

MP1220B

ATM Quality Analyzer

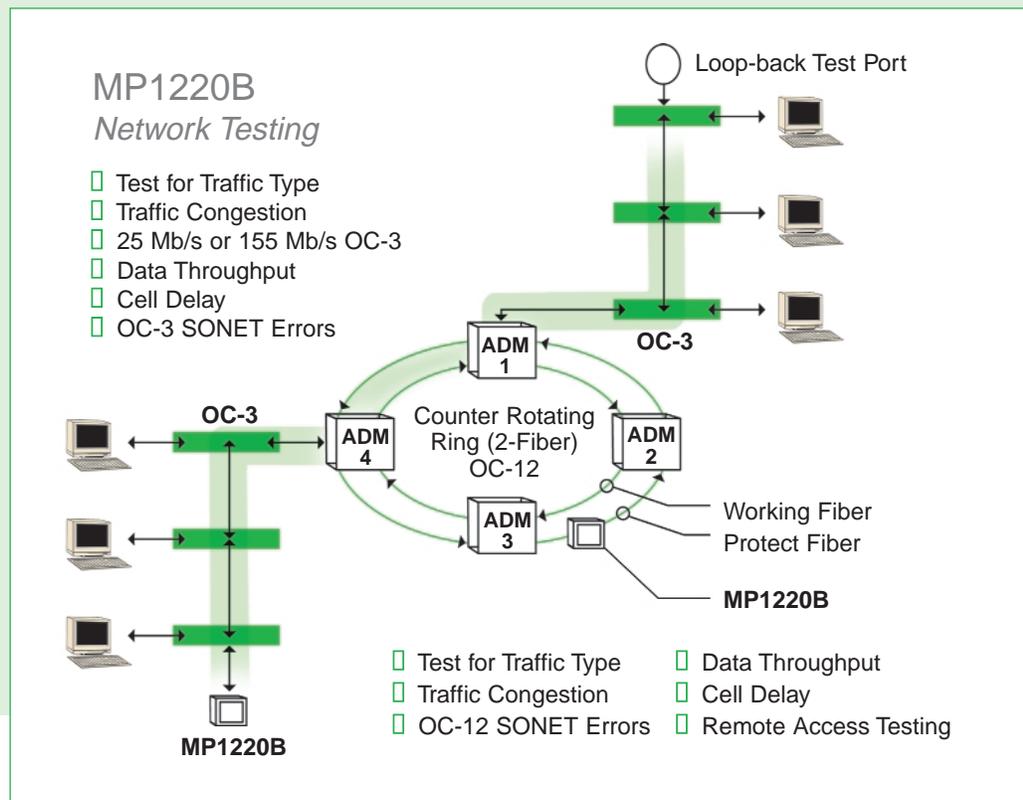


*A Comprehensive ATM Network Performance
Monitoring and Measurement Solution*

MP1220B

A Comprehensive ATM Network Performance Monitoring and Measurement Solution from Anritsu

- Supports various interfaces from 1.5 Mbps (T1) to 622 Mbps (STM-4c/OC-12c) SONET and SDH
- Simultaneous measurement and real-time analysis up to the ATM-CPCS layer of two channels (one upstream / one downstream)
- Automated traffic monitoring of 1,023 network channels for bandwidth utilization
- Uses formatted payload data conforming to ITU-O.191 recommendations for cell delay performance measurements
- Small, lightweight, rack mount or portable
- Supports a variety of remote control testing configurations
- Online manuals and online help



Overview

Anritsu Company offers a wide variety of testing solutions for telephony carriers and networking service providers. Although Anritsu has historically been known for its copper-based and fiber-based physical media testing, Anritsu also has the product capabilities that will enable its customers to accurately test the data transport layers of the network. The addition of data transport testing to its existing suite of physical media test capabilities allows Anritsu customers to choose tailored test solutions for any size of network.

Explaining ATM and QoS

ATM (Asynchronous Transfer Mode) is a scalable network protocol which allows all types of data traffic, i.e voice, video, and data, to be efficiently routed from its source to its destination efficiently with minimum interference from any other data existing on the same network. A QoS (Quality of Service) test provides a quantifiable measurement of how efficiently the data is moved between its source, destination and any intermediate nodes within a network.

Characteristics of ATM Testing

Testing of an ATM network begins with the physical media used to connect the network equipment. Testing then evolves into traffic flow monitoring, shaping and policing to insure the total data bandwidth is utilized efficiently without exceeding available media capacity. Media testing identifies problems with the physical connections; traffic testing identifies problems with network data capacity and the ability to route data to its final destination.

| | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 | +10 |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 10 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 10 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | *** |
| 20 | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| 30 | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| 40 | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |

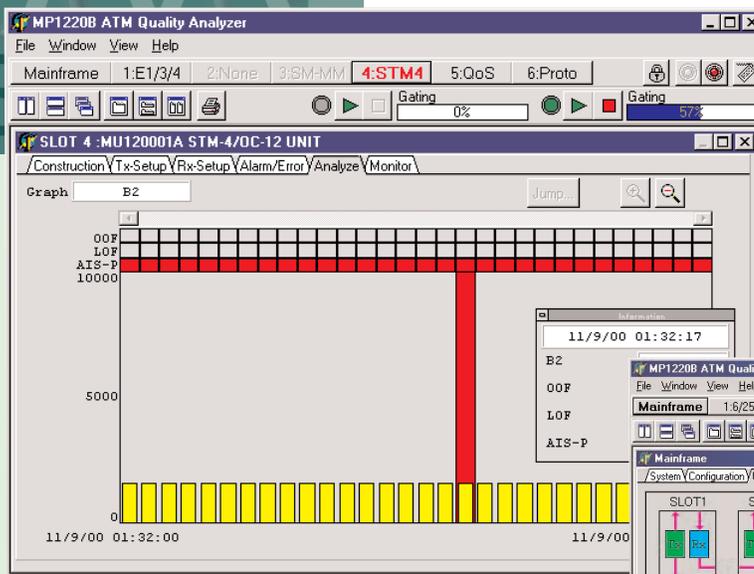
The OAM test cell utilized by the MP1220B QoS unit can be defined for F4 and F5 test flows where both error injection and detection can be realized.

ATM Scalability

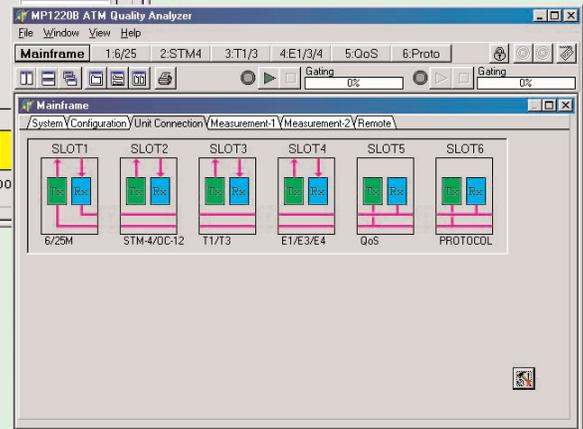
Unlike Local Area Networks, ATM is a networking solution which has guaranteed QoS adherence regardless of the geographical size of the network. Whether the network is local or global, the network test methodology is exactly the same. The measurement data acquired during an ATM performance test will identify topology limitations and data capacities of the network under test.

The MP1220B Architectural Features

The MP1220B Mainframe unit is constructed to mirror the three layers of the ATM model as defined by the ATM Forum. The six slot chassis allocates lower numbered slots for optional physical layer I/O units while upper slots are reserved for optional traffic and protocol units. Multiple channel traffic generation and testing is handled by the QoS option unit while ATM - AAL protocol is handled by the protocol option unit. Further, the chassis architecture can be software controlled to split the mainframe into two test units, each with a different physical layer.



Injecting and monitoring for error or alarm status of an optical network can be done using the STM4 option unit.



ATMQA[®] mainframe configuration software defines the flow of data across the option units contained in the mainframe chassis.

This division of the mainframe into two distinct ATM test units allows the MP1220B to test both a low speed line interface and a high speed line interface located on an ATM switch. Both line interfaces can be tested at the same time. The architectural features of the MP1220B makes it an ideal testing solution for resolving a variety of complex network test problems involving switches, routers and multiplexers. The MP1220B physical interface option units enable testing of a wide variety of line speeds and data framing options. The software used to set up and control each of the physical interface option units utilizes a similar option set so that changing an interface does not require learning a new setup menu.

Physical Interfaces

The current physical interface option units supported by the MP1220B are:

- T1/T3
- E1/E3/E4
- 6.3/25 Mbps
- OC-1/OC-3/OC-12 SONET and SDH
- Multimode OC-3/OC-12 SONET and SDH
- Category 5 Twisted Pair - 155Mbps

Errors and alarms recommended by the ATM Forum as well as Telcordia (formerly Bellcore) can be injected and detected by each of the physical interface option units.

Error and alarm statistics can be graphically displayed to give accurate framing or data error counts. For optical media, SONET and SDH overhead frames and pointers can be monitored for accurate descriptions of concatenated data channels. All of the MP1220B interfaces allow for error and alarm insertion.



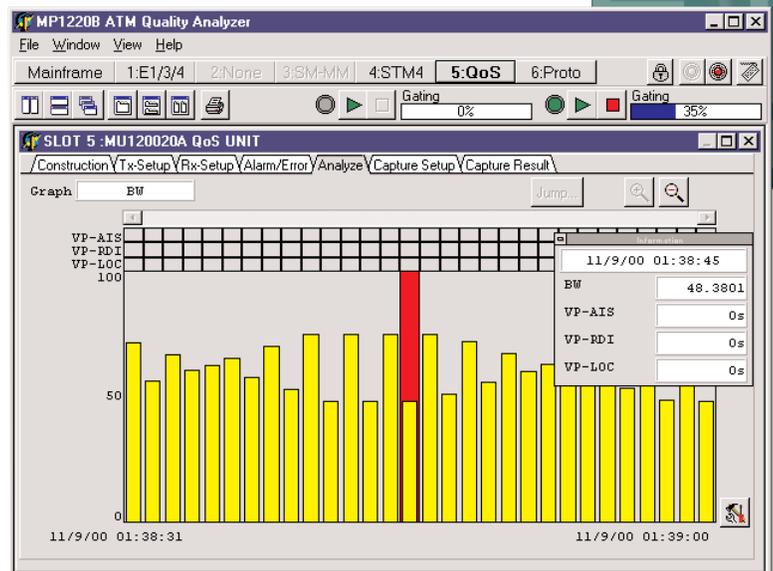
QoS Option Unit

The QoS option unit of the MP1220B is used for traffic generation and network congestion monitoring of an ATM Network. Once the physical interfaces are well defined and operational, data traffic load testing is used to test network throughput and delivery issues. Foreground test cells are used to focus on specific performance issues related to traffic control, shaping and policing. Background cells are utilized as ambient, steady state traffic flows which can impede the progress of foreground test cells. Both the foreground and background cells can have user defined traffic patterns assignments which dynamically load the network during a QoS test. The traffic patterns available on the MP1220B are:

| Test Cell Type | Traffic Type |
|--|---|
| <input type="checkbox"/> ITU-0.191 Cell | <input type="checkbox"/> CBR - Constant Bit Rate |
| <input type="checkbox"/> ITU-Extended 0.191 Cell | <input type="checkbox"/> Burst |
| <input type="checkbox"/> OAM Cell | <input type="checkbox"/> Sawtooth |
| <input type="checkbox"/> AAL1 Cell | <input type="checkbox"/> CBR with Cell Delay |
| <input type="checkbox"/> AAL3/4 Cell | <input type="checkbox"/> VBR - Variable Bit Rate |
| <input type="checkbox"/> User Defined Cells | <input type="checkbox"/> Poisson |
| | <input type="checkbox"/> Manual - User Programmed |
| | <input type="checkbox"/> External Triggered |
| | <input type="checkbox"/> CBR with UPC (Usage Parameter Control) |

Measuring ATM network quality of service means more than checking for line loss errors or analyzing aggregate traffic conditions. The MP1220B allows for real time testing of traffic flow through a network.

Real time testing for traffic flow and congestion can yield important network routing performance information on either the up-link or down-link side of network equipment.



The QoS analysis can reveal traffic flow patterns in real time which cannot be detected utilizing network equipment aggregate data.





By injecting test cells over an operational network, operational performance characteristics can be extracted from the network that give important information on data transfer delay and switching times. The MP1220B is an important and necessary network tool that can detect ATM traffic flow problems while they are still controllable.

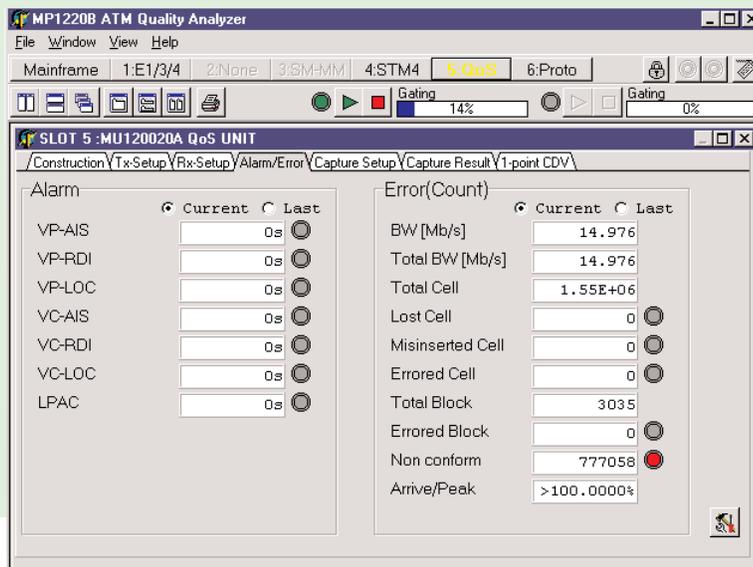
Remote Control Capabilities

The MP1220B is an ideal testing solution for both local and remotely controlled test applications. The software suite is completely self contained and can be operated efficiently from the front touch-screen, through its GPIB or RS232 interface, or over an attached Ethernet network connection. This unique capability is ideal for operations centers which rely on real time traffic reporting of network performance.

Protocol Design

Detecting traffic congestion or line loss still only represents the diagnostic test capabilities of the MP1220B. In addition to powerful detection capabilities, the protocol suite offers the flexibility to inject format specific data flows which can be used to diagnose the equipment within the network.

Protocol testing for ATM Adaption Layers 1, 3/4, and 5 (AAL1, 3/4, and 5) performance is handled quickly using the MP1220B editing tools. The MP1220B protocol options include software capabilities to generate ATM cell types for voice, video and data traffic types. Guaranteed Frame Rate (GFR) can be tested easily when using the MP1220B editor to create a frame of ATM cells. Access to ATM cell payloads, the Common Part Convergence Sublayer (CPCS) trailer, cell and frame length indicators, Sequence Number (SN) and other protocol specific attributes is obtained through the AAL Editor.



Non-conforming ATM Cell which exceed the bandwidth allocation of the GCR Algorithm can be detected by the MP1220B.



| Mainframe | Description | Accessories (continued) | |
|--------------|--|-------------------------|--|
| MP1220B | Mainframe including: Protocol and Call Setup Utility Software Easytest and Remote Control Software GPIB and Electronic user Manuals | J0796A | ST Connector |
| | | J0796B | DIN Connector |
| | | J0796C | SC Connector |
| | | J0796D | HMS-10A Connector |
| | | J0796E | FC Connector |
| | | J0844A | ISO 10173 Cable (T1-RJ48X), 2 meter |
| Option Units | Description | | |
| MU120001A | STM-4/OC-12 Unit | J0838A | UTP Category 3 Cable, 2 meter |
| MU120010A | T1/T3 Unit | Z0319A | PS/2 Mouse |
| MU120011A | E1/E3/E4 Unit | Z0340A | Protective Cover Keyboard |
| MU120017A | 25M/6.3M Unit | Z0343A | Input Stylus |
| MU120020A | QoS Unit | Z0345A | Accessory Bag |
| MU120021A | Protocol Unit | J0747B | 10db Attenuator Single Mode FC-SPC (Both Ends) |
| MU120030A | OC-12 SM to MM Unit | J0747C | 15db Attenuator Single Mode FC-SPC (Both Ends) |
| MU120031A | OC-3 SM to Cat5 TP | J0747D | 20db Attenuator Single Mode FC-SPC (Both Ends) |
| Accessories | Description | | |
| B0414A | Hard Case | J1063 | Fiber Attenuation Cable Set for MU120030A |
| B0163A | Soft Case | J1064 | T1 RJ48X - Bantam Cable - 2M |
| J0008 | GPIB Cable, 2 meter | J1065 | Fiber Attenuation Cable Set for MU120031A |
| J0775D | Coax Cable, 2 meter, 75 ohm | B0474 | Universal 19"/23" Rack Mount Kit |
| J0776D | Coax Cable, 2 meter, 50 ohm | | |
| J0635B | Optical Fiber Cable, 2 meter (FC-PC) | | |
| J0660B | Optical Fiber Cable, 2 meter (SC-PC) | | |



ANRITSU COMPANY
1155 East Collins Boulevard
Richardson, TX 75081

<http://www.us.anritsu.com>

SALES & SUPPORT

UNITED STATES

Tel: 1-800-ANRITSU
Fax: 972-671-1877

CANADA

Tel: 1-800-ANRITSU
Fax: 613-828-5400

SOUTH AMERICA

Tel: 55-21-527-6922
Fax: 55-21-537-1456

JAPAN

Tel: 81-3-3446-1111
Fax: 81-3-3442-0235

ASIA-PACIFIC

Tel: 65-282-2400
Fax: 65-282-2533

EUROPE

Tel: 44-1582-433200
Fax: 44-1582-731303

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