

# quantumdata™ M42h 96G Video Analyzer/Generator for HDMI® Testing



## Key Features

- Verify the 16b/18b encoding for Fixed Rate Link (FRL) Packets in both 3 and 4 lane configurations
- Use generator or analyzer in three (3) Lane configuration mode at 3Gbps/6Gbps data rates and four (4) Lane configurations at 6Gbps through 24Gbps (96Gbps aggregate)
- Video generator function supports TMDS and FRL for resolutions up to 8K, 10K and 12K with DCS compression and Optimized Video Timing (OVT) format
- View captured FRL and TMDS data elements graphically in Event Plot and in Data Decode table; use searching and filtering to find data
- View FRL packet mapping into Character Blocks and Character Block mapping into Super Blocks
- Verify Display Stream Compression (DSC) on FRL, DSC capable source or sink devices.
- Run FRL and DSC source/sink compliance tests
- Run eARC the full suite of compliance tests on an eARC Tx or Rx device
- Run TMDS source/sink compliance tests
- Run HDCP 2.3 source, sink & repeater compliance tests
- View TMDS video, protocol, data island, preamble and control elements
- Monitor of FRL Link Training transactions in the Auxiliary Channel Analyzer utility to show SCDC reads and writes over the DDC channel
- Passively monitor DDC channel in TMDS or FRL mode (FRL mode requires custom cable)
- View Lane Error Counts and Reed Solomon Corrections Count in the SCDC CED registers
- Verify the eARC common mode channel on either an eARC Tx or Rx device
- Run Gaming-VRR, FVA and QMS-VRR tests
- Run test automation for compliance tests with API

**Note:** Not all functions listed are fully implemented at this time

The Teledyne Lecroy quantumdata M42h 96Gbps Video Analyzer / Generator for HDMI® testing is a compact, versatile test instrument that can be easily extended from an entry level functional tester with both video analysis and/or video generation functionality to a full certified source and sink compliance tester.

## Analyzer and Generator

The M42h is equipped with both HDMI Tx and Rx ports supporting HDMI 2.2 Fixed Rate Link (FRL) and FEC capture analysis and decode up to 96Gbps (24Gbps/Lane).

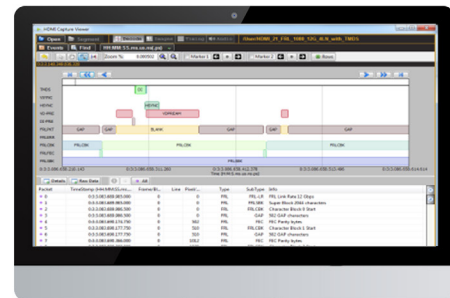
The HDMI Rx analyzer ports provide visibility into the Fixed Rate Link packetization—super blocks, character blocks and FRL packets and underlying TMDS video, protocol, control and metadata elements. The HDMI Tx video generator ports transmit Fixed Rate Link video streams with embedded TMDS video, protocol, control and metadata elements.

The M42h will also support the full suite of FRL, DSC, FEC and TMDS source and sink compliance tests as well as HDCP and Enhanced Audio Return Channel (eARC) compliance testing for both Tx and Rx devices. An extensive Application Programming Interface (API) is supported for automated testing systems available thru a command line interface.

## Operation

The M42h supports video generation and analysis of the FRL and TMDS HDMI data streams through the user-friendly GUI Manager which presents the data in an easy to understand way. The GUI can be controlled either via a laptop connected to the M42h or through a USB keyboard and mouse and a connected UHD HDMI admin display.

### Display for ATP Manager



M42h 96Gbps  
Video Analyzer /  
Generator

### Keyboard and mouse for ATP Manager control



## Specifications

HDMI® Capabilities	
Versions	Up to HDMI 2.2
Standard Formats	CEA, VESA
Protocols	FRL with FEC, DSC; TMDS, HDCP 1.4, HDCP 2.3, eARC
FRL Bit Rates	3Gbps; 6Gbps; 8Gbps; 10Gbps; 12Gbps 16Gbps, 20Gbps, 24Gbps (96Gbps aggregate)
Capture Memory	16 GBytes

Connectors - Front	
HDMI Connectors 48G	In/Rx HDMI Type A; Out/Tx HDMI Type A
HDMI Connectors 96G	In/Rx HDMI Type A; Out/Tx HDMI Type A
USB (2); USB-C (2)	For control with a keyboard and mouse

Connectors - Back	
HDMI - Admin Connector	Admin Connector HDMI Port for M42h ATP Manager for external 4K UHD TV at Admin HDMI port
USB (2); USB-C (2)	For control with a keyboard and mouse
RJ45 E1	For command line control and remote management over a network
RCA (2)	For SPDIF input and output
BNC (2)	Trigger IN / OUT for triggering captures
All other connectors	Not currently used

Physical / Electrical / Admin	
Power	100-240 VAC, 50-60 Hz, 200 Watts
Weight	7.6 LBS; 3.447 Kg
Size	Height: 3.44 in. (8.74 cm) Width: 9.57 in. (24.30 cm) Depth: 10.94 in. (27.79 cm)
Rack Mountable	2 RU mounts in 19-inch rack with rack mounting brackets (provided)
Command Line Control	Ethernet (RJ-45) for external GUI and telnet
GUI Control	Either through External PC connected over LAN to Ethernet RJ45 or Keyboard / mouse connected to USB ports; External 4K UHD TV at Admin HDMI port
Environmental	Operating Temp: 32 to 104 (F); 0 to 40 (C)

## Ordering Information

### Product Description

M42h base System – Includes Video Generation, Basic Analysis, Aux Channel Analyzer

### Product Code

00-00270

### Software Options

Source Enhanced Functional test – Includes Capture Analysis, Gaming Compliance, DSC Functional testing, HDR10+ and Cable ID Compliance and UHDA Compliance Tests

95-00302

Sink Enhanced Functional test – Includes UHDA Patterns, DSC Functional Test, CEC ITE, HDR Patterns & Gaming and Cable ID Compliance Tests

95-00303

FRL and DSC Source compliance tests (req's 95-00302)

95-00304

TMDS Source compliance tests (requires 95-00302)

95-00305

FRL and DSC Sink compliance tests (req's 95-00303)

95-00306

TMDS Sink compliance tests (requires 95-00303)

95-00307

HDCP 2.3 Source compliance (requires 95-00302)

95-00308

HDCP 2.3 Sink compliance (requires 95-00303)

95-00309

eARC Rx functional test

95-00310

eARC Tx functional test

95-00311

eARC Rx compliance tests (required 95-00310)

95-00312

eARC Tx compliance tests (requires 95-00311)

95-00313

**Note:** Not all options will be available with the initial releases of the product.



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