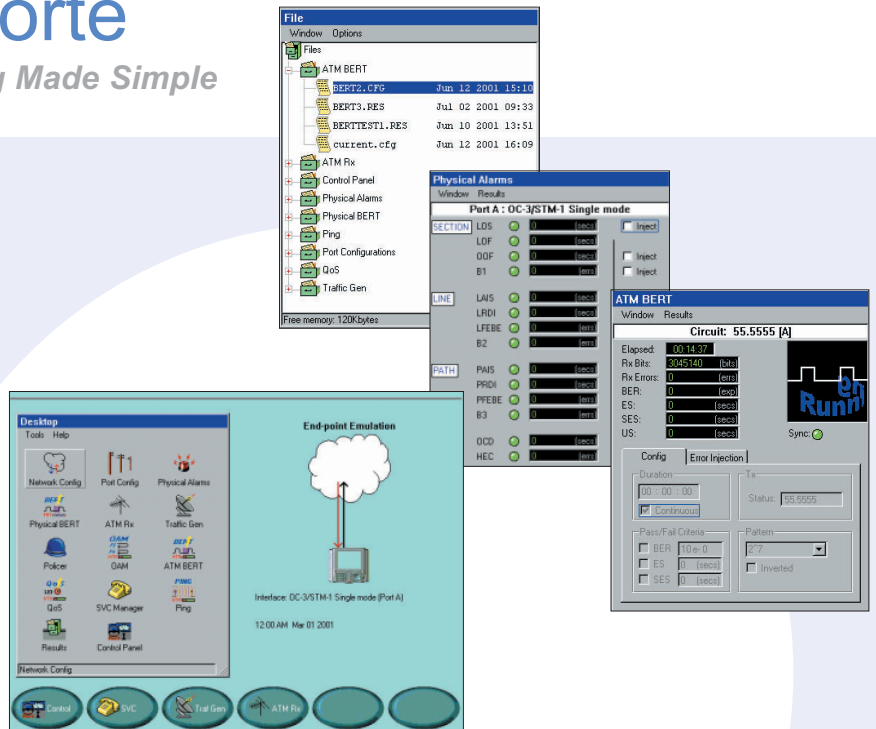
Serious ATM Testing Made Simple

Friendly Graphical User Interface

Aurora Forte is equipped with a large colour LCD, which is combined with excellent user interface software. A traditional text menu hierarchy has been avoided with the use of multi-tasking windows. This provides a comprehensive view of the instrument setup and operation in a clear and easily learnt design.

Remote Viewer enables you to control AuroraForte using a Windows™ based PC connected via Ethernet. This allows you to see results on your PC in the familiar Windows environment.

The File Manager facility has 384 kbytes memory for results and configuration stores for all applications. You can also copy data to or from a PC and clone configuration between units using the Ethernet interface.



- Robust design for field operation
- Lightweight, hand-held, battery powered
- Full colour graphical user interface
- Remote operation through a PC using Remote Viewer
- Function keys for quick operation of test applications
- High visibility LEDs, configurable for any physical interface alarm

Multiple Interfaces

for any mixture of line testing

Aurora Forte is equipped with two ports that can contain user-changeable interface modules. This way you can carry out any mixture of line testing, from 1.5 Mbit/s to 622 Mbit/s. Networks can be tested by emulating the connection to the network or customer, or by monitoring a circuit in-line or passively in single or bi-directional modes.

Mix and match of interface types:

- OC-12/STM-4 single mode (622 Mbit/s)
- OC-3/STM-1 single/multi mode (155 Mbit/s)
- E3 (34 Mbit/s) and E1 (2 Mbit/s)
- DS3 (45 Mbit/s) and DS1 (1.5 Mbit/s)
- ATM25 (25.6 Mbit/s)
- E1 IMA (8-port)

Test Applications

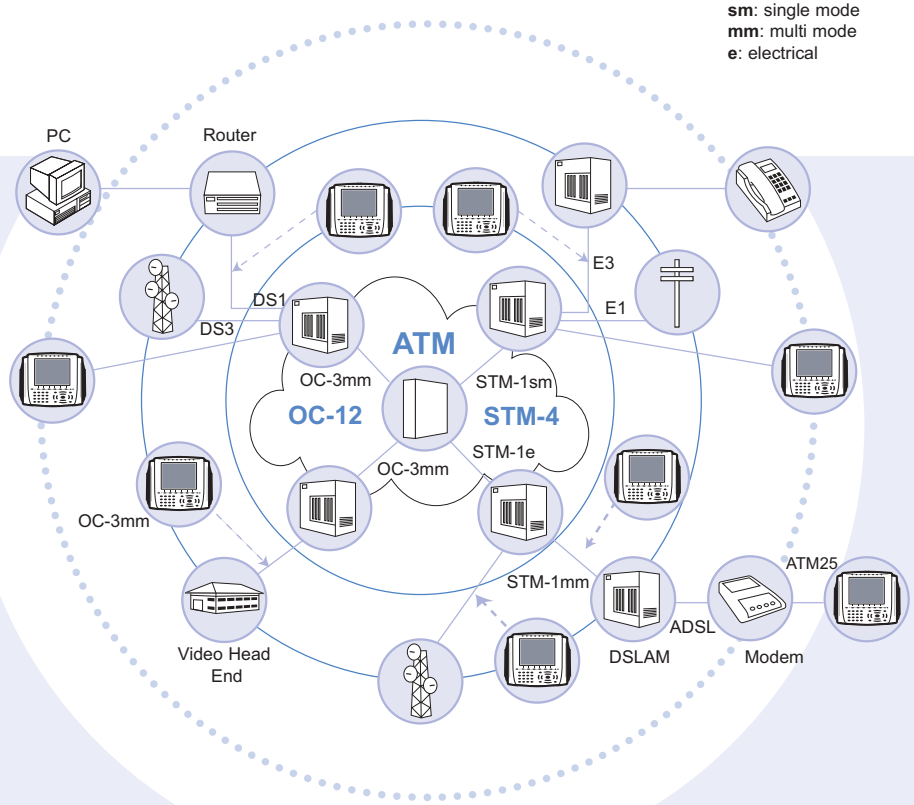
for all your ATM testing needs

The ATM network is dependent on high-reliability connections. Aurora Forte addresses this by providing framing analysis of each type of interface with a report of error types and statistics. You can also simulate error conditions with an inject facility. The quality of electrical links for PDH interfaces can be measured with the physical layer Bit Error Rate Test, making use of framed or unframed patterns.

At the ATM layer, Aurora Forte offers a comprehensive suite of tests. The traffic generator can transmit up to 256 different cellstreams using CBR, VBR or UBR profiles.

The ATM receiver automatically synchronises with up to 1024 cell streams indicating the VCC value, with separate performance statistics for each circuit.

You can use OAM analysis for a selected cell stream to test the ATM layer alarms, plus the operation of Continuity Check and Loopback cell types. You can run an ATM cell BERT to measure the cellstream performance. The O.191 Quality of Service test enables you to measure errors involving data loss or misinsertion, together with cell transfer timing.



Applications involving the transfer of IP message packets over ATM can be tested using an IP PING to ensure end-to-end connectivity by either transmitting or responding to IP PING messages. You can run any of these tests continuously or by control of a timer, for up to 24 hours.

Test results are compared to programmed thresholds and an overall pass/fail analysis is provided.

Application

environments

Aurora Forte can be configured to emulate terminal equipment or the network termination allowing it to function in any ATM environment.

- Emulate end equipment or transmission network
- Fault finding on access network or transmission network
- Monitoring of network circuits

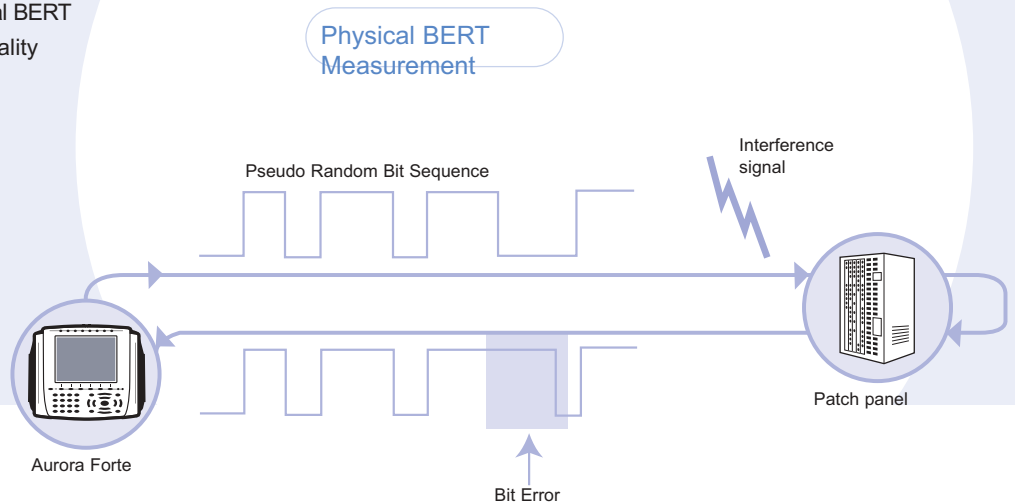
- Commissioning of physical circuits and ATM virtual circuits
- Generate network alarms at physical and ATM layer
- Multi-interface, E1, E3, DS1, DS3, OC-3/STM-1, OC-12/STM-4, ATM25, E1 IMA
- Physical and ATM Bit Error Rate Testing to check circuit quality
- Line rate cell processing of 1024 receive circuits and 256 transmit circuits
- Verification of cellstream performance
- Traffic Policing to verify or enforce Network Contract compliance
- QoS measurement for comprehensive performance testing
- OAM testing and decode of F4/F5 cells



Network Commissioning

You can flexibly configure each interface for the line type and network framing being used. Physical alarms can be analysed, and you can also inject alarms.

The ability to carry out physical BERT will ensure that the cable quality is adequate for the ATM service.



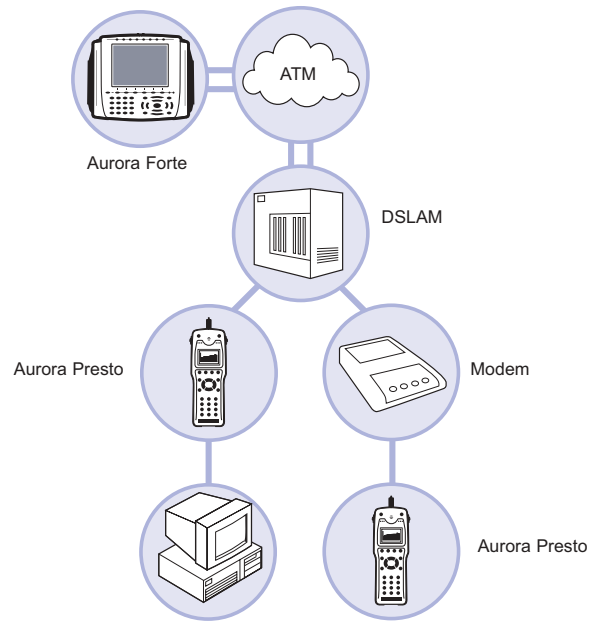
DSLAM Installation

and monitoring

xDSL network installation requires the rapid deployment of network infrastructure. Aurora Forte can be used on the network side of the DSLAM to monitor traffic, or to provide test traffic through the xDSL connection.



ADSL network testing



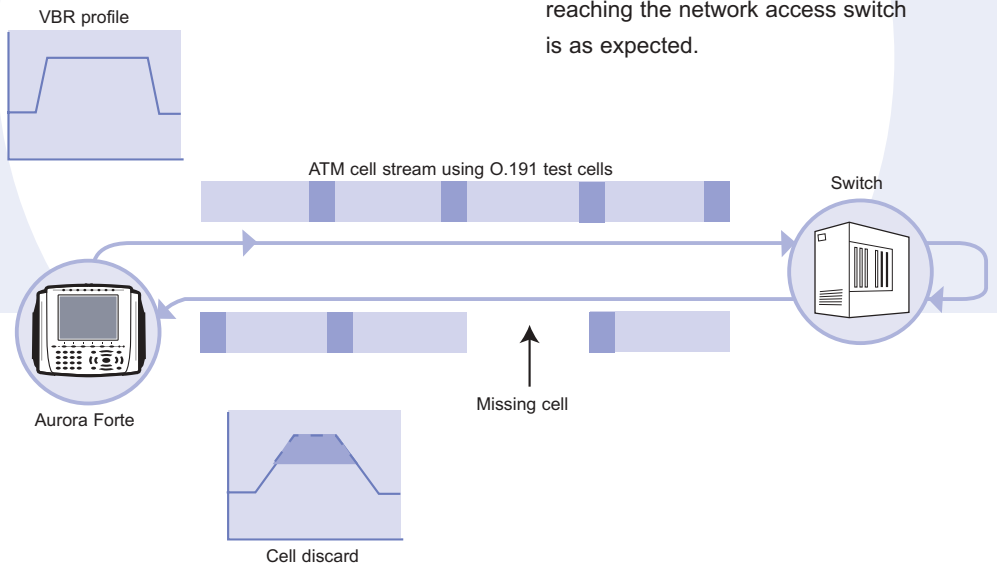
Contract

compliance

Quality of Service and Service Level Agreement verification

The ITU-T O.191 test method is implemented for detailed assessment of circuit quality by measuring lost and misinserted cells, cell transfer delay, and 1 or 2 point cell delay variation. There are counts for Severely Errored Cell Blocks, Errored Seconds and Severely Errored Seconds. This test method is designed to make sure that circuit performance meets the requirements of the service user, and it can be used by the network operator to show the customer that the network performance is satisfactory.

Quality of Service test 0.191



Traffic Policing

The Traffic Policing application enables Aurora Forte to compare the actual cell data rate received from a user connection to the Network Traffic Contract. This is done on a cell-by-cell basis, using the GCRA (Generic Cell Rate Algorithm). The network operator can use Aurora Forte to enforce a contract by discarding cells that exceed the GCRA. This makes sure that the data rate reaching the network access switch is as expected.

Streamlined Technology

with advanced features

Traffic Monitoring

With Aurora Forte you can monitor 1024 ATM circuits simultaneously. Summary information is provided of Peak Cell Rate, Average Cell Rate, alarm status, cell discard tagging and ATM Adaptation layer type. Traffic Policing may be used for contract verification. This provides statistics of contract violations and can discard non-compliant cells when the tester is configured in Through Mode.

A cellstream window provides an instantaneous graphical view of time and cell stream data rate.



Packet Output

Data carried with AAL5 encapsulation (most common format for IP and other packet protocols) can be converted to Ethernet format for real-time analysis.

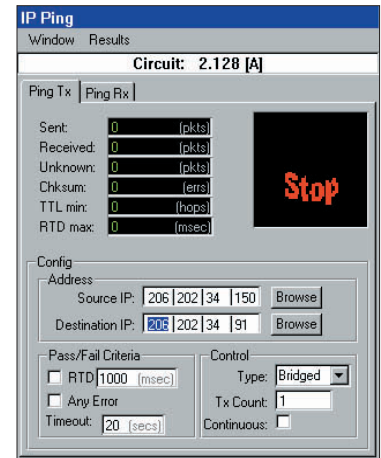
By using a PC-based protocol analyser connected to the Ethernet port on the Aurora Forte, you can carry out full decode and analysis of the higher layer protocols.

Bi-directional monitoring of a complete protocol link is possible by installing two interface modules on the tester.

IP Ping

Aurora Forte is able to send and receive Ping messages through a selected ATM cellstream. This enables the tester to prove IP connectivity to routers over the ATM network. Response messages will also be generated when Ping messages are received from other devices.

The tester supports Ping messages of variable payload size up to 4000 bytes. Up to 16 addresses can be used, and a loop time measurement is included. In addition, the Ethernet port can respond to PING messages received from other devices.



SVC

Aurora Forte includes SVC (Switched Virtual Circuit) operation for testing networks using UNI3.0, UNI3.1 or UNI4.0 protocols. The tester can emulate the user or network side connection, enabling ILMI address registration and SVC call establishment.

The SVC application provides a comprehensive setup and test to prove that the SVC protocol is operating correctly, or to discover if faults are occurring.

A trace window shows real time message flows between the tester and network equipment, and a history view is provided for filtering messages – these will help in finding the cause of faults. Once a circuit has been established, you can use the BERT, QoS or Traffic Policing measurements to prove the cellstream performance.

IMA Testing

Certain problems may occur on the IMA layer of networks that call for a tester with an IMA interface in order for them to be discovered and rectified quickly.

The testing requirements for IMA are different to those for E1, because the higher ATM layer cannot be tested unless the entire E1 IMA group is accessible.

This means that test equipment with E1/ATM capability cannot test the IMA/ATM circuits; the test equipment must have sufficient interfaces to allow connection to all the E1 links in the group at the same time and support the IMA protocol.

The E1/IMA interface module of Aurora Forte supports this protocol, providing up to 8 E1 links for testing the aggregate ATM bandwidth. The key IMA parameters, such as available link IDs and differential delay are included.



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Distributor

To arrange a demonstration or to obtain the latest information on the Trend **AuroraForte** or any of Trend's other test equipment, contact your nearest Trend Distributor.