



Quality Explorer™ DVQ-B1

Comprehensive quality and MPEG2 elementary stream analysis

- Comprehensive content analysis of MPEG2-coded video elementary streams of any format
- Automatic detection of coding errors
- Logging of quality parameters with graphical display and storage to data media
- Clear presentation of analysis results
- User-friendly operation
- Installation under Windows 95/98/NT
- Usage without DVQ



ROHDE & SCHWARZ

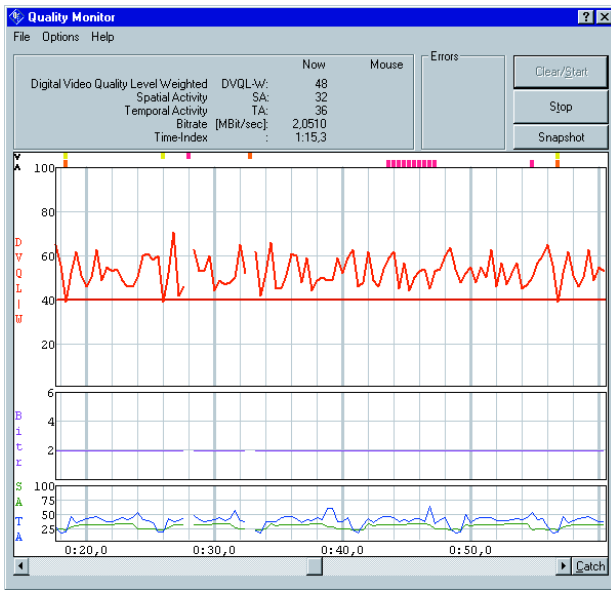


Fig. 1: Quality Monitor for real-time logging and graphical display of quality data determined by DVQ

Alternatively, elementary streams available in the form of PC files can be analyzed. Therefore, Quality Explorer™ can be used on other instrument platforms without the DVQ.

Full remote control of DVQ is provided by a library routine (DLL) supplied with the software and the Quality Monitor's user interface.

The software runs under Windows 95/98 or Windows NT on any PC or laptop connected to the DVQ via an RS232 interface or network (10BaseT) interface. The easy-to-operate software, as well as the clear presentation of the analysis results in windows of variable size, ensure speed and success right from the start.

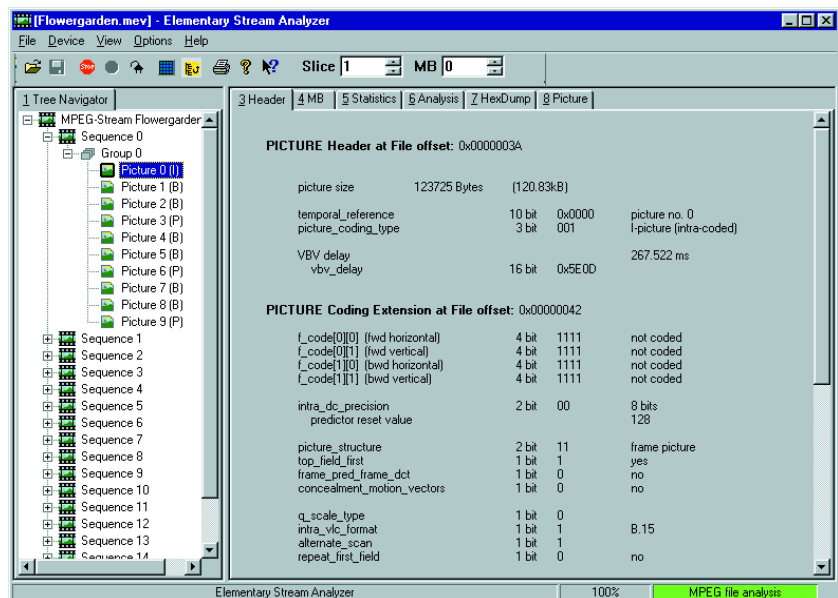
Quality Explorer™ DVQ-B1 from Rohde&Schwarz is a software package that performs comprehensive analysis on MPEG2-coded transport streams. It can be used either on an external PC connected to DVQ or fully independently of DVQ for elementary stream analysis from data media (eg hard disk, CD-ROM).

DVQ-B1 comprises two independent tools:

The **Quality Monitor** reads the quality parameters provided by the Digital Video Quality Analyzer DVQ in real time via the remote-control interface. It displays the quality levels graphically as a histogram. Archiving on data storage media is also possible.

The **Elementary Stream Analyzer** analyzes the content of MPEG2-coded video elementary streams. For this purpose DVQ has a 32 Mbit internal buffer memory for the elementary stream to be analyzed. The elementary stream buffered in DVQ can also be stored as a PC file.

Fig. 2: Clear display of header information with Elementary Stream Analyzer, in Fig. illustrated by picture header



Quality Monitor

The following quality levels determined by DVQ are simultaneously displayed as a graph over time (Fig. 1):

- Spatial activity (SA)
- Temporal activity (TA)
- Data rate ("Bitr") in Mbit/s
- Subjective quality level DVQL-W (digital video quality level weighted) to SSCQE

The colours of each line are user-selectable. Also, distortions such as picture freeze, picture and audio loss or loss of sync are shown by different colour labels above the diagram.

The diagram itself shows only a limited section of the read-out data. If the recording period is increased, the displayed time section can be varied using the horizontal slider as and when required.

While displayed on the screen, all results can be stored to data media, eg hard disk. Data are output in the universal *.CSV format (comma separated values) making further processing with commercial word processing and spread-sheet software packages extremely easy.

Elementary Stream Analyzer

Video elementary streams are analyzed in conformance with the guidelines laid down by the Motion Picture Experts Group in the MPEG2 standard. All aspect ratios, picture frequencies and formats stipulated in the standard can be analyzed.

Coding errors are clearly marked at the appropriate position. The user is alerted by a red bar in the status bar at the bottom of the window.

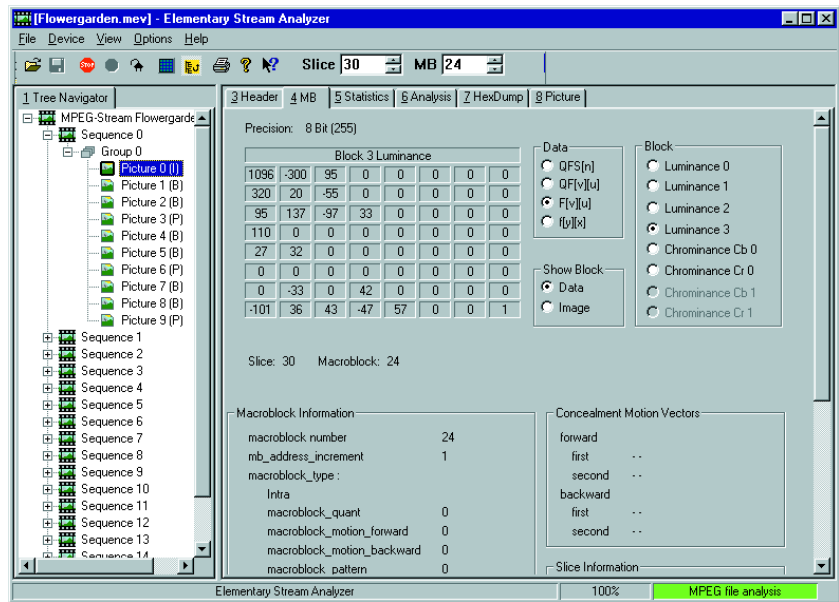


Fig. 3: Comprehensive display of all macroblock data satisfies any information requirement

The graphical user interface comprises two clearly arranged windows which can be varied in size. The following display modes are available:

Tree navigator

The whole of the elementary stream content is displayed as a tree. The order of the individual pictures in the tree is selectable: coding/transmission or original sequence.

This display and one other display mode are always simultaneously available (Figs 2 and 3).

Header

The header and extension information of the following elementary stream elements are sorted and displayed in an interpreted form:

- Sequence:
 - header
 - extension
 - display extension
 - scalable extension
- Group of pictures header

- Picture (as shown in Fig. 2):
 - header
 - coding extension
 - quant matrix extension
 - display extension
 - spatial scalable extension
 - temporal scalable extension
 - copyright

MB (macroblock)

Displaying all data in a selected luminance or chrominance block (Fig. 3):

- All coefficients from coded, quantized form (QFS) in the frequency domain back to the time domain ($f(x,y)$)
- Quantization table used
- Slice information
- Motion vectors (with predicted blocks)

There are two ways of selecting the macroblock: Either by numeric entry in two fields of the toolbar or by mouse-clicking a separate window in which the decoded picture is automatically displayed in the background (Fig. 4).

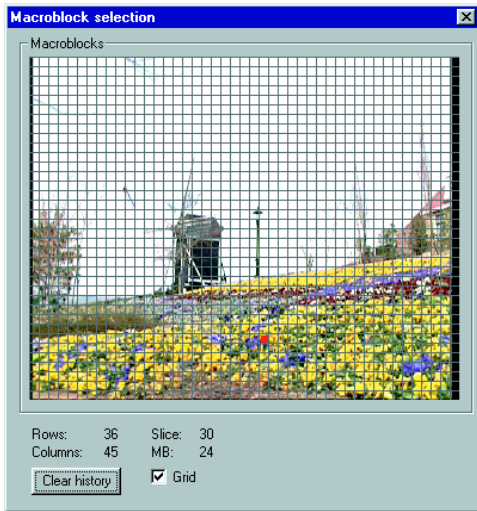


Fig. 4: Extremely simple, direct graphical selection of macroblock in decoded picture

- Value of the DC coefficient (averaged luminance)
- Number of bits used per macroblock
- Number of coded blocks per macroblock
- Type of macroblock
- Number of motion vectors per macroblock
- Motion vectors (Fig. 5)

There are two different display modes:

- Squares of differing brightness correctly positioned at the picture level (exception: motion vectors represented as arrows of different lengths pointing in the correct direction, Fig. 5)
- Distribution in the form of a histogram

Statistics

Further statistics about the four luminance blocks of the previously selected macroblock can be displayed here.

Analysis

Shows the distribution of the following features of individual macroblocks over a picture and analyzed according to:

HexDump

Display of the raw values of the selected header and macroblock in hexadecimal notation.

Picture

Display of decoded content for I-, P- and B-coded pictures (title photo).

Fig. 5: Display of motion vectors of predicted frames (B and P), overlaid on decoded picture



Specifications

Elementary Stream Analyzer

MPEG2 formats	
Profile	MP (main profile 4:2:0) 422P (4:2:2 profile)
Aspect ratios	any, eg 4:3, 14:9, 16:9
Picture formats	any SDTV & HDTV

System requirements

PC or laptop with Pentium processor (Pentium II with 266 MHz clock frequency recommended, min. Pentium I with 100 MHz), Windows 95/98 or Windows NT operating system, min. 16 Mbyte RAM (Windows NT: 32 Mbyte), required memory on hard disk approx. 20 Mbyte, 1 free serial RS232 interface (recommended data rate 115 kbit/s) or 1 free 10BaseT-network interface, CD-ROM drive, 1 parallel printer interface

Ordering information

Quality Explorer™	DVQ-B1	2079.7151.02
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Equipment supplied

CD-ROM with setup program, serial cable for connecting DVQ to the PC, dongle for the parallel printer output of the PC, manual



Applications

The Quality Monitor is ideal for expanding the capabilities of the DVQ. The DVQ's built-in display and the OSD in the decoded video picture provide only a limited resolution for displaying the quality levels.

Whenever it is essential to determine, record, store and analyze parameters over long periods of time, the Quality Monitor of Quality Explorer™ is the ideal choice. Without any complex application-specific programming, the quality data determined by DVQ can be made available in any form on any PC platform for convenient analysis.

The Elementary Stream Analyzer is an indispensable tool when video coding and its effect on picture quality has to be investigated. First and foremost, this means development and design but also MPEG2 video encoder applications.

The Elementary Stream Analyzer can localize even the smallest coding detail in a minimum of time and perform value and correctness checks – and all this in a repeatable, transparent and clear way. Moreover, comprehensive statistics can be generated at the macroblock and picture level. This makes it possible to detect further MPEG2 coding trends as well.

Fax Reply (Quality Explorer™ DVQ-B1)

- Please send me an offer
- I would like a demo
- Please call me
- I would like to receive your free-of-charge CD-ROM catalogs
- I would like to receive your free-of-charge CD-ROM
DTV Dream Team with demo of Stream Combiner™,
Stream Explorer™ and Quality Explorer™

Others: _____

Name: _____
Company/Department: _____
Position: _____
Address: _____

Country: _____
Telephone: _____
Fax: _____
E-mail: _____

