

quantumdata™ 980

HDMI 2.0 Protocol Analyzer Module

Deep Analysis and Compliance Testing up to 600MHz



Key Features

- Captures and decodes metadata, control data, protocol data, data islands, InfoFrames and auxiliary channel data up to 600 MHz
- Captured data presented graphically in Event Plot and in Data Decode Table; searching and filtering data are supported
- Captures video frames and timing data over multiple frames
- Provides log of auxiliary channels such as display data channel for monitoring HDCP (including HDCP 2.2) and EDID transactions
- Provides real time view of incoming video and metadata
- Supports various HDMI 2.0 source compliance tests
- **NEW!** Supports UHD Alliance source compliance tests

The Teledyne LeCroy quantumdata 980 HDMI 2.0 Protocol Analyzer module is equipped with an HDMI Rx port operating up to 600 MHz. The HDMI Rx analyzer port provides full visibility into the HDMI video, protocol, metadata, timing, control and auxiliary data. The module supports analysis and compliance testing of Ultra HD HDMI source devices. The 980 HDMI Protocol Analyzer module operates at TMDS clock rates up to 600 MHz to support analysis and HDMI 2.0 compliance testing of Ultra HD capable source devices.

Deep Analysis

The 600 MHz 980 HDMI 2.0 Protocol Analyzer module provides the deep analysis and compliance test features necessary to enable you to get your product to market more quickly and with reduced expense. Deep analysis enables you to identify and resolve interoperability problems early in the product life cycle. Unlike competing analyzers for HDMI protocol testing, the 980 captures all protocol data, data islands and control packets with accurate timestamps.

Compliance Testing

The 980 HDMI 2.0 Protocol Analyzer also supports HDMI 2.0 compliance tests and UHD Alliance compliance tests for source devices.

Operation

The 980 HDMI 2.0 Protocol Analyzer module operates in one of two modes: 1) Capture and Store or 2) Real Time Monitoring. In the Capture and Store mode, the 980 HDMI 2.0 Protocol Analyzer captures and decodes encrypted or unencrypted metadata (protocol data, audio sample, InfoFrames and other data islands) as well as HDMI DDC transactions and HDMI CEC messages. Once the data is captured, the 980 Manager presents the data in an easy to understand way through its GUI graphical user interface.

The 980 HDMI 2.0 Protocol Analyzer module can be equipped in either the 980B or 980R Advanced Test Platform.

CAPTURE/DECODE AND REAL TIME ANALYSIS

Capture and Decode

The 980 HDMI 2.0 Protocol Analyzer captures and decodes incoming encrypted or unencrypted metadata (protocol data, audio samples, InfoFrames, data islands, DDC channel etc.) from a source up to 600 MHz pixel rate. The captured data enables you to identify and resolve interoperability problems early in the product life cycle. Unlike competing analyzers for the 980 HDMI 2.0 analyzer module captures *all* protocol data, data islands and control packets with accurate timestamps.

980 with HDMI 2.0 Protocol Analyzer module

HDMI Source



Test Setup for Source Test

Real Time Analysis

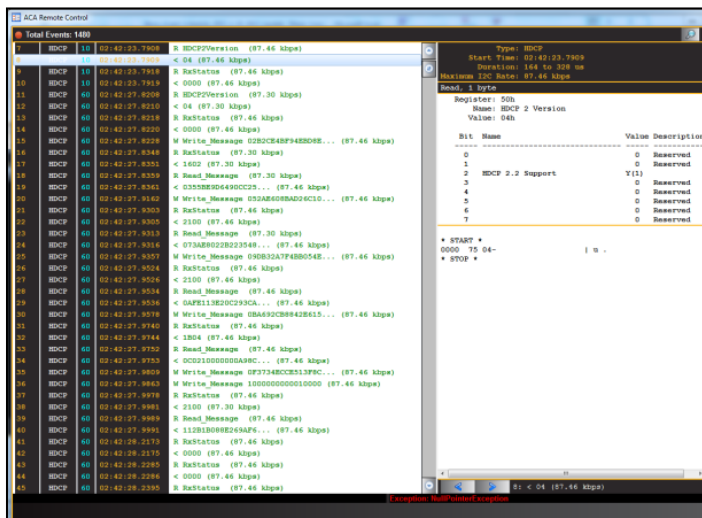
The 980 HDMI 2.0 Protocol Analyzer's Real Time analysis feature enables you to monitor the incoming video and metadata, data islands and Info-Frames including High Dynamic Range InfoFrames. A status bar provides an at-a-glance view of the essential incoming video parameters.

Timing & Video Analysis

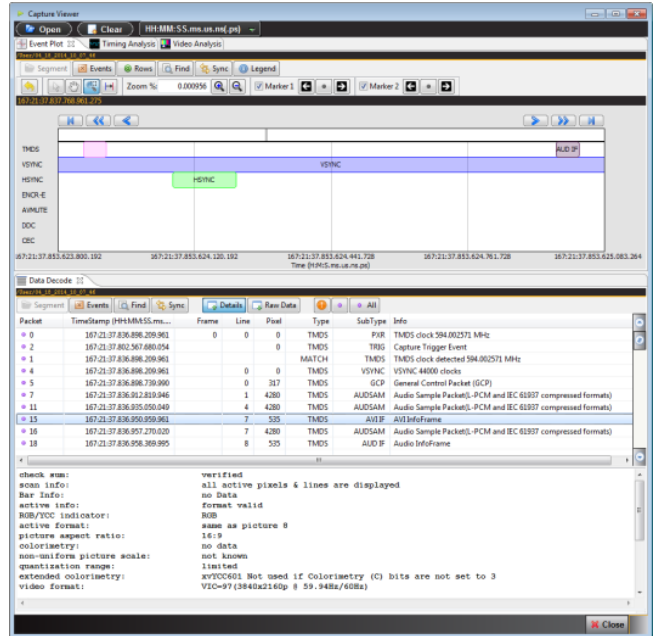
The capture and decode feature also captures video frames and timing data. You can apply a filter to capture only timing data in order to catch intermittent timing anomalies.

Aux Channel Analyzer

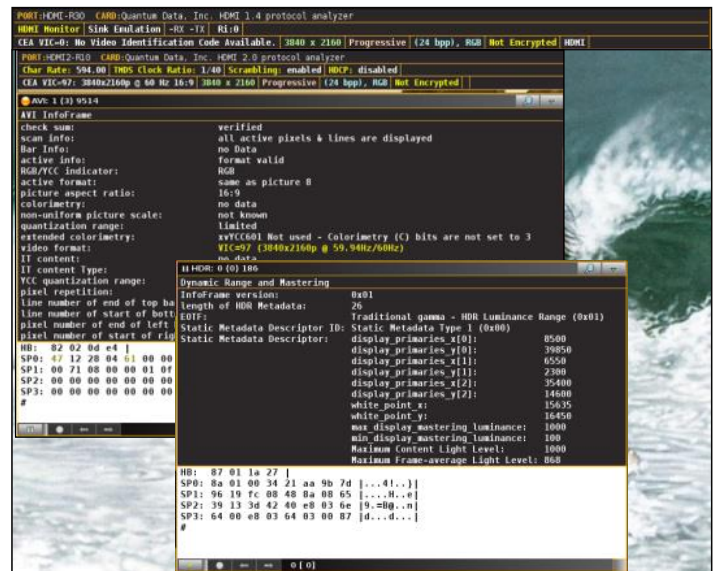
You can use the 980 HDMI Protocol Analyzer to monitor the HDCP (including HDCP 2.2) and EDID transactions occurring over the HDMI DDC channel. You can also monitor CEC messages over the CEC bus.



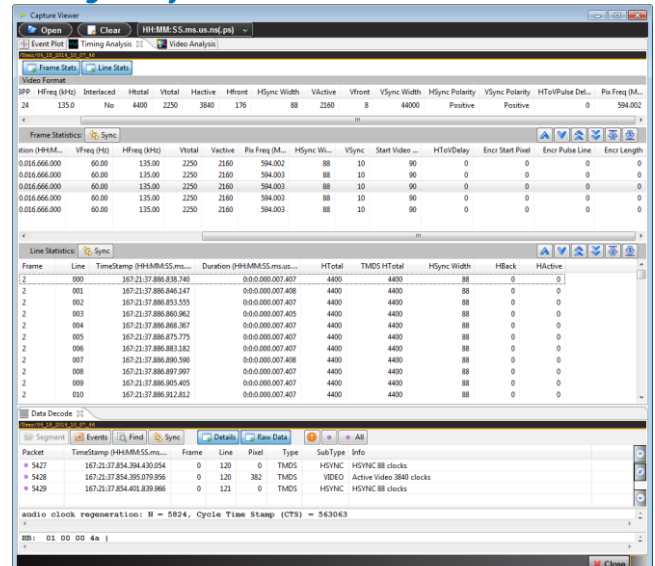
Capture and Decode



Real Time mode with video & InfoFrames



Timing Analysis

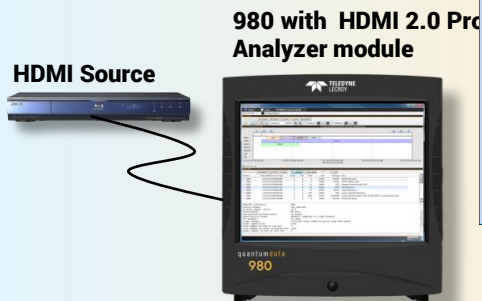


COMPLIANCE TEST FEATURES

Compliance Testing

The 980 compliance tests are ideal for pre-testing your product prior to submission to an Authorized Test Center for approval. Pre-testing provides added assurance that your product will pass at the ATC when submitted.

The compliance tests enable you to view the captured data (for sources) and detailed test results which help pinpoint the cause of compliance test failures.



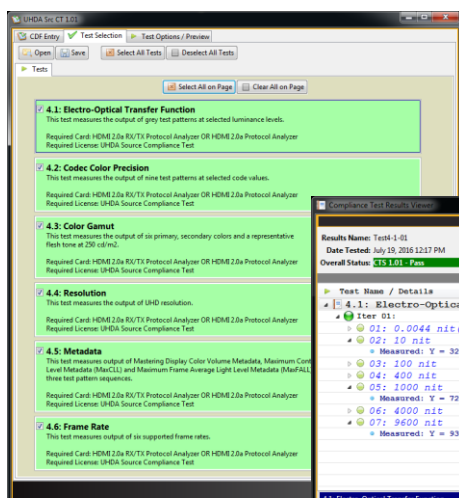
980 with HDMI 2.0 Protocol Analyzer module

Test Setup for Source Compliance Tests

NEW! UHDA Compliance Test

The 980 HDMI Protocol Analyzer supports the UHD Alliance compliance tests.

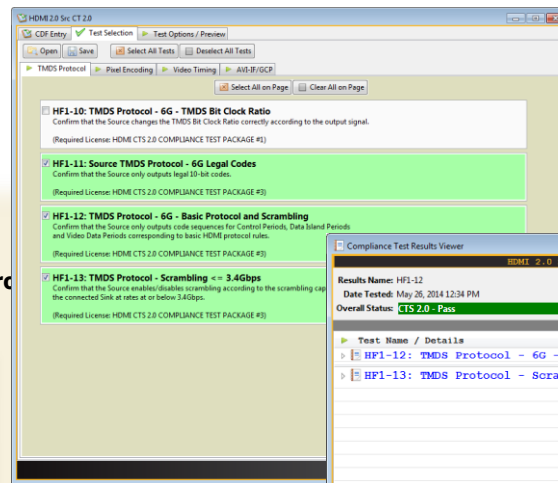
UHDA Source Compliance Test Selection



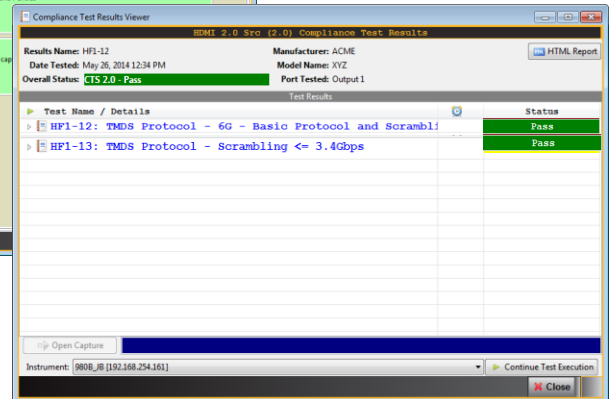
HDMI 2.0 Compliance Tests

The 980 HDMI Protocol Analyzer supports various HDMI 2.0 source compliance tests (MOIs) for Sections 7.2 through 7.7, 7.12 and 9.7 for sources.

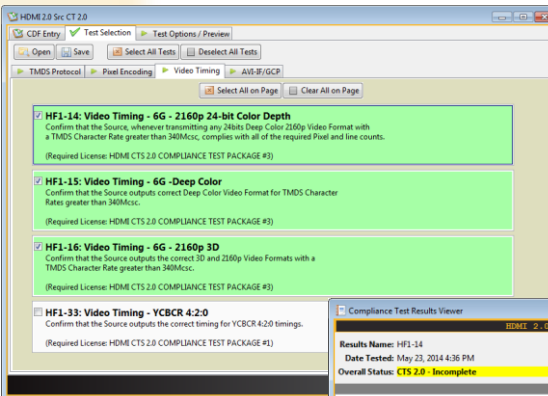
HDMI 2.0 Source Compliance – Test Selection



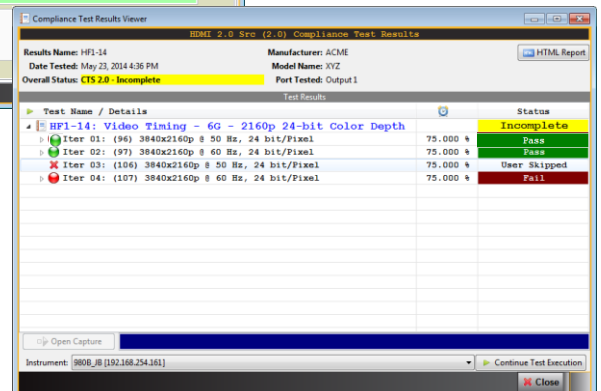
Test Results HDMI 2.0 Source Compliance



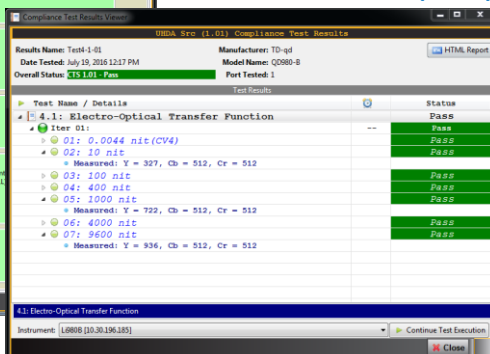
HDMI 2.0 Source Compliance – Test Selection



Test Results HDMI 2.0 Source Compliance



UHDA Source Compliance Test Results (EOTF)



SPECIFICATIONS

HDMI Rx Port

| | |
|----------------------|---|
| Version | HDMI 2.0a |
| Standard Formats | VESA, CEA |
| Connector | Rx Type A Tx Type A |
| Protocol | HDMI, DVI |
| Video Colorimetry | ITU-R BT.601-5, ITU-R BT.709-5, BT.2020 |
| Video Max Pixel Rate | 600MHz (6.00 Gbps/channel TMDS rate) |
| Color Depths | 8, 10, 12 bits |
| Video Encoding | RGB, YCbCr |
| Video Sampling Modes | 4:4:4, 4:2:2, 4:2:0 |
| HDCP | Versions 1.4 & 2.2 |
| Capture memory | 4 GBytes |

Compliance Test Support

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|---------------------|---|
| HDMI 2.0 Source | Various tests in Sections: 7.2 TMDS Protocol; 7.3 Pixel Encoding; 7.4 Video Timing; 7.7 AVI InfoFrame; 7.12 High Dynamic Range InfoFrame; 9.7 Repeater Output HDR |
| UHD Alliance Source | Test IDs: 4-1, 4-2, 4-3, 4-4, 4-5, 4-6 |

Options

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|---------------------------|--|
| HDMI Aux Channel Analyzer | Monitor HDMI DDC transactions and CEC message in real time |
| Compliance Test Package | See list in table above |

Aux Connectors

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|----------|--|
| Ethernet | RJ-45 HDMI Ethernet Channel (not currently functional) |
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980 Test Platforms

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|----------------------|--|
| Embedded Display | 980B: 15" diagonal; Resolution: 1024(H); x 768 (V) resolution; 24 bit RGB color. 980R: 7" diagonal: Resolution: 800 (H) x 480 (V); 24 bit RGB color. |
| Power | 90-264 VAC, 47-63Hz |
| Weight | 23.76 LBS; 10.78 Kg |
| Size | 980B: Height: 15.25 in. (38.7 cm) Width: 14.57 in. (36.5 cm) Depth: 6.29 in. (15.9 cm) 980R: Height: 6.29 in. (15.9 cm); Width: 15.25 in. (38.7 cm); Depth: 14.57 in. (36.5 cm) |
| Command Line Control | Ethernet (RJ-45) for external GUI and telnet |
| Environmental | Operating Temp: 32 to 104 (F); 0 to 40 (C) |