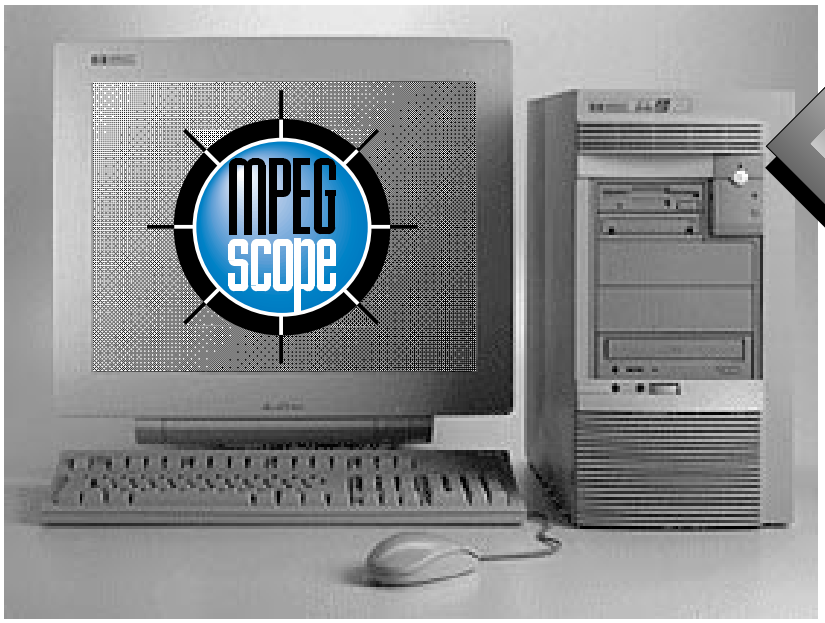
HEWLETT PACKARD

E6277A MPEGscope



The Complete Real-Time Testing Solution for MPEG-2, DVB and ATSC System Development and Qualification

The E6277A MPEGscope, combined with HP's growing family of targeted test applications and solutions, offers an ideal platform for qualification and debugging the full range of DV network components, including encoders, servers and multiplexers.

Today, network equipment designers, systems planners and broadcast engineers are creating, trialing and evaluating the components and transmission networks that will deliver the next generation of digital video services over satellite, cable and terrestrial links. But, each phase of development and qualification requires new testing capabilities and applications to ensure conformance to applicable standards and interoperability between equipment. That's why HP has developed the most powerful, flexible and extensible platform for MPEG-2 DVB testing available in the industry: the E6277A MPEGscope.

- Sophisticated Generation and Capture of Transport Streams – at Speeds up to 60 Mbp/s
- Real-time Measurement and Monitoring including ETR-290 Health Checks, PID Bandwidth and PCR Jitter
- Trigger-Based Capture of TS Errors
- Complete MPEG-2 TS and PES Packet and Table Decoding
- DVB and ATSC Electronic Program Guide Table Decoding
- Modular Architecture Supports Multiple Interfaces (SPI Included) and Upgradeable Equipment-Specific Testing Applications

The E6277A MPEGscope offers the complete array of capture, generation and analysis tools required for fast, successful development and testing of network components for DVB, ATSC and other MPEG-2 Transport Stream-based implementations. Its advanced features include:

- Capture, storage and analysis of Transport Streams at speeds up to 60 Mbp/s
- Real-time Transport Stream and bit error rate analysis
- Easy playback of recorded Transport Streams and Compliance Streams
- Sophisticated Editor/Composer for editing, mapping and multiplexing test Transport Streams (Available Fall, 1997)
- Electronic Program Guide Table decoding for DVB and ATSC systems
- Trigger-based error captures on up to 8,192 simultaneous PIDs
- Modular architecture for easy extensibility and software-only upgradeability
- Simple, intuitive operation using a Windows-based graphical user interface that highlights errors and presents complex tabular data in easy-to-view hierarchical displays.

The E6277A MPEGscope-developed by HP in close cooperation with customers working at the forefront of the digital video revolution-is a streamer/recorder/protocol analyzer that combines real-time functionality with specific applications targeted directly at the needs of research-and-development engineers working in the lab and in the field, such as encoder testing. It is specifically designed to speed the process of verifying and debugging the full range of digital video transmission and distribution components, including encoders, video servers, multiplexers, remultiplexers and set-top boxes.

Real-Time Transport Stream and Bit Error Rate Analysis

Real-world conditions seldom allow time for the delays inherent in off-line measurement and cumbersome post-processing evaluation of MPEG–2 and DVB performance data. The E6277A MPEGscope is designed to perform the entire range of Transport Stream error checking and bit error rate testing in real time, eliminating the need to waste valuable minutes storing data and then running post-analysis tests. The E6277A MPEGscope instantaneously provides results that would take other testers minutes or even hours to deliver.

The system can be easily configured to automatically trigger captures based on specific events or errors or impairments in the Transport Stream, as specified in ETR-290, and capture and store up to 9 Gbytes of Transport Stream traffic (10 minutes of compressed video at 60 Mbp/s), facilitating problem isolation and troubleshooting.

Real-time measurements that the E6277A MPEGscope displays include: TSP bit error rate; PCR jitter and interval; PID bandwidth utilization; and T-STD buffer compliance. The system also checks the Transport Stream for errors (as defined in ETR-290) and checks for missing or unexpected PIDs-all in real time.

Another significant benefit of the test set is its ability to monitor a Transport Stream over an extended period of time-for example, to examine the stability of an implementation. The E6277A MPEGscope's real-time measurement and result-logging capabilities allow the monitoring of a Transport Stream, without interruption, over an extended time period, facilitating identification of intermittent problems.

Sophisticated Capture, Editing and Generation of Recorded Transport Streams and Compliance Streams

The generator function of the E6277A MPEGscope makes it simple to replay captured Transport Streams to re-create identical test environments or scenarios-repeatedly, if necessary-so that the user can isolate the source of a problem.

HP will deliver Stream Editor/Composer enhancements that allow users to edit captured TS data, or build entire Transport Streams from Elementary Streams that have been previously captured or are loaded from files. All tables can be accessed for editing and/or error insertion. These enhancements will be available in Fall, 1997.

The E6277A MPEGscope also supports the insertion of Pseudo Random Binary Sequences into TS packet payloads (either immediately after the synch bite or instead of a PID payload).

Electronic Program Guide Table Decoding for DVB and ATSC Systems

The MPEGscope can automatically decode Program Guide tables, and graphically display the service information contained in the tables, in a hierarchical, level-by-level display that significantly simplifies the fault-isolation process.

The data capture capabilities of the E6277A MPEGscope are complemented by a complete array of analysis tools:

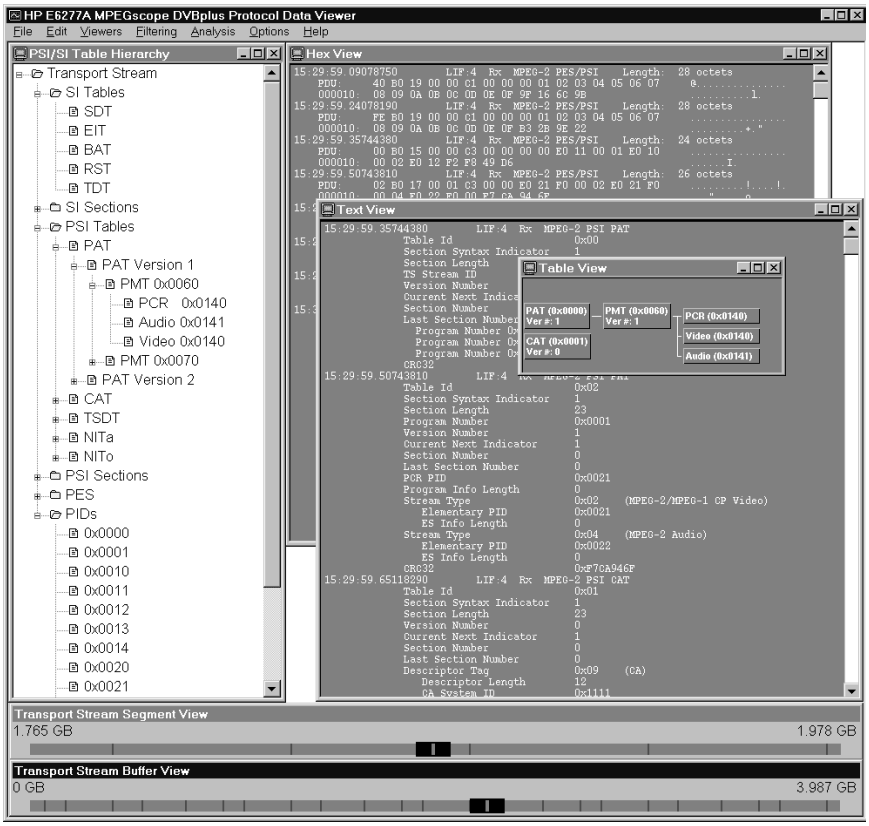
- In-Depth Protocol Analysis

  Detailed protocol analysis of all fields of the Transport Stream packets, PES headers, MPEG-2 PSI tables, DVB and ATSC SI

tables and multiplex structure deliver the in-depth protocol analysis users require to verify and troubleshoot all their implementations. The protocol syntax error checking and highlighting features of the E6277A MPEGscope significantly simplify testing of MPEG-2 protocol implementations. Automated compliance checking features view TS and PSI table syntax automatically,and display errors and potential problems.

- Comprehensive Filtering Capabilities

  The E6277A MPEGscope eliminates the need to search through megabytes of irrelevant data in order to locate a specific event. A unique navigation and filter mechanism allows the display of only the relevant data. For example, a user who wishes to look at the TS packets that were carrying a PSI program association table under investigation can extract only those packets and display the actual PAT table content, while at the same time analyzing the TS packets carrying the tables. Irrelevant information is filtered out, eliminating the time required to review large volumes of extraneous data.



"Point and click" navigational tools, and clear, hierarchical screen layouts provide simplified access to complete table decodes, and allow users to "zoom" in on key data for easy analysis.

Modular Architecture for Extensibility and Upgradeability

The highly flexible modular architecture of the E6277A MPEGscope is designed to permit users to meet future requirements or add new applications. This eliminates the need to purchase new equipment as users' testing requirements change. Both the software and the firmware can be upgraded via the built-in CD-ROM drive. The system also allows for multiple line interface support, and the addition of new interface cards, such as ASI and QAM. (The product is initially configured with a standard SPI interface.)

The active interface can be changed from the SW application without any swapping of HW modules.

Simple, Intuitive Operation Using a Windows-based Graphical Interface

The E6277A MPEGscope–configured as a Pentium tower PC running Windows NT 4.0 for easy network interconnection-is designed for simple, intuitive operation in the lab or in the field. The intuitive Windows-based graphical user interface makes it possible to perform all system functions using familiar point-and-click commands. Clear, hierarchical screen setups and navigational aids simplify the process of reviewing complex table structures. Detailed on-line help and automated reference tools provide pointers to related technical specifications and definitions within each analysis area, and even describe possible sources or causes for problems that are detected.

For years, research–and–development engineers in virtually every area of the communications industry have come to rely on HP for the test and measurement tools to support the introduction of new technologies and services. Now, HP is leading the way in MPEG-2 digital video test systems, with tools and instruments that can help you meet the time–to–market challenge.

Configuration

The E6277A MPEGscope is completely self-contained and comes installed in a personal computer chassis supporting the SPI interface. Access to the clock and data connectors is via the rear of the PC. All software is pre-installed on the system.

As backup media for the application software and for captured data files, a DAT drive with 12 Gigabyte capacity can be ordered as an option.

Future interfaces can be ordered as retrofittable options.

Applicable Standards

Portions of the following standards are relevant to the E6277A MPEGscope.

- ETA 290 / Draft MG-66 Rev. 6
- ISO/IEC 11172-2: 1993
- ISO/IEC 11172-3: 1993
- ISO/IEC 13818-1
- ISO/IEC 13818-2
- ISO/IEC 13818-3
- ISO/IEC 13818-4
- ISO/IEC 13818-9
- ATSC AS/Q

Ordering Information

E6277A	MPEGscope
E6277A #010	Video Elementary Stream Compression Analyzer
E6277A #020	12 Gigabyte DAT drive for backup and capture storage
E6277A #100	Upgrade from E6276A to E6277A
E6277A #077	Transit Case

For more information on Hewlett-Packard Test & Measurement products, publications or services, please call your local Hewlett-Packard sales office. A current listing is available via Web through AccessHP at http://www.hp.com. If you do not have access to the internet, please contact one of the HP centers listed here and they will direct you to your nearest HP representative.

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