quantumdata™ 780 Series Handheld Test Instruments Overview of Applications

Model 780

TELEDYNE
LECROY
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Preferences
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Video Pattern
Audio Test Tone
Test Sink (Display/TV)
Test Source (DVD/STB)
3D Output
Aux Channel Analyzer
Cable/Repeater Test
Installer Tests
HDMI (YCbCr 4:2:0)
3840x2160 60Hz
Color Bars
780 Handheld Test Instrument for HDMI
with 297MHz for 4K Testing

780 Handheld Test Instrument – Interfaces / Options

780 Rear Edge
without optional ACA board

780 Front Edge

780 Rear Edge
with optional ACA board

780 Handheld Test Instrument – Interfaces / Options

Interfaces:

- HDMI Tx & Rx ports – 165MHz pixel rate.
- VGA output port - RGB and component YCbCr up to 80MHz pixel rate.
- Digital audio – SPDIF/Optical.

Standard Features:

- 4.3 inch touch screen – 480 x 272 resolution.
- Battery-power, convenient size.
- Format and test pattern library, add custom bitmaps.
- Command line control via USB serial.
- Software upgradable.

Options:

- Network Analyzer – Test HDMI protocols and timing on source and sink devices.
- Cable Test – Test HDMI cables and distribution networks.
- Test pattern packs – ISF, THX China Resolution
- Auxiliary Channel Analyzer (emulation) – Monitor HDCP, EDID transactions, hot plug events and CEC messages with source or sink DUT.
- Auxiliary Channel Analyzer (passive) – Monitor HDCP, EDID transactions, hot plug events and CEC messages between multiple source or sink DUTs.

Model 780AH

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3840x2160 60Hz
Color Bars
780A Handheld Test Instrument for HDMI
with 297MHz for 4K Testing

780AH Handheld Test Instrument – Interfaces / Options

780AH Rear Edge without optional ACA board

780AH Front Edge

780AH Rear Edge with optional ACA board

780AH Handheld Test Instrument – Interfaces / Options

Interfaces:

- HDMI Tx & Rx ports – 300MHz pixel rate. **Note**: Supports HDCP 2.2 testing.
- VGA output port - RGB and component YCbCr up to 80MHz pixel rate.
- Digital audio – SPDIF/Optical.

Standard Features:

- 4.3 inch touch screen – 480 x 272 resolution.
- Battery-power, convenient size.
- Format and test pattern library, add custom bitmaps.
- Headphone jack and speakers.
- Command line control via USB serial.
- Software upgradable.

Options:

- Network Analyzer – Test HDMI protocols and timing on source and sink devices.
- Cable Test – Test HDMI cables and HDMI / HDBaseT distribution networks.
- Test pattern packs – ISF, THX China Resolution.
- Auxiliary Channel Analyzer (emulation) – Monitor HDCP, EDID transactions, hot plug events and CEC messages with source or sink DUT.
- Auxiliary Channel Analyzer (passive ACA board) – Monitor HDCP, EDID transactions, hot plug events and CEC messages between multiple source or sink DUTs.

Model 780BH

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Test HDCP
Configure Audio Monitor
Test HDCP
Test Cable/Repeater
Test Source
Passthrough Video
Test CEC
Test CEC
POLLING...
Test Link
Test Repeater
HDMI/DVI: No signal
No TMDS clock
Cannot be analyzed
Not capable of HDMI 3D
No GCP packets received
Not capable of HDCP
No +5V detected
Interface: HDMI (8 bpc RGB)
Format: 1920x1080 30Hz
Pattern: Decoder Adjust
3D: Disabled
Audio (HDMI): LPCM 2.0ch 44.1kHz
Enable HDCP
AVMUTE OFF
NO HDCP
HPD FAIL
01:18
quantumdata
780BH
Video Generator / Protocol Analyzer
for HDMI Testing

780BH Video Generator / Protocol Analyzer – Interfaces / Options

780BH Rear Edge without optional ACA board

780BH Front Edge

780BH Rear Edge with optional ACA board

780BH Video Generator / Protocol Analyzer – Interfaces / Options

Interfaces:

- HDMI Tx & Rx ports – 300MHz pixel rate.

  Note: Supports HDCP 2.2 testing.
- VGA output port - RGB and component YCbCr up to 80MHz pixel rate.
- Digital audio – SPDIF/Optical.

Standard Features:

- 7 inch touch screen – 800 x 480 resolution.
- Battery-power, convenient size.
- Format and test pattern library, add custom bitmaps.
- Real time status bar.
- Headphone jack and speakers.
- Command line control via RS-232 or USB serial.
- Software upgradable.

Options:

- Cable Test – Test HDMI cables and HDMI / HDBaseT distribution networks.
- Test pattern packs – ISF, THX China Resolution.
- Auxiliary Channel Analyzer (emulation) – Monitor HDCP, EDID transactions, hot plug events and CEC messages with source or sink DUT.
- Auxiliary Channel Analyzer (passive ACA board) – Monitor HDCP, EDID transactions, hot plug events and CEC messages between multiple source or sink DUTs.

Model 780C

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Analyze Audio
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Analyze Aux Channels (ACA)
Test Sink
Display Video
Test HDCP
Configure Audio Monitor
Test HDCP
Test Cable/Repeater
Test Source
Passthrough Video
Test CEC
Test CEC
Test Link
Test Repeater
quantumdata
780C
Video Generator / Protocol Analyzer
for HDMI, HDBaseT & 3G-SDI Testing

780C Video Generator / Protocol Analyzer – Interfaces / Options

780C Top

780C Rear Edge

780C Video Generator / Protocol Analyzer – Interfaces / Options

Interfaces:

- HDMI Tx & Rx ports – 300MHz pixel rate.
- HDBaseT Tx & Rx ports – 300MHz pixel rate.
- 3G-SDI Tx & Rx ports – 2.97Gb/s data rate.
- VGA output port - RGB and YCbCr up to 80MHz pixel rate.
- Digital audio – SPDIF/Optical.

Standard Features:

- 7 inch touch screen – 800 x 480 resolution. Convenient size.
- Format and test pattern library, add custom bitmaps.
- Real time status bar.
- Headphone jack and speakers.
- Command line control via RS-232 or USB serial.
- Software upgradable.

Options:

- Cable Test – Test HDMI cables and distribution networks.
- Test pattern packs – ISF, THX China Resolution.
- Auxiliary Channel Analyzer (passive & emulation) – Monitor HDCP, EDID transactions, hot plug events and CEC messages between source and sink DUTs.

Model 780D

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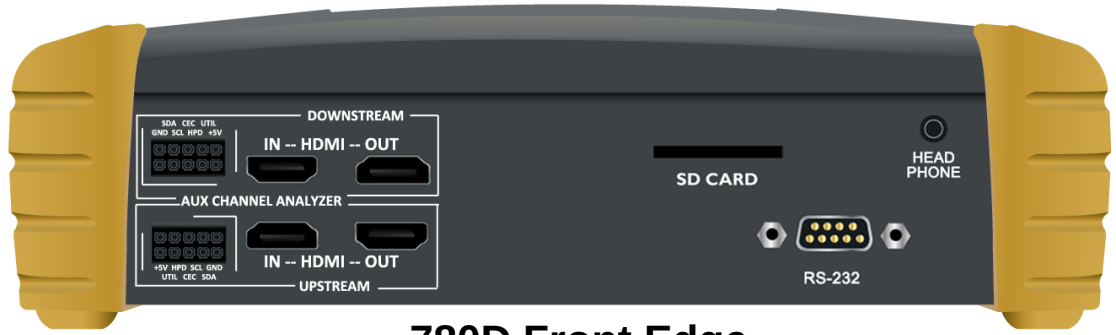
780D
Video Generator / Protocol Analyzer
for HDMI & HDBaseT Testing

780D Video Generator / Protocol Analyzer – Interfaces/Options

780D Top



780D Front Edge

780D Rear Edge

780D Video Generator / Protocol Analyzer – Interfaces/Options

Interfaces:

- HDMI Tx & Rx ports – 600MHz pixel rate.
  Note: Supports HDCP 2.2 testing.
- HDBaseT Tx & Rx ports – 300MHz pixel rate.
- VGA output port - RGB and YCbCr up to 80MHz pixel rate.
- Digital audio – SPDIF/Optical.

Standard Features:

- 7 inch touch screen – 800 x 480 resolution. Convenient size.
- Format and test pattern library, add custom bitmaps.
- Real time status bar.
- Headphone jack and speakers.
- Command line control via RS-232 or USB serial.
- Software upgradable.

Options:

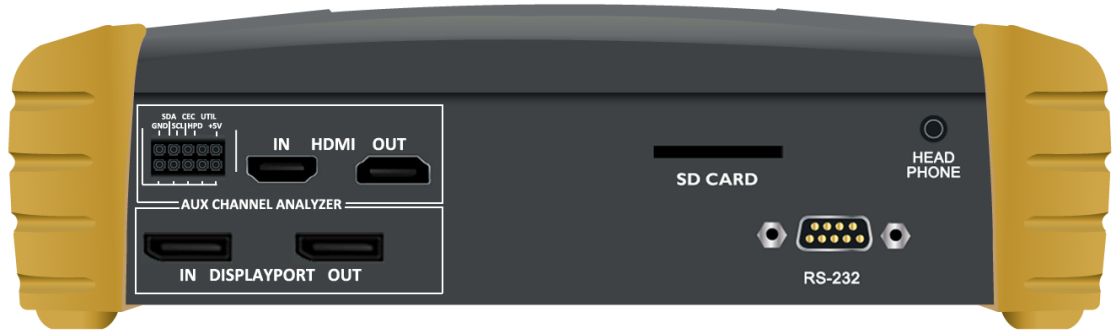
- Cable Test – Test HDMI cables and distribution networks.
- Test pattern packs – ISF, THX China Resolution.
- Auxiliary Channel Analyzer (passive & emulation) – Monitor HDCP, EDID transactions, hot plug events and CEC messages between source and sink DUTs.

quantumdata 780 Series

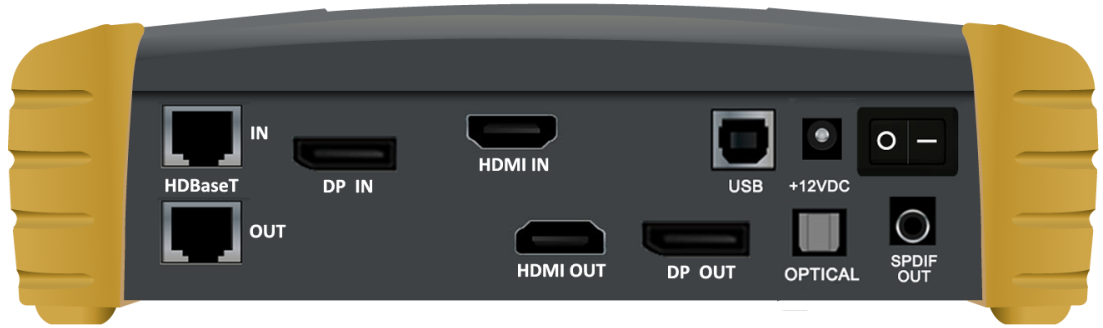
Model 780E

780E Video Generator / Protocol Analyzer – Interfaces/Options

780E Top



780E Front Edge



780E Rear Edge

780E Video Generator / Protocol Analyzer – Interfaces/Options

Interfaces:

- HDMI Tx & Rx ports – 600MHz pixel rate.
  Note: Supports HDCP 2.2 testing.
- HDBaseT Tx & Rx ports – 300MHz pixel rate.
- DisplayPort Tx & Rx ports – 5.4 Gb/s link rate; 1, 2, 4 lanes.
  Note: Supports HDCP 2.2 testing.
- Digital audio – SPDIF/Optical.

Standard Features:

- 7 inch touch screen – 800 x 480 resolution. Convenient size.
- Format and test pattern library, add custom bitmaps.
- Real time status bar.
- Headphone jack and speakers.
- Command line control via RS-232 or USB serial.
- Software upgradable.

Options:

- Cable Test – Test HDMI cables and distribution networks.
- Test pattern packs – ISF, THX China Resolution.
- Auxiliary Channel Analyzer (passive & emulation) – Monitor HDCP, EDID transactions, hot plug events and CEC messages between source and sink DUTs.

Applications - HDMI

780 Sample Application – HDMI Source Testing

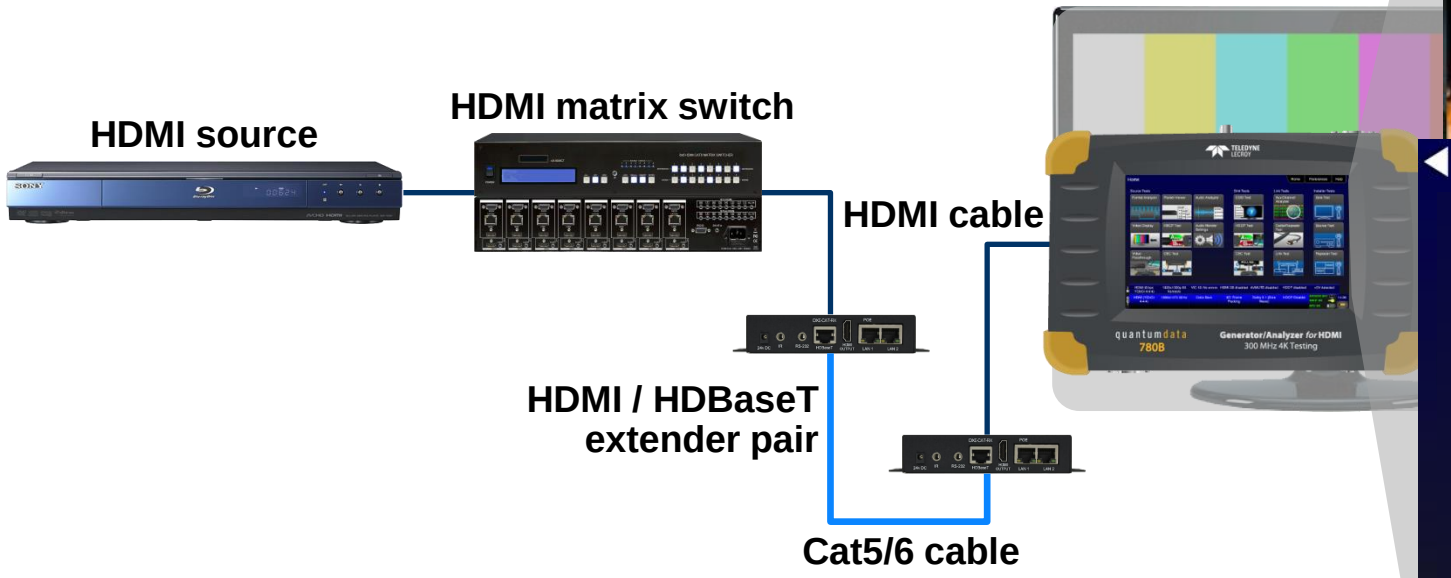
- HDMI Source Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Verify video and timing and video parameters of an HDMI source device.

HDMI source

HDMI cable

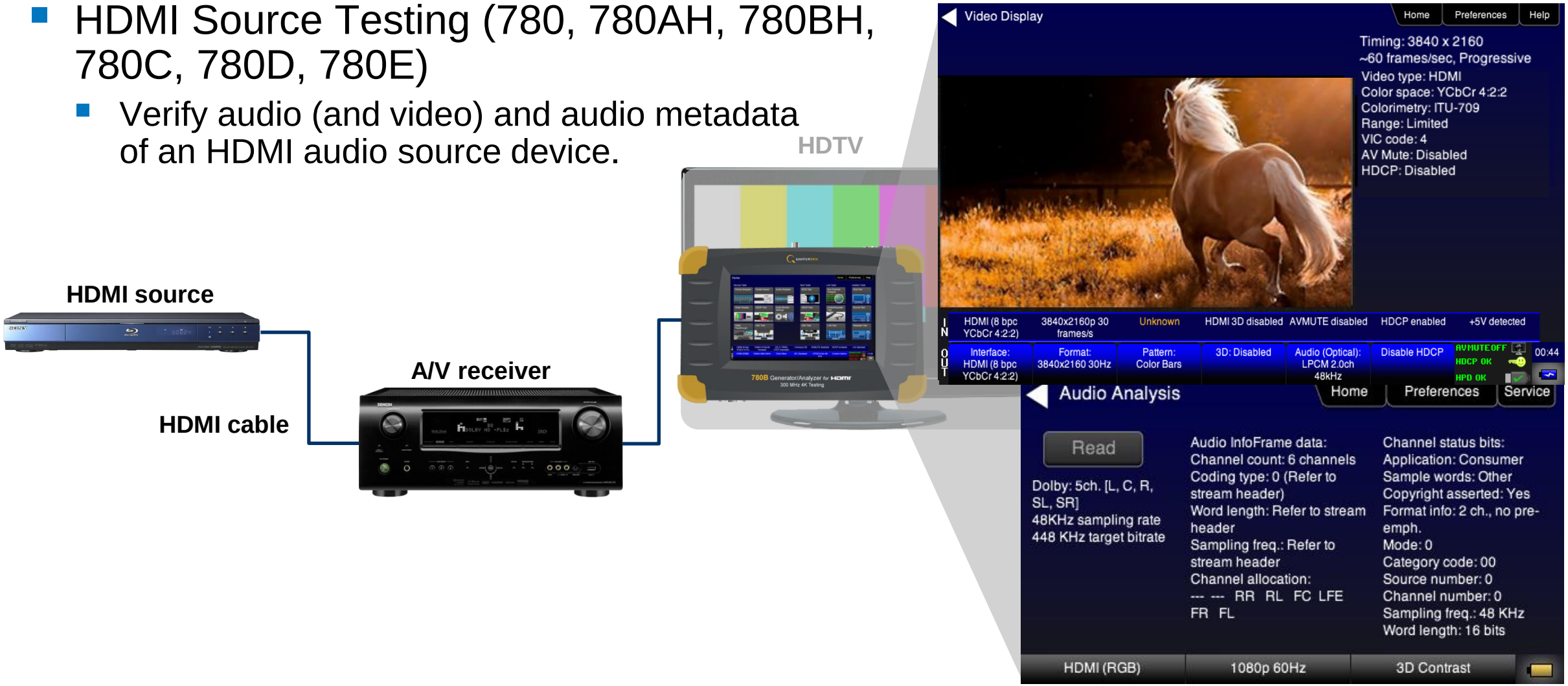
780 Sample Application – HDMI Source Testing

- HDMI Source Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Verify video, video parameters and timing of an HDMI upstream distribution network.



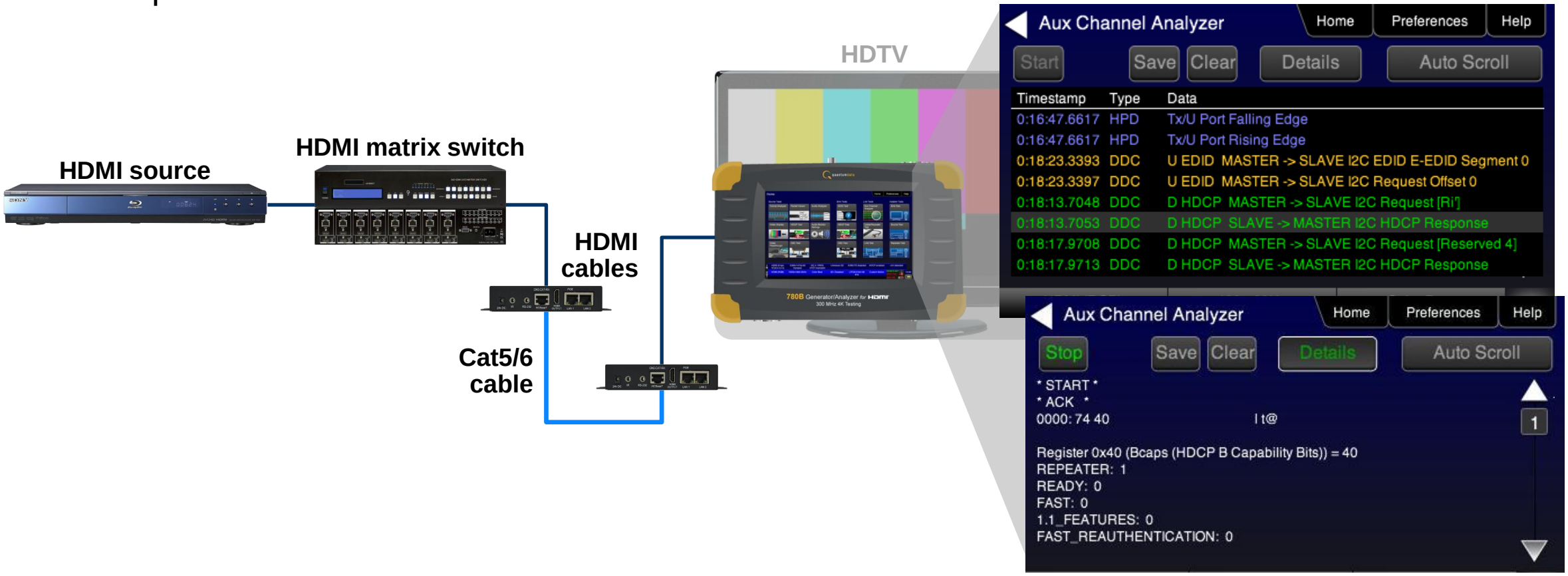
780 Sample Application – HDMI Source Testing

- HDMI Source Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Verify audio (and video) and audio metadata of an HDMI audio source device.



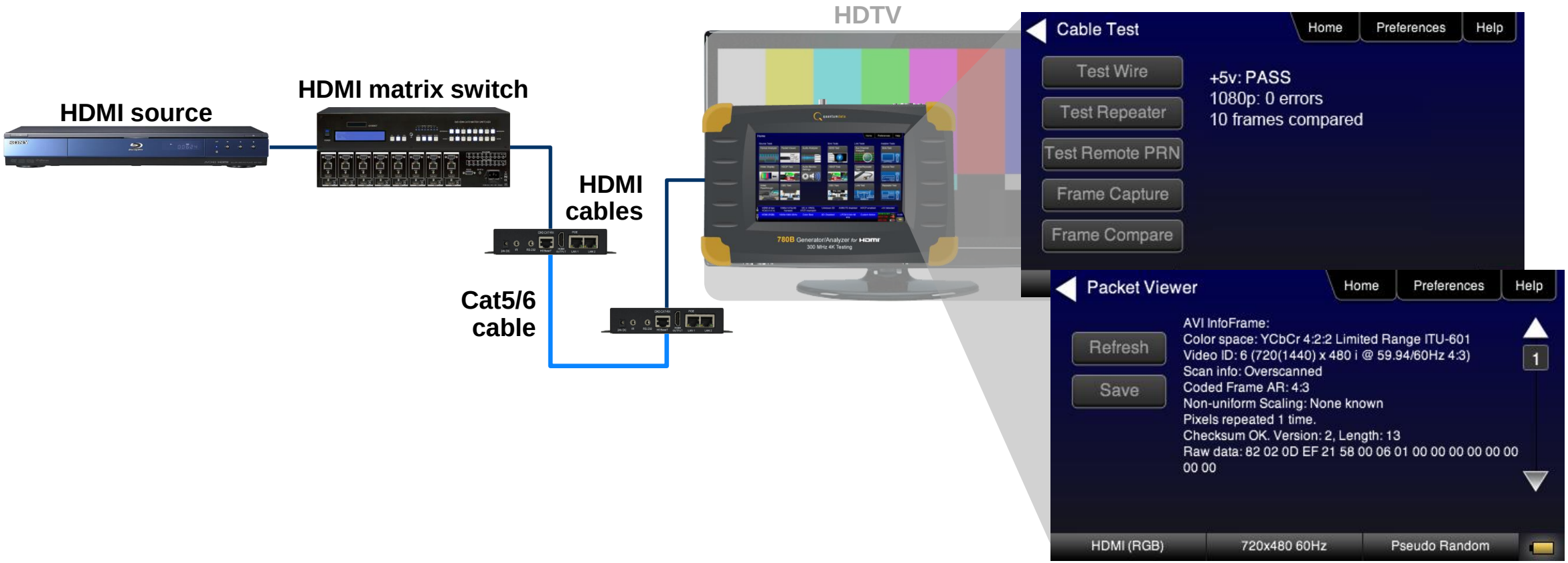
780 Sample Application – HDMI Distribution Network

- HDMI Source Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Monitor DDC (HDCP & EDID) and hot plug events of an HDMI source device or upstream distribution network.



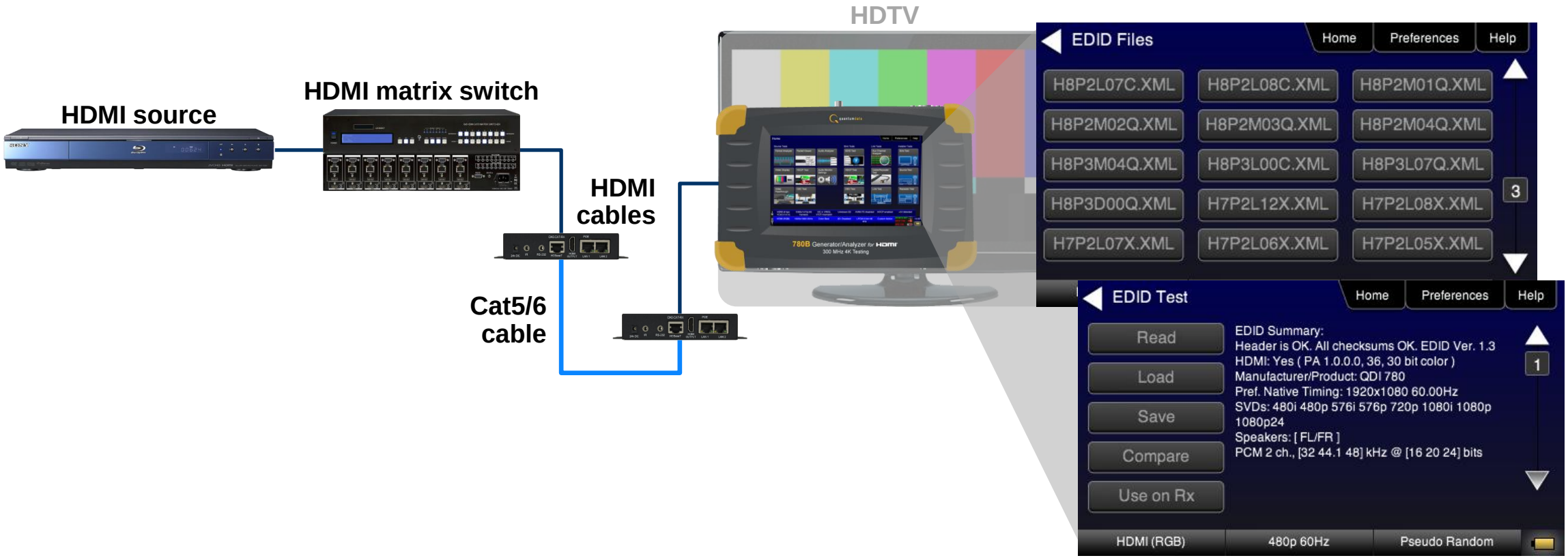
780 Sample Application – HDMI Distribution Network

- HDMI Source Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Check for pixel errors and view metadata packets on an upstream HDMI / HDBaseT distribution network.



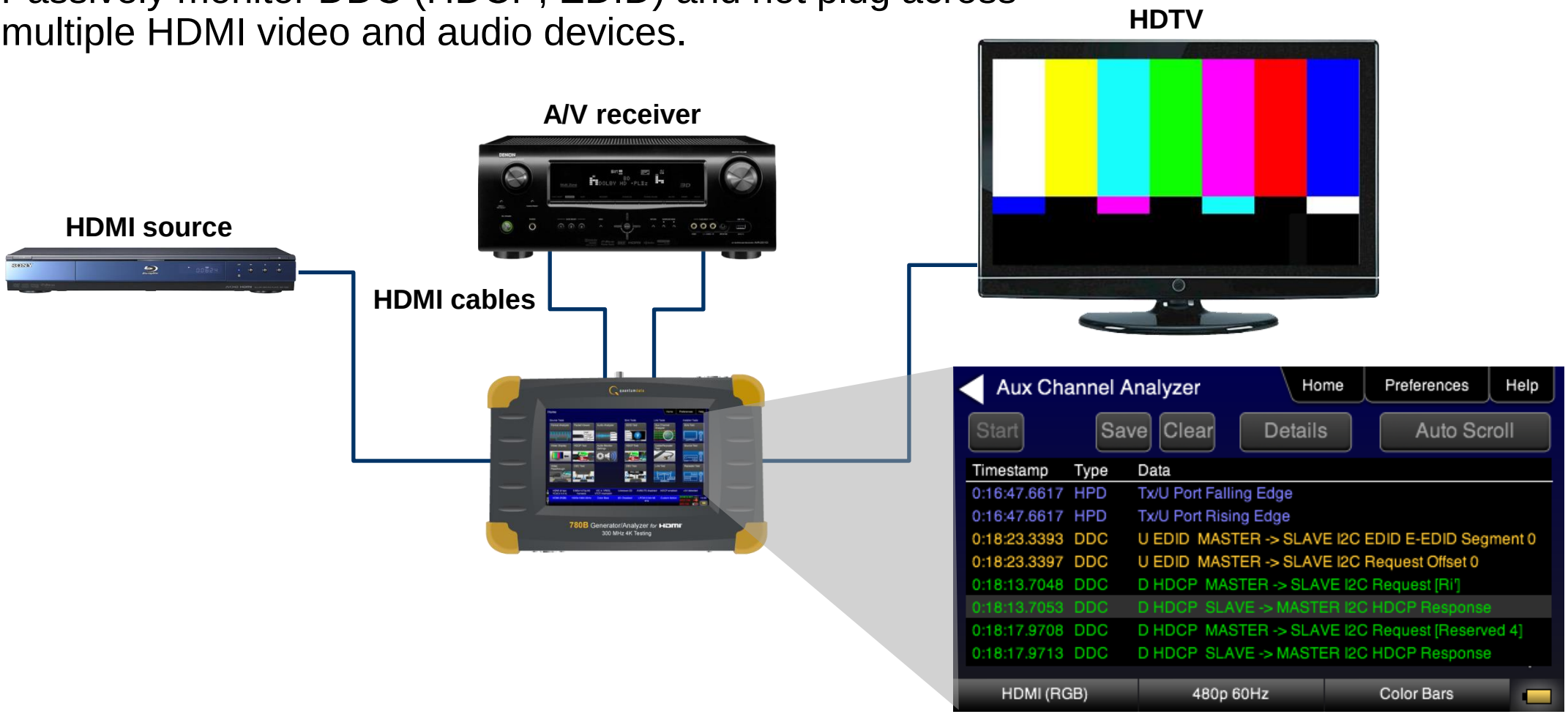
780 Sample Application – HDMI Network EDID Test

- HDMI Source Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Verify HDMI source or distribution network's handling of various HDMI EDIDs.



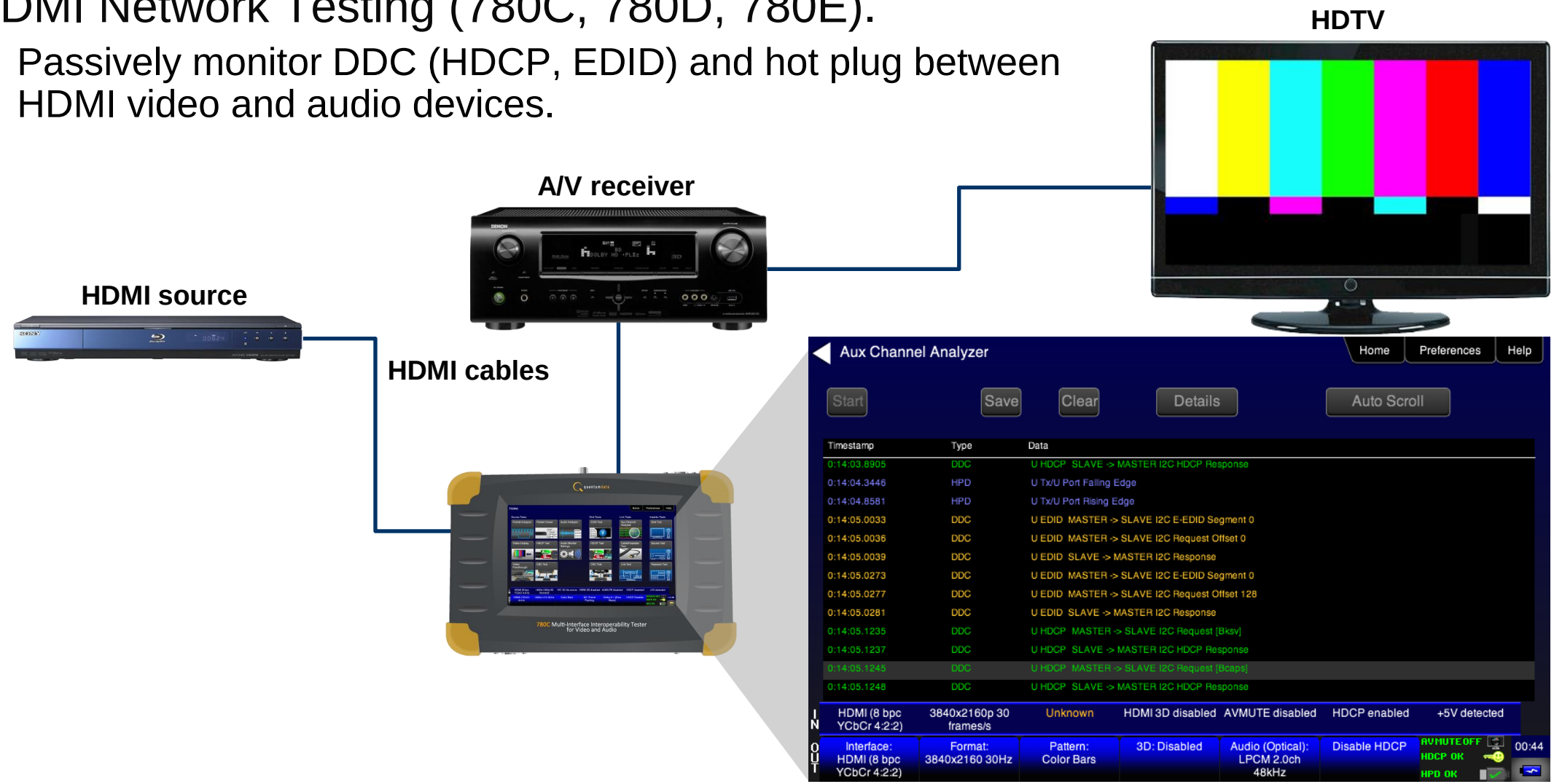
780 Sample Application – HDMI Network Testing

- HDMI Network Testing (780, 780AH, 780BH, 780D, 780E)
  - Passively monitor DDC (HDCP, EDID) and hot plug across multiple HDMI video and audio devices.



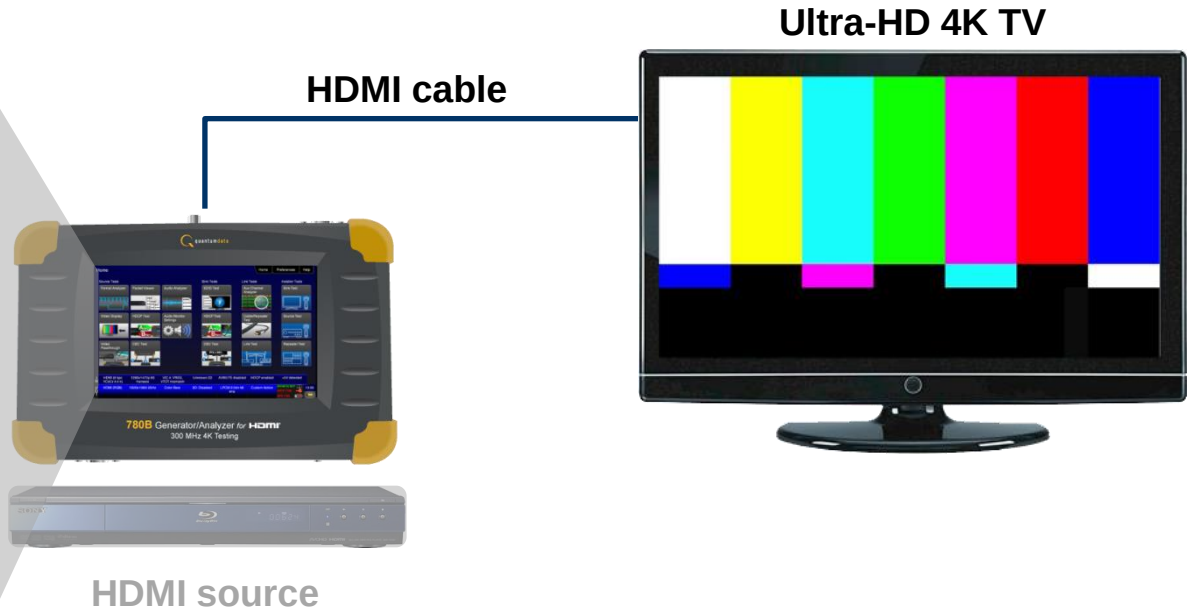
780 Sample Application – HDMI Network Testing

- HDMI Network Testing (780C, 780D, 780E).
  - Passively monitor DDC (HDCP, EDID) and hot plug between HDMI video and audio devices.



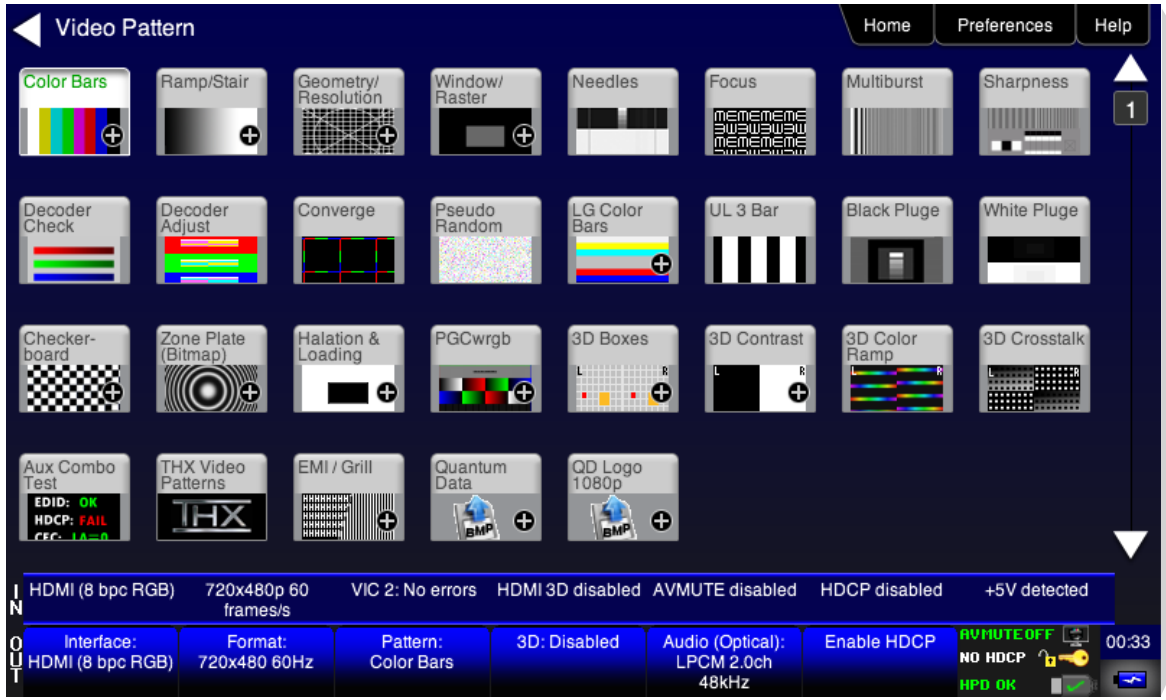
780 Sample Application – HDMI Sink Testing

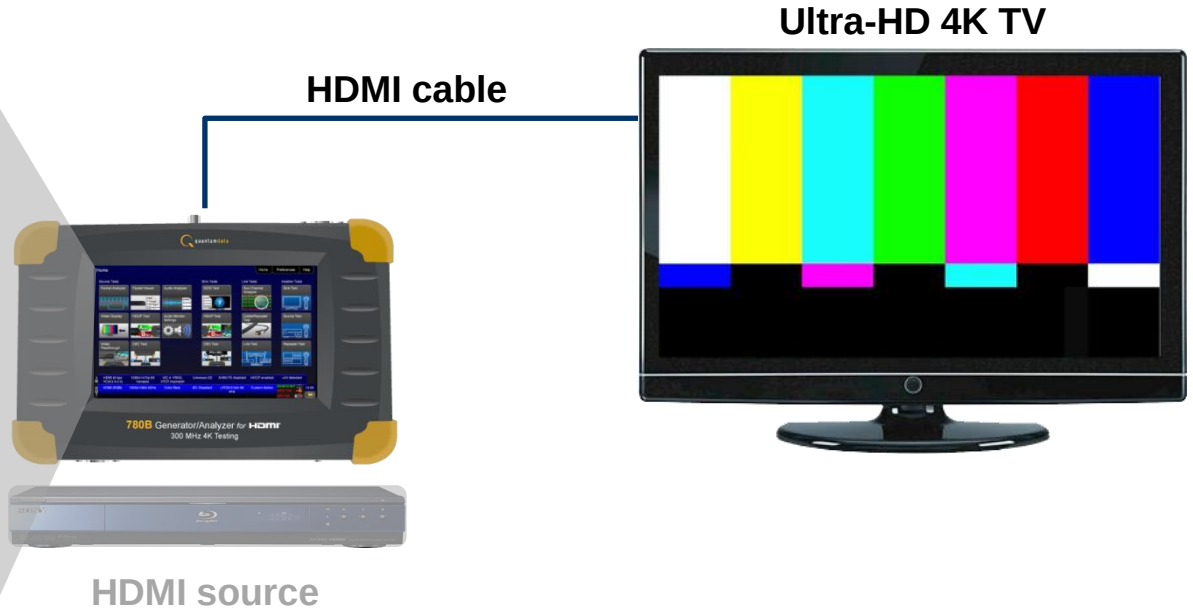
- HDMI Sink Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Basic video functional test of an HDMI sink device.
  - Supports UHD 4K formats & HDMI 2.0 4:2:0 pixel encoding (780AH, 780BH, 780C, 780D, 780E).



780 Sample Application – HDMI Sink Testing

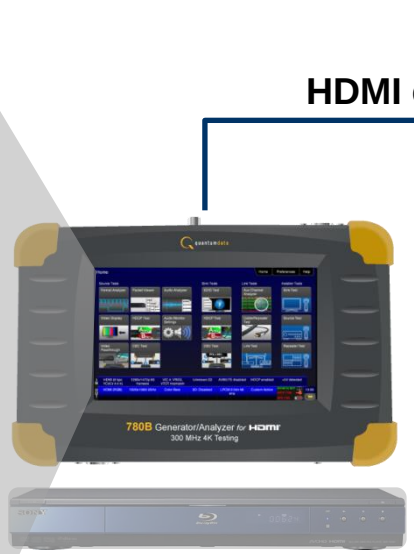
- HDMI Sink Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Basic video functional test of an HDMI sink device.
  - Provides library of standard test patterns.





780 Sample Application – HDMI Sink Testing with "HDR Lab"

- HDMI High Dynamic Range (HDR) Sink Testing with “HDR Lab” (780E)
  - Verify an Ultra HD TVs HDR capabilities.
  - Use “HDR Lab” test images and test patterns.
  - Test for peak brightness, native contrast, average brightness level, clipping and color gamut.



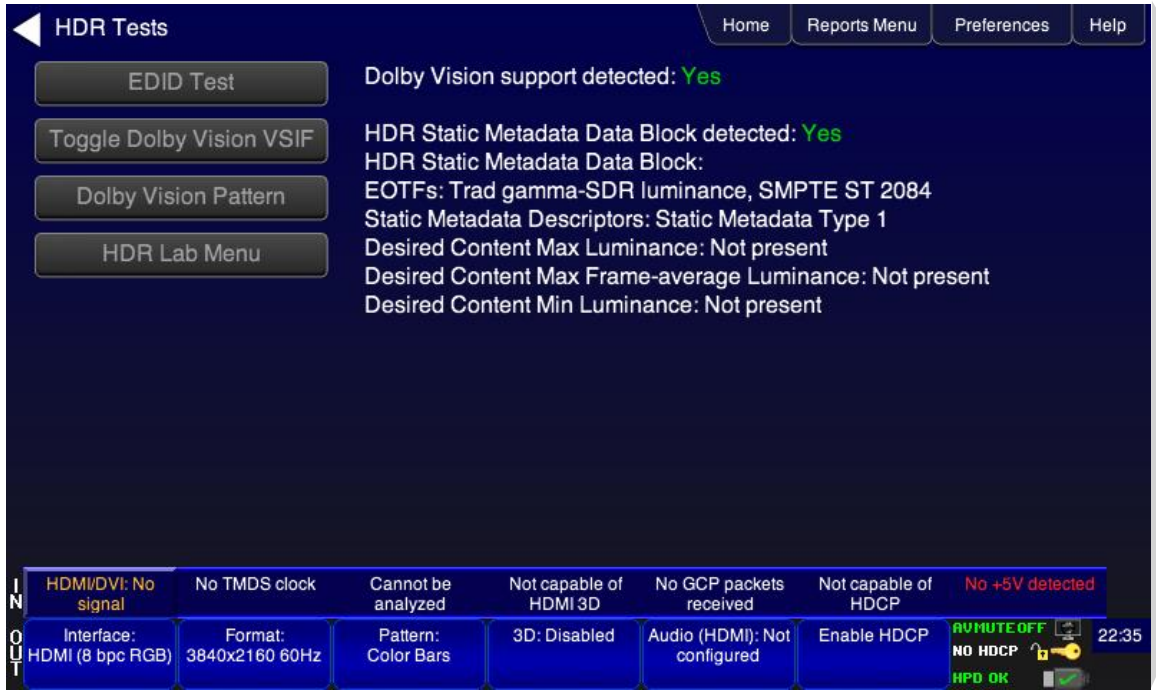
HDMI source

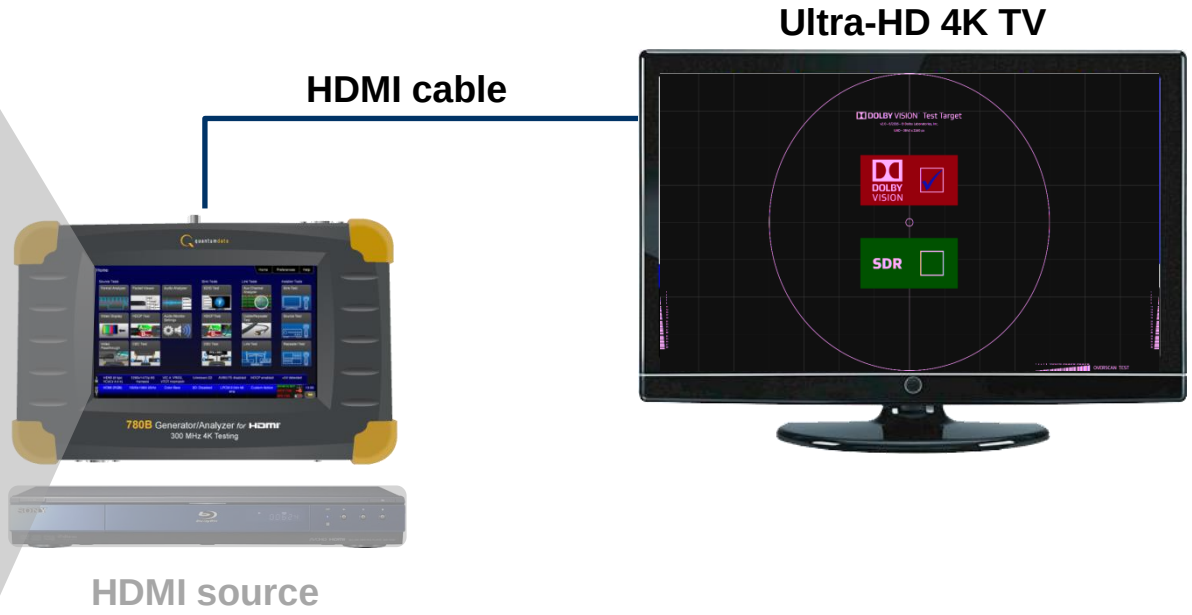
HDMI cable

Ultra-HD 4K TV

780 Sample Application – HDMI Sink Testing with HDR Dolby Vision

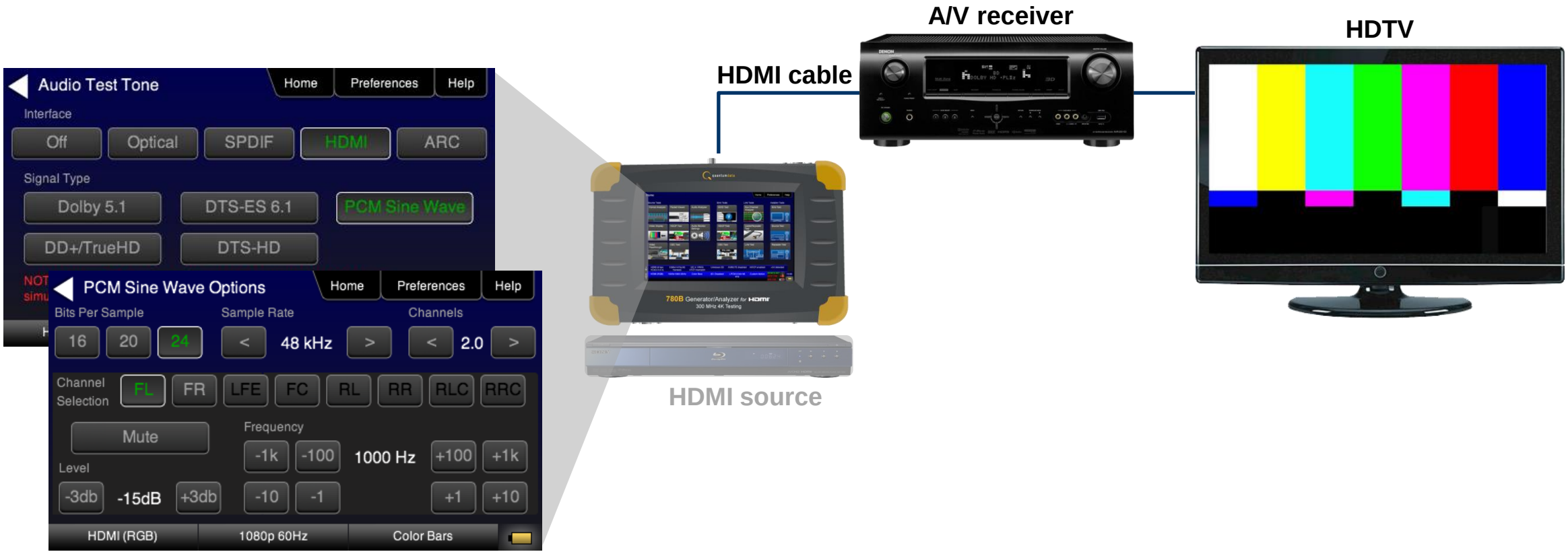
- HDMI High Dynamic Range (HDR) Sink Testing with Dolby Vision (780E)
  - Dolby Vision test image verifies embedded HDR metadata.





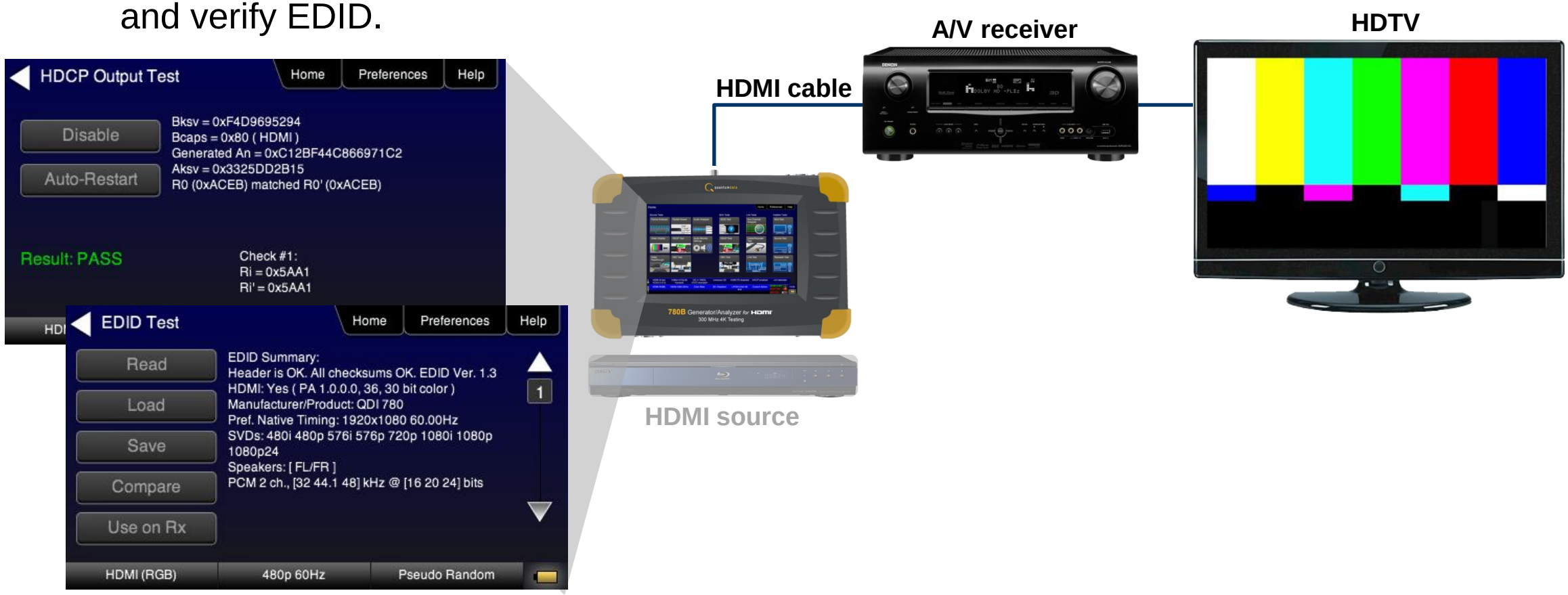
780 Sample Application – HDMI Sink Testing

- HDMI Sink Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Audio functional test of an HDMI audio rendering sink device.
  - Supports uncompressed LPCM and Dolby or DTS compressed formats.



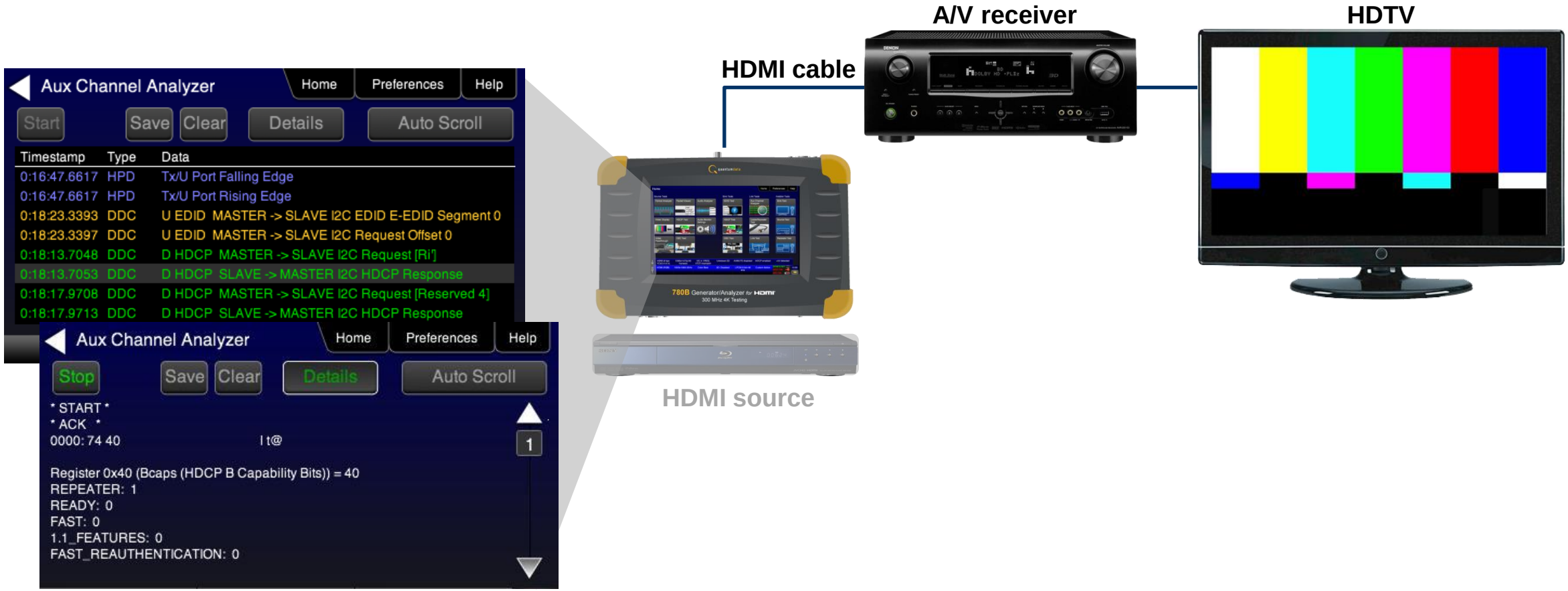
780 Sample Application – HDMI Sink Testing

- HDMI Sink Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Basic protocol functional test of an HDMI sink device.
  - Test HDCP (780AH, 780BH, 780D & 780E support HDCP 2.2) authentication and verify EDID.



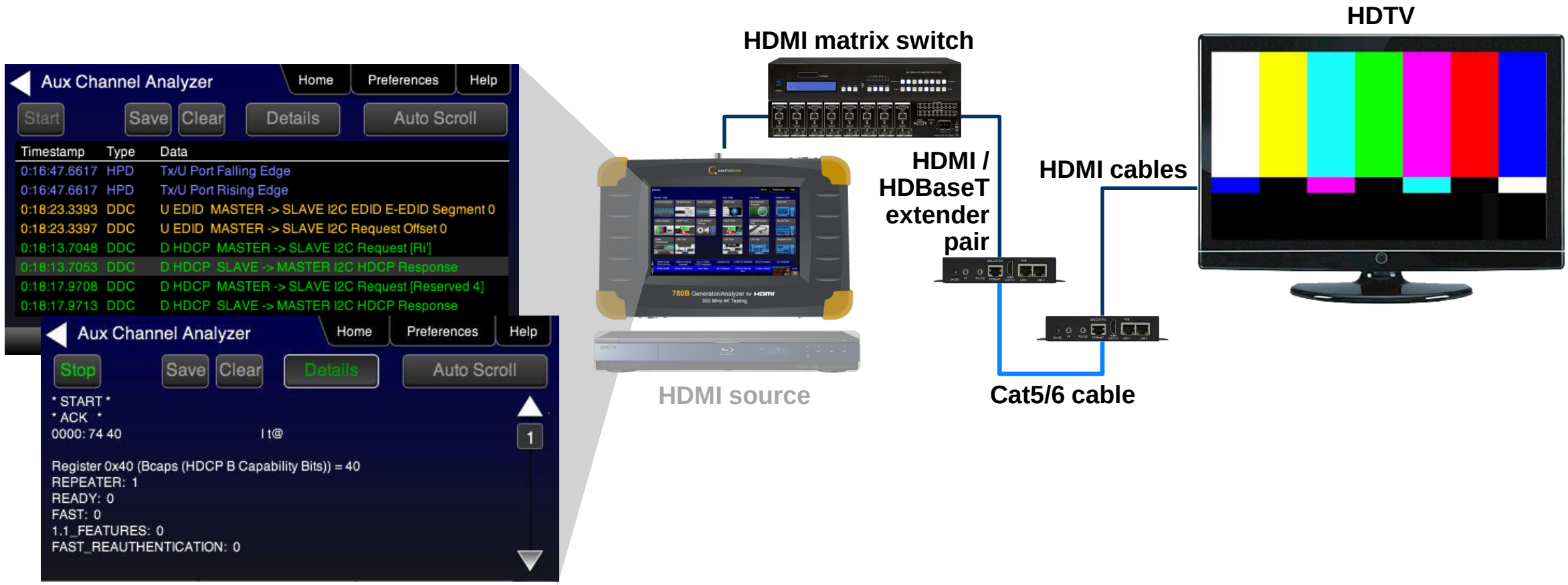
780 Sample Application – HDMI Sink Testing

- HDMI Sink Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Monitor DDC (HDCP & EDID) and hot plug events with an HDMI sink device.



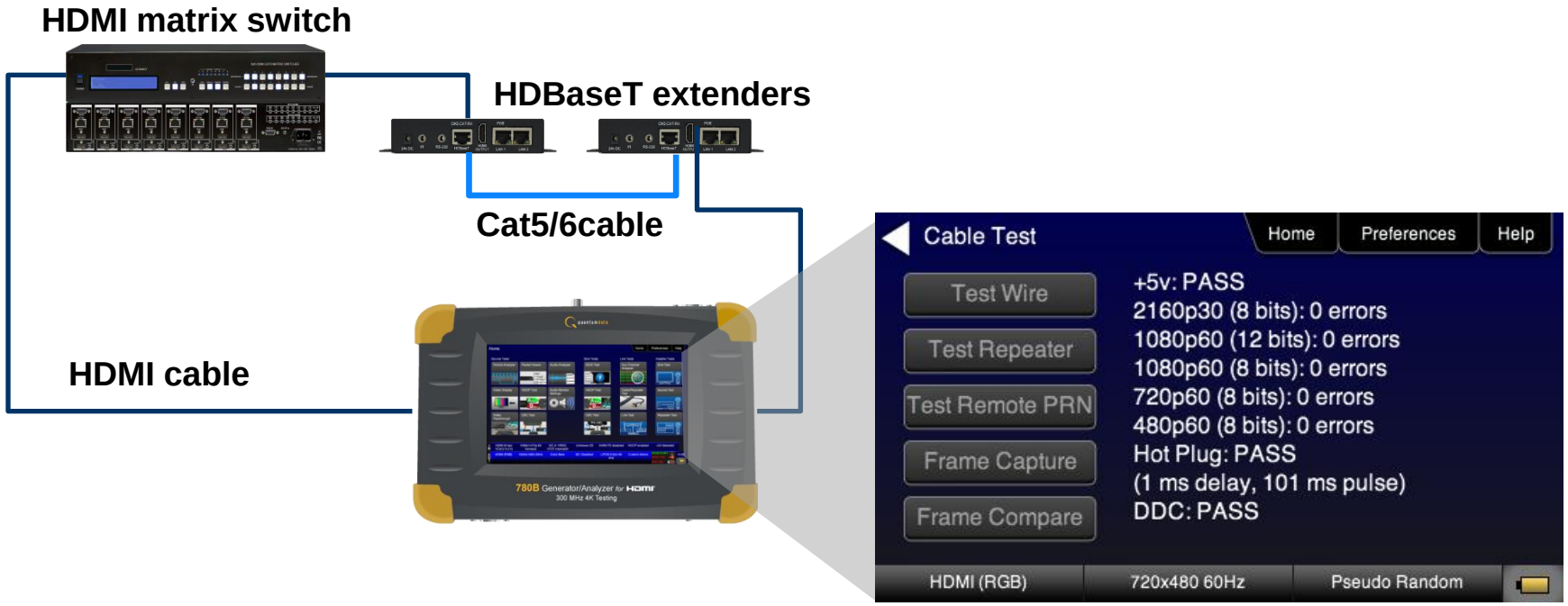
780 Sample Application – HDMI Sink Testing

- HDMI Sink Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Monitor DDC (HDCP & EDID) and hot plug events with an HDMI sink device or downstream distribution network.



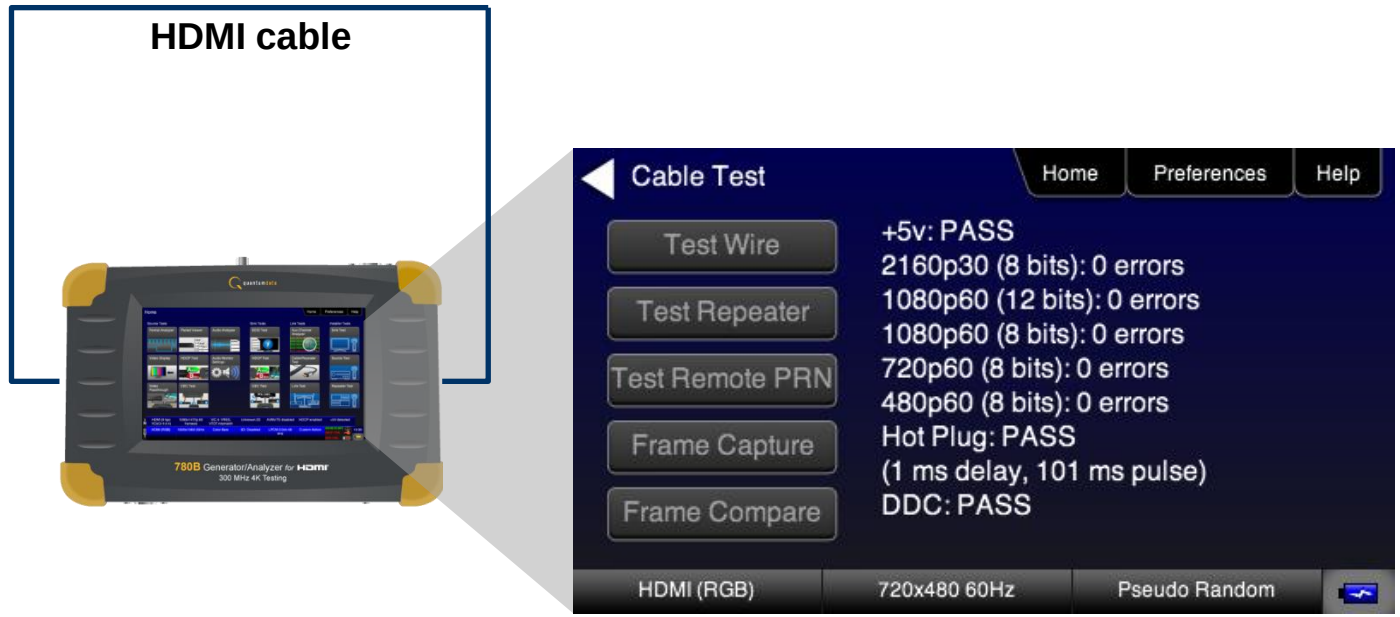
780 Sample Application – HDMI Distribution Network

- HDMI Distribution Network Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Check for pixel errors on an HDMI / HDBaseT distribution network.



780 Sample Application – HDMI Cable Test

- HDMI Cable Testing (780, 780AH, 780BH, 780C, 780D, 780E)
  - Check for pixel errors on an HDMI cable.



Applications - HDBaseT

780 Sample Application – HDBaseT Device Testing

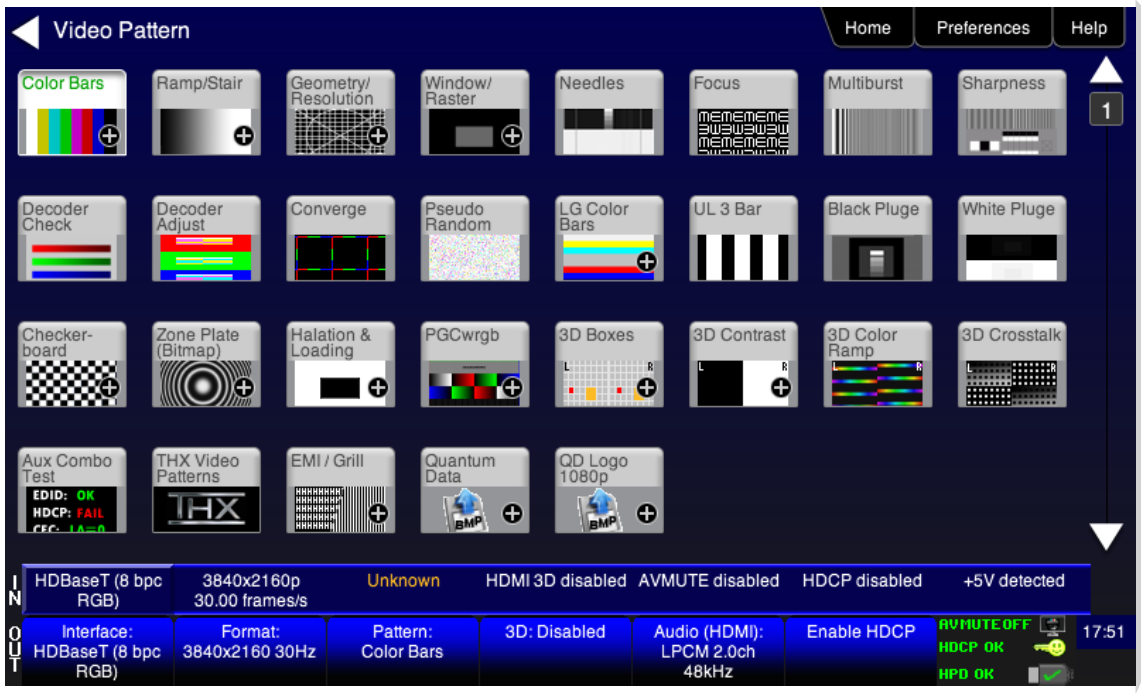
- HDBaseT Sink Testing (780C, 780D, 780E)
  - Basic video functional test of an HDBaseT sink device.
  - Supports 4K formats.

HDBaseT Cat5/6 cable

HDBaseT Projector

780 Sample Application – HDBaseT Device Testing

- HDBaseT Sink Testing (780C, 780D, 780E)
  - Basic video functional test of an HDBaseT sink device.
  - Provides library of standard test patterns.



HDBaseT Cat5/6 cable

HDBaseT Projector

780 Sample Application – HDBaseT Device Testing

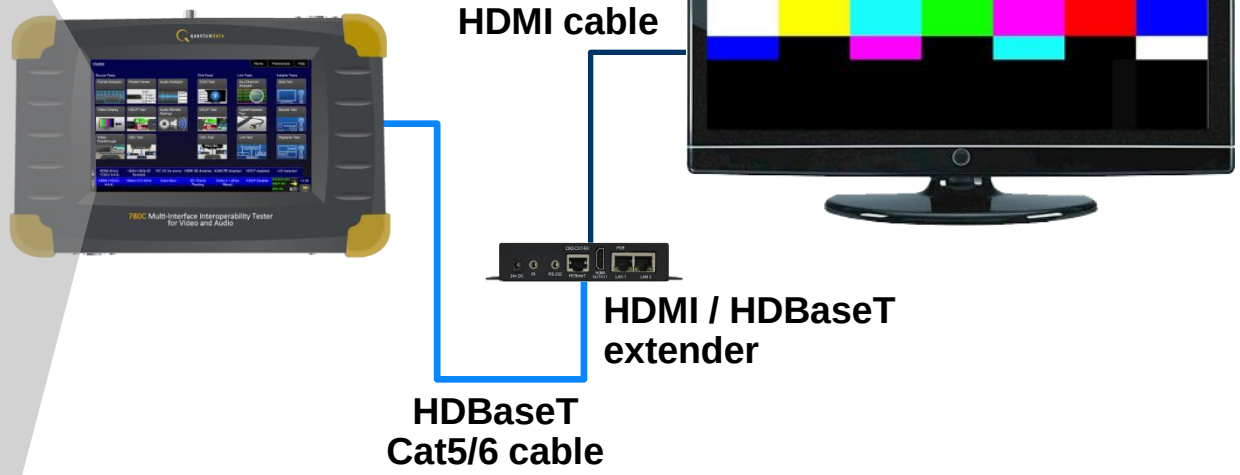
- HDBaseT Device Testing (780C, 780D, 780E)
  - Monitor DDC (HDCP & EDID) and hot plug events with an HDBaseT device connected to an HDMI sink.

HDBaseT Cat5/6 cable

HDBaseT Projector

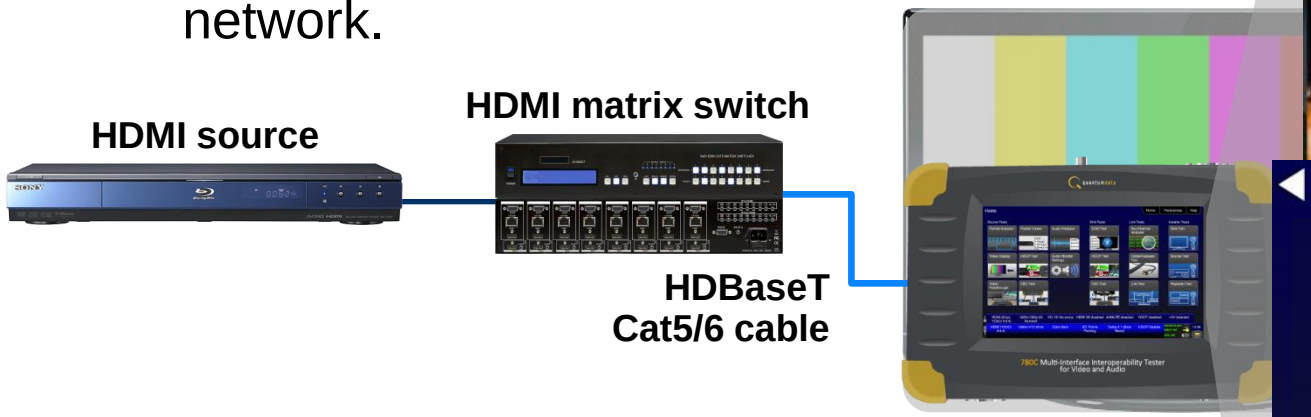
780 Sample Application – HDBaseT Device Testing

- HDBaseT Device Testing (780C, 780D, 780E)
  - Monitor DDC (HDCP & EDID) and hot plug events with an HDBaseT device connected to an HDMI sink.



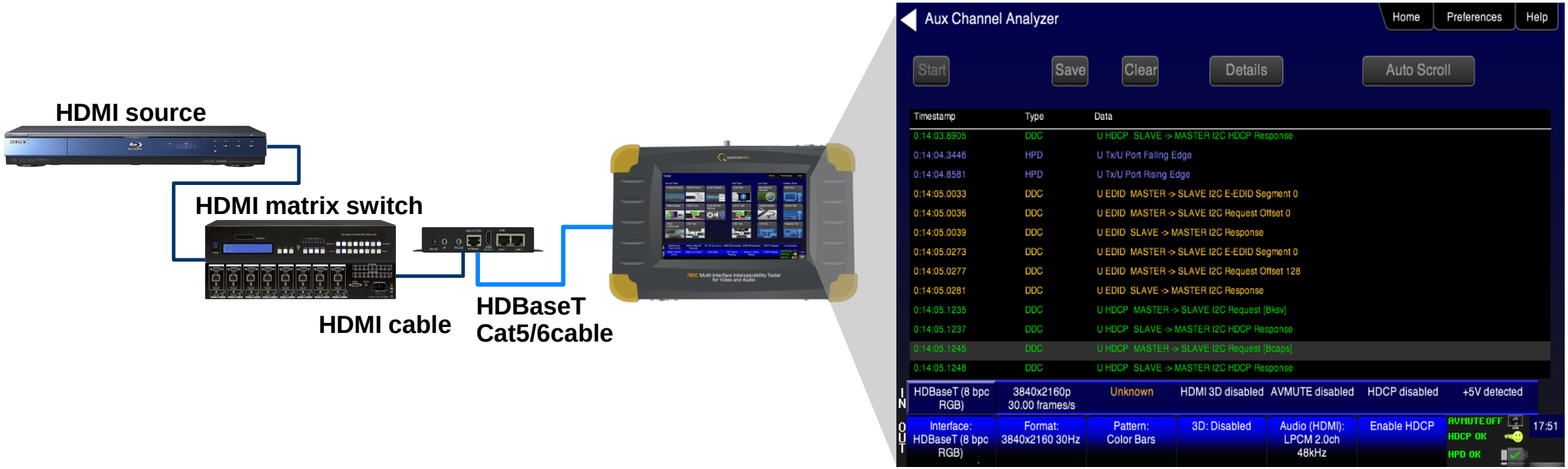
780 Sample Application – HDBaseT Device Testing

- HDBaseT Device Testing (780C, 780D, 780E)
  - Verify video and timing from an HDBaseT device through an upstream distribution network.



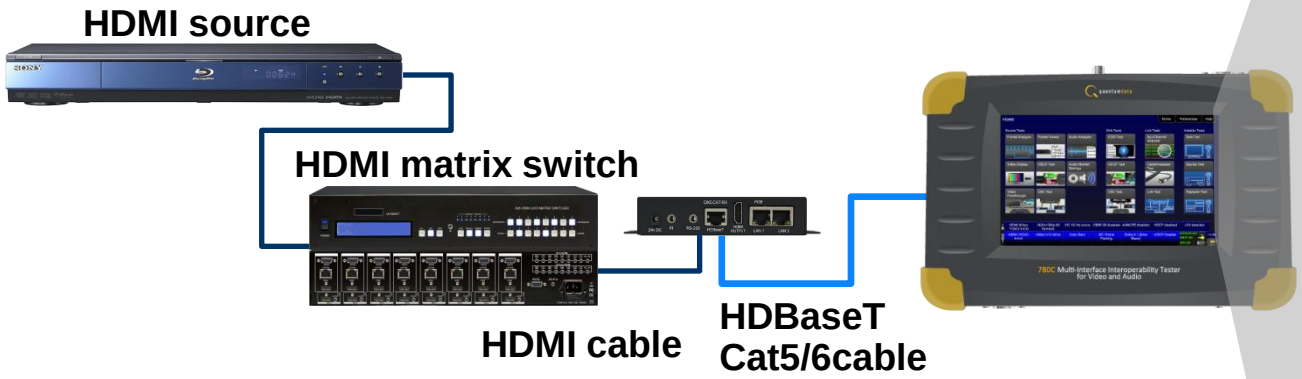
780 Sample Application – HDBaseT Device Testing

- HDBaseT Device Testing (780C, 780D, 780E)
  - Verifying HDCP authentication on an HDBaseT device through an upstream distribution network.



780 Sample Application – HDBaseT Device Testing

- HDBaseT Device Testing (780C, 780D 780E)
  - Check for pixel errors and view packets on an HDBaseT device through a distribution network.

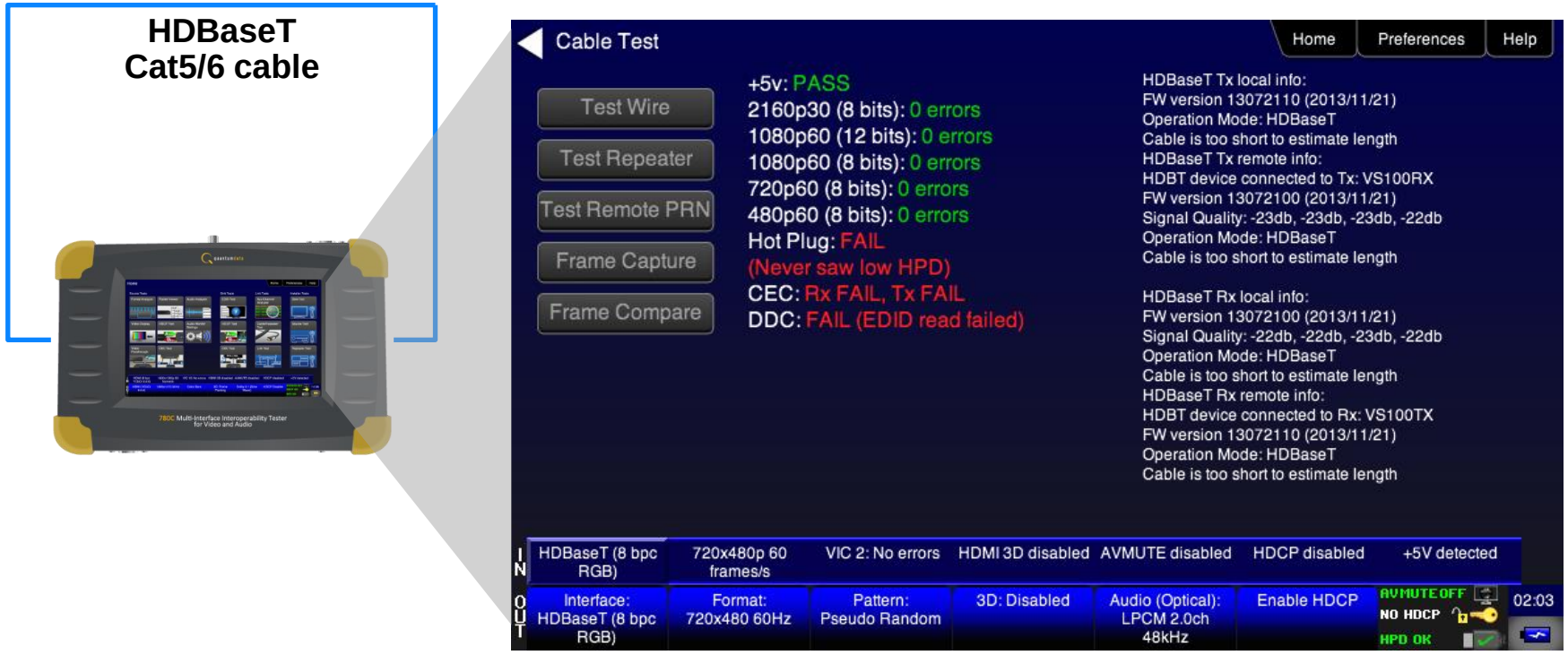


Sample Applications – HDBaseT Cat5/6 Remote Cable Test

- HDBaseT Remote Cable Testing (780C, 780D, 780E)
  - Check quality of signal from near end to a far end HDBaseT Remote Terminal.
  - Solution checks main video channel and aux channel.

Sample Applications – HDBaseT Cat5/6 Cable Test

- HDBaseT Cable Testing (780C, 780D, 780E)
  - Check for pixel errors on an HDBaseT Cat5/6 cable.



Applications - SDI

780C Sample Application – SDI Device Testing

- SDI Sink Device Testing (780C)
  - Test video on an SDI display device.

SDI cable

SDI Monitor

780C Sample Application – SDI Device Testing

- SDI Sink Device Testing (780C)
  - Test video on an SDI display device.
  - Supports library of standard test patterns.

SDI cable

SDI Monitor

780C Sample Application – SDI Device Testing

- SDI Device Testing (780C)
  - Test video on an HDMI to SDI converter device.

SDI Monitor

SDI cable

HDMI / SDI converter

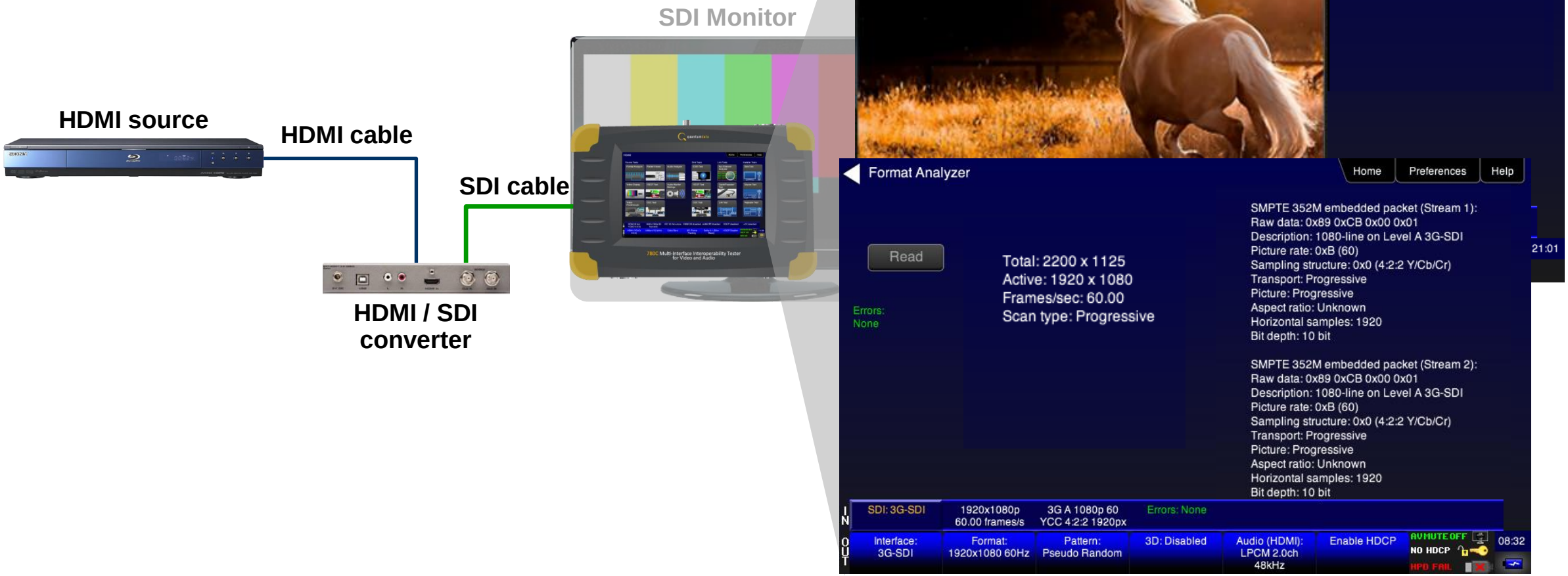
HDMI cable

780C Sample Application – SDI Device Testing

- SDI Source Device Testing (780C)
  - Verify video and timing from an SDI source device.

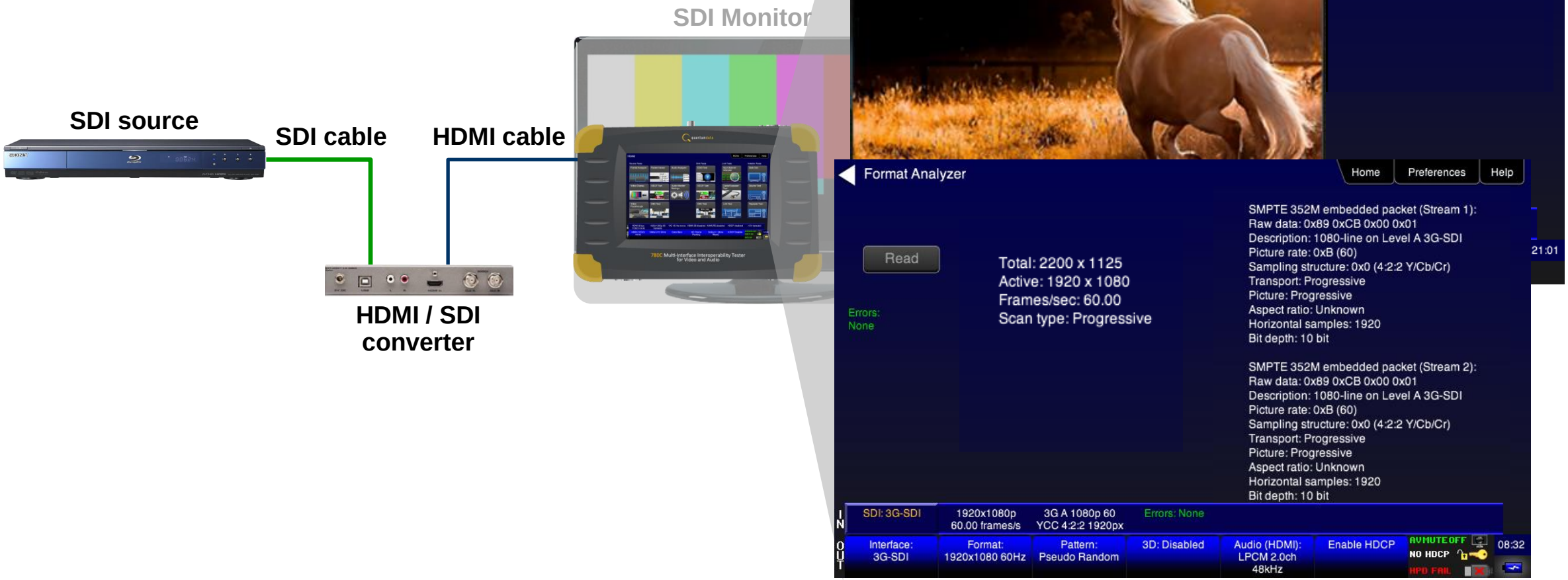
780C Sample Application – SDI Device Testing

- SDI Device Testing (780C)
  - Verify video and timing through HDMI to SDI converter device.



780C Sample Application – SDI Device Testing

- SDI Device Testing (780C)
  - Verify video, video parameters and timing through SDI to HDMI converter device.

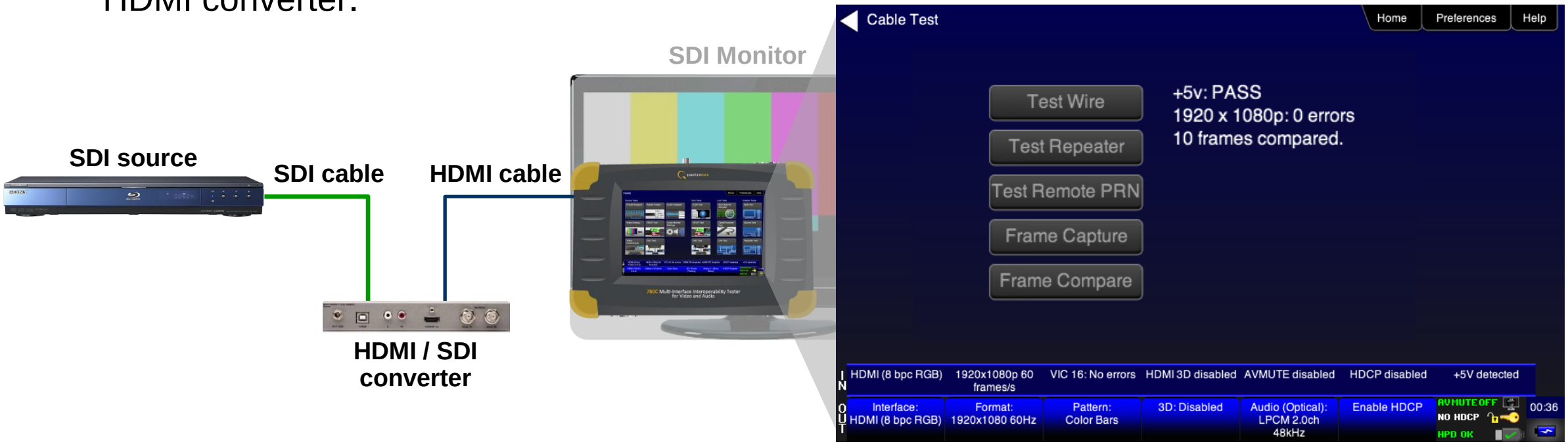


780C Sample Application – SDI Device Testing

- SDI Device Testing (780C)
  - Check for pixel errors on HDMI to SDI converter.

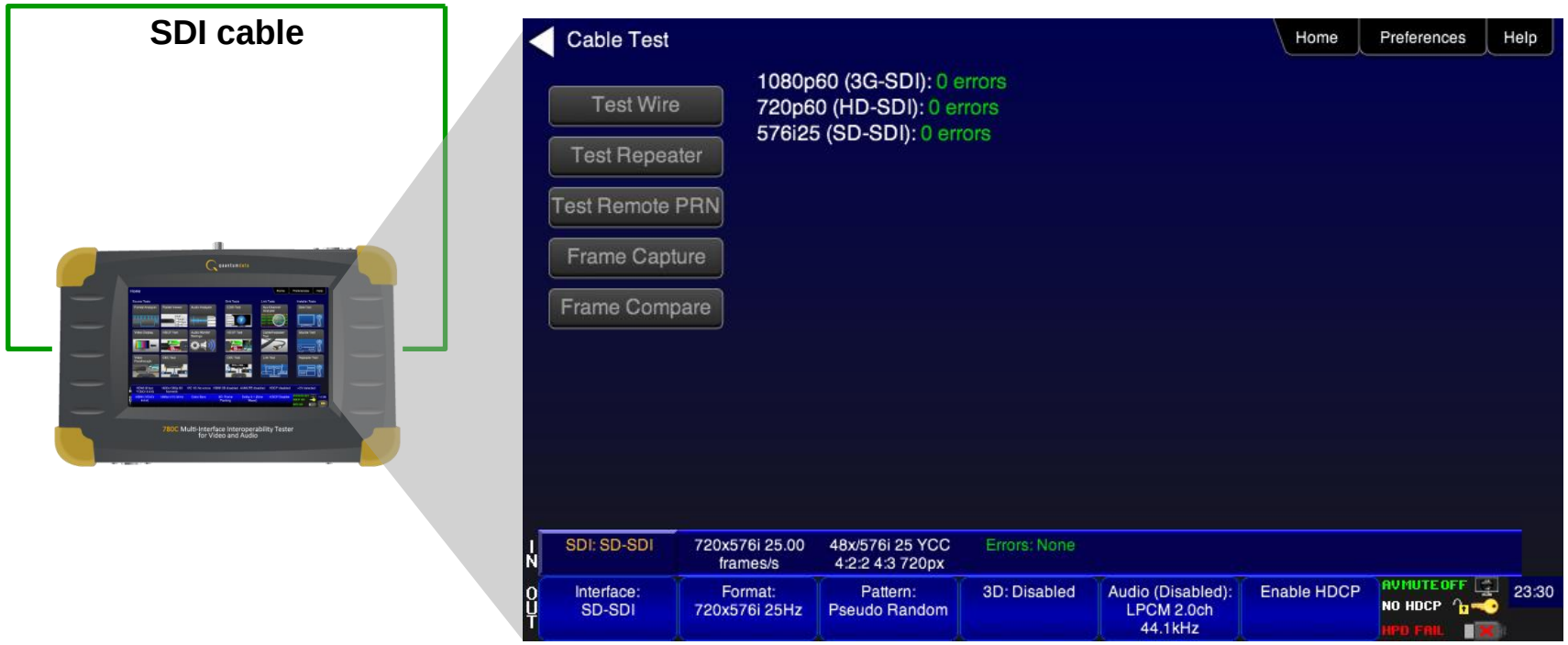
780C Sample Application – SDI Device Testing

- SDI Device Testing (780C)
  - Check for pixel errors on SDI to HDMI converter.



Sample Applications – 3G-SDI Cable Test

- SDI Cable Testing (780C)
  - Check for pixel errors on an 3G-SDI cable.



Applications - DisplayPort

780E Sample Application – DisplayPort Device Testing

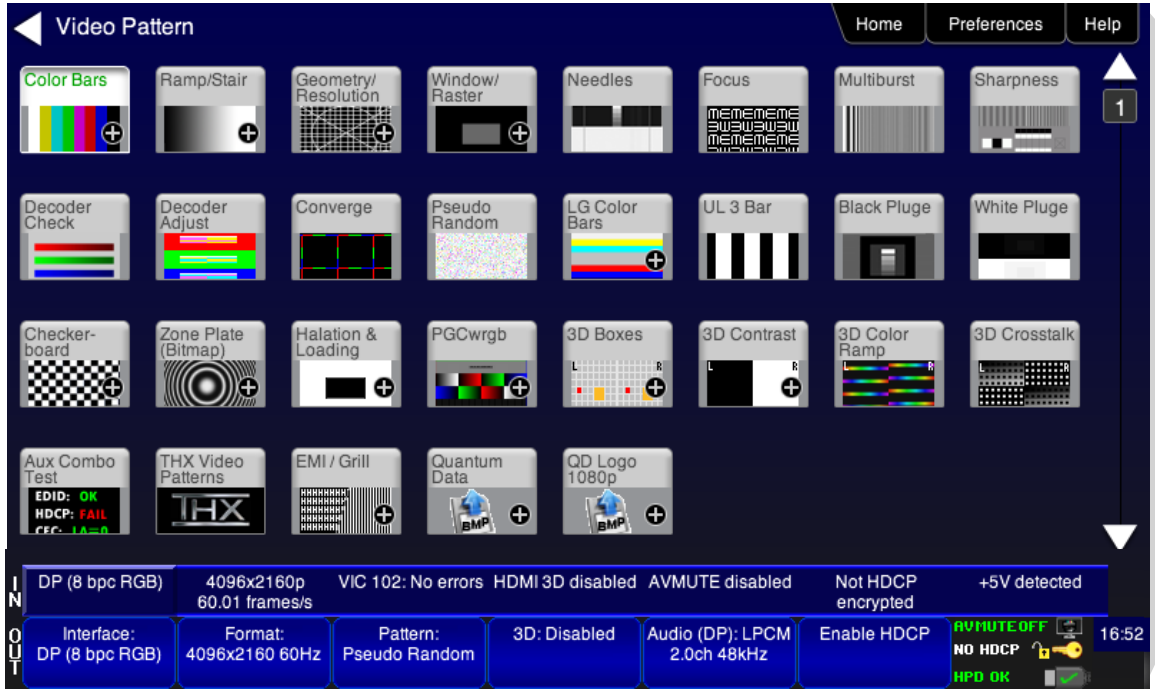
- DisplayPort Sink Device Testing (780E)
  - Test video on an DisplayPort display device.

DP cable

DP Monitor

780E Sample Application – DisplayPort Device Testing

- DisplayPort Sink Device Testing (780E)
  - Test video on an DisplayPort display device.
  - Supports library of standard test patterns.

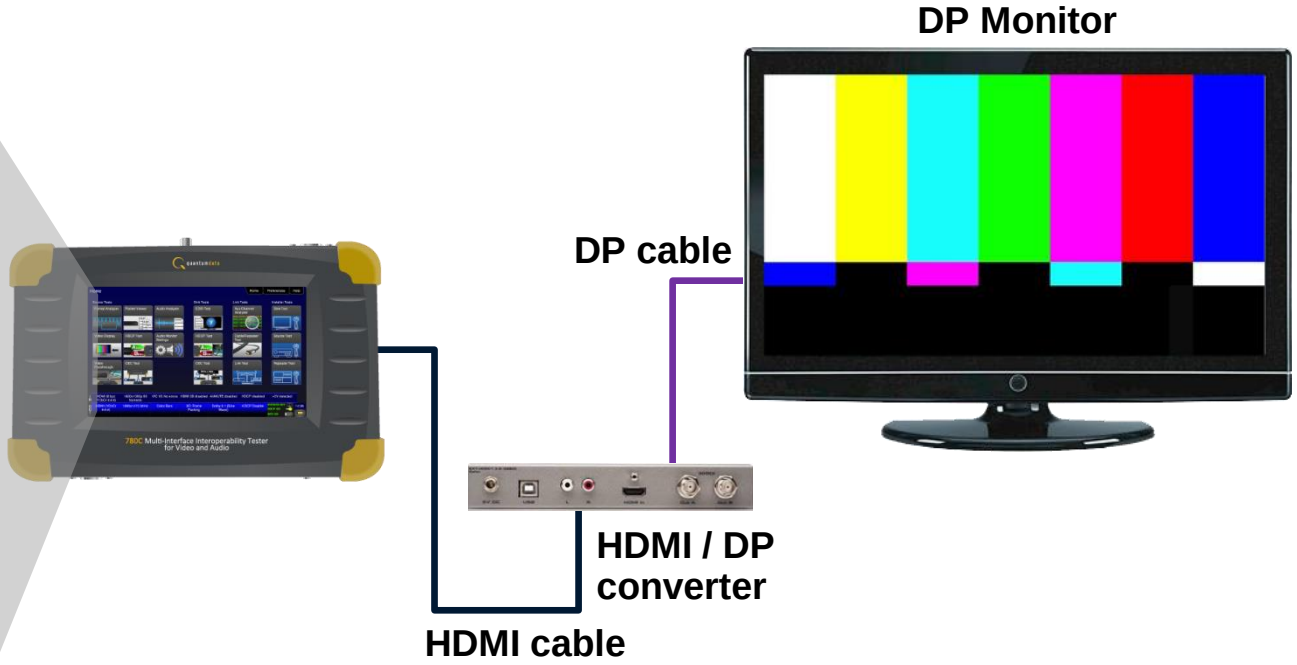


DP cable

DP Monitor

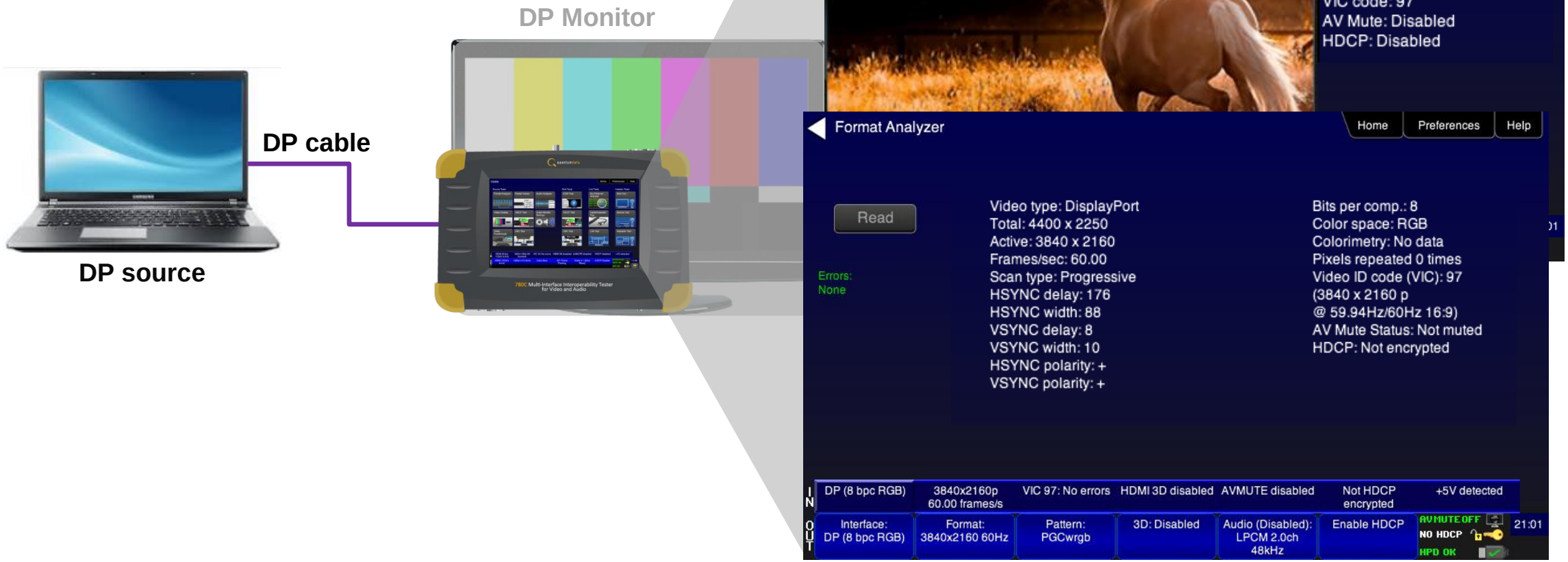
780E Sample Application – DisplayPort Device Testing

- DisplayPort Device Testing (780E)
  - Test video on an HDMI to DisplayPort converter device.



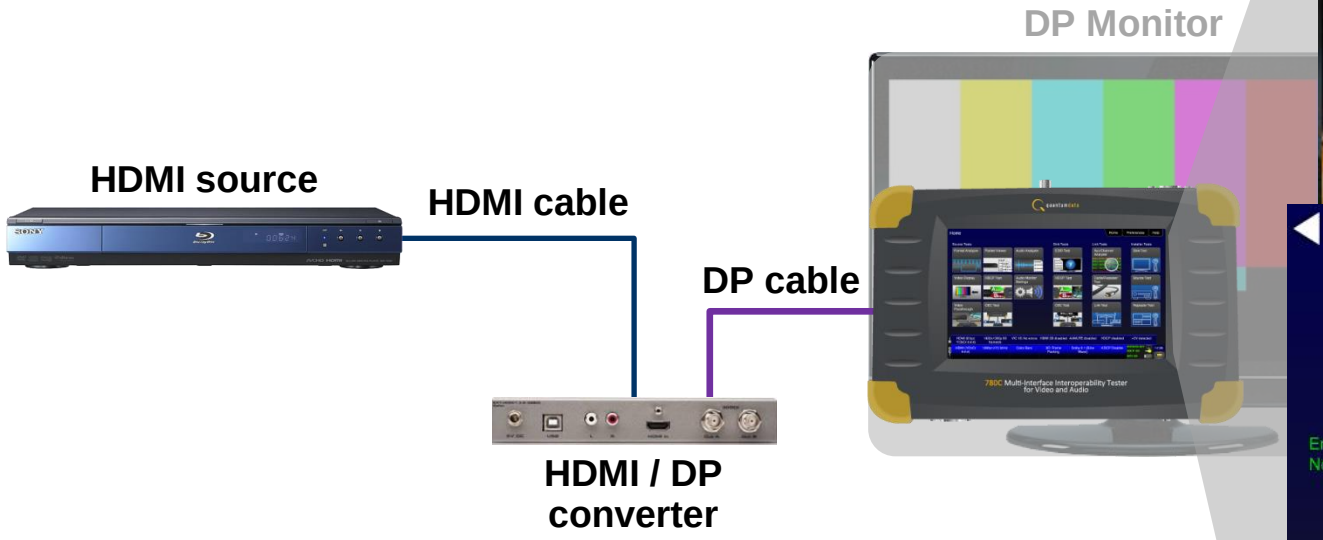
780E Sample Application – DisplayPort Device Testing

- DisplayPort Source Device Testing (780E)
  - Verify video and timing from an DisplayPort source device.



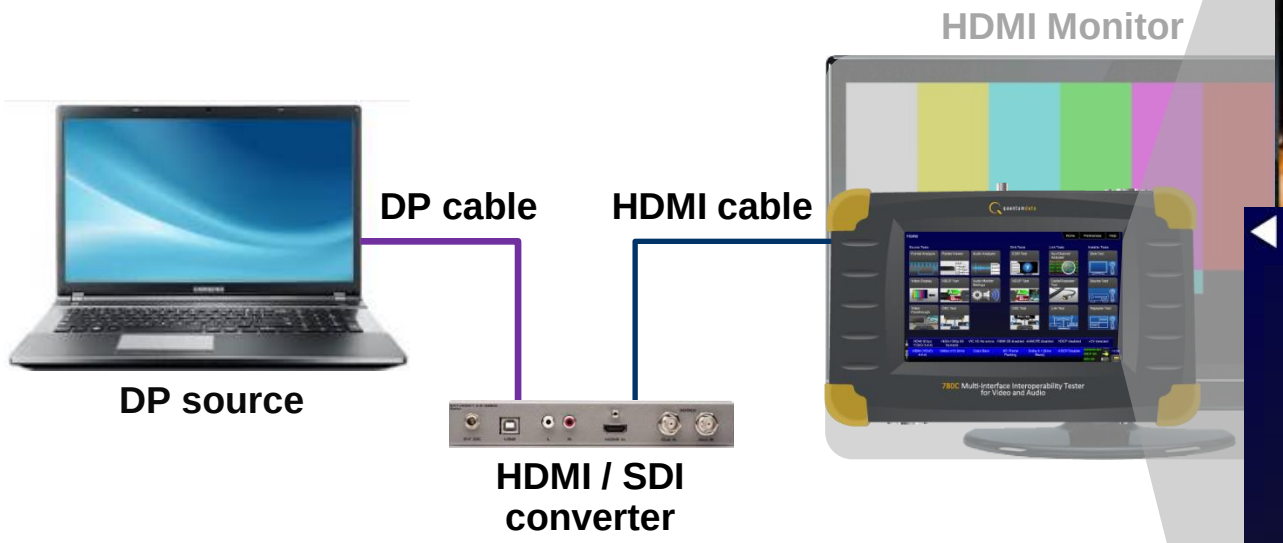
780E Sample Application – DisplayPort Device Testing

- DisplayPort Device Testing (780E)
  - Verify video and timing through HDMI to DisplayPort converter device.



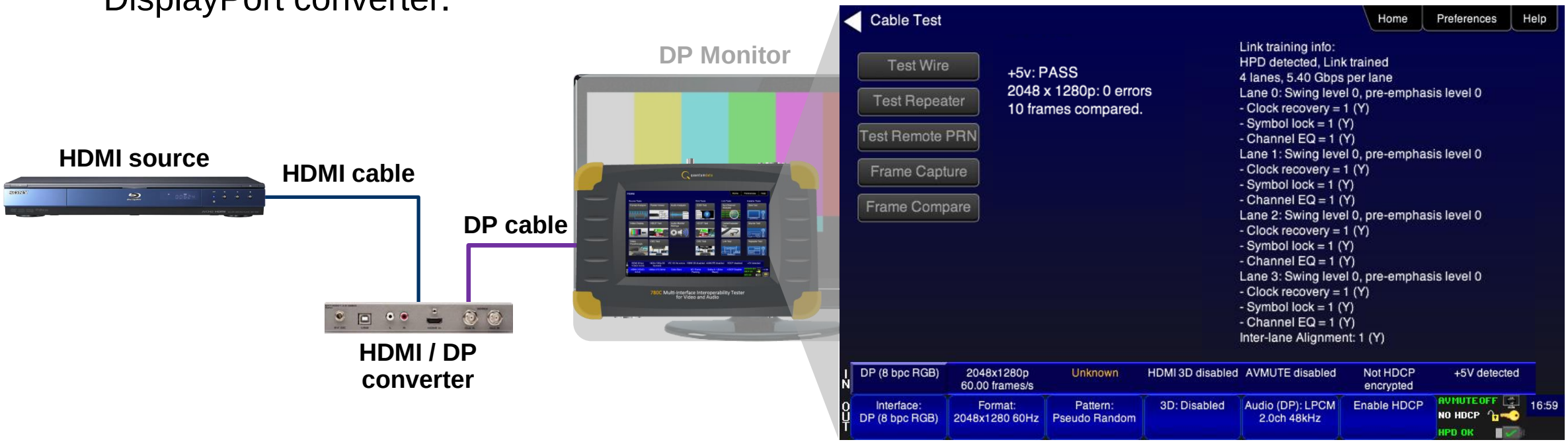
780E Sample Application – DisplayPort Device Testing

- DisplayPort Device Testing (780E)
  - Verify video, video parameters and timing through DP to HDMI converter device.



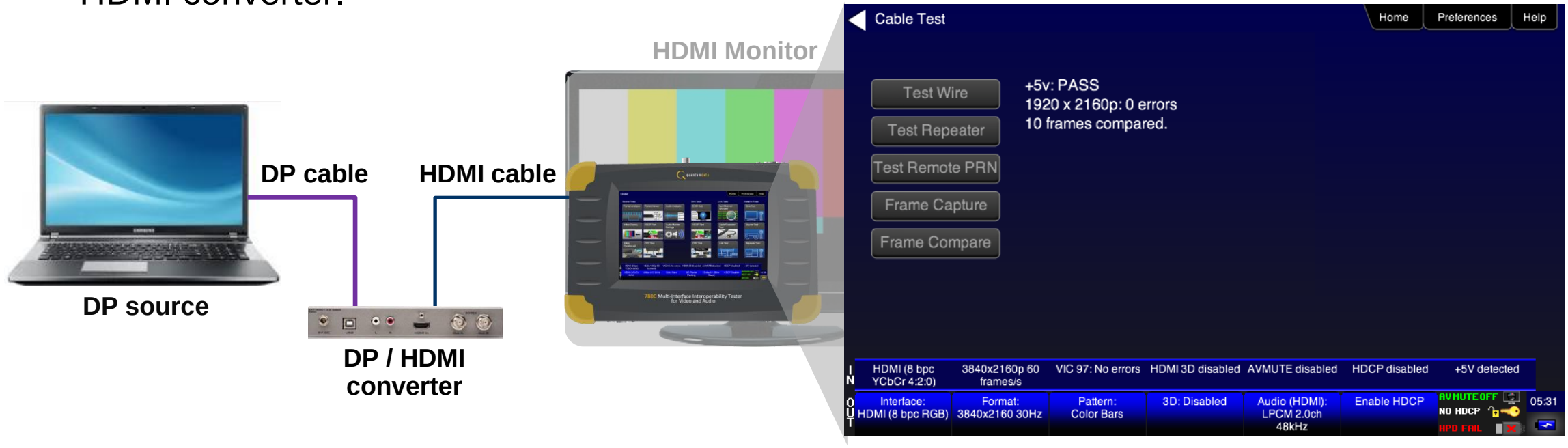
780E Sample Application – DisplayPort Device Testing

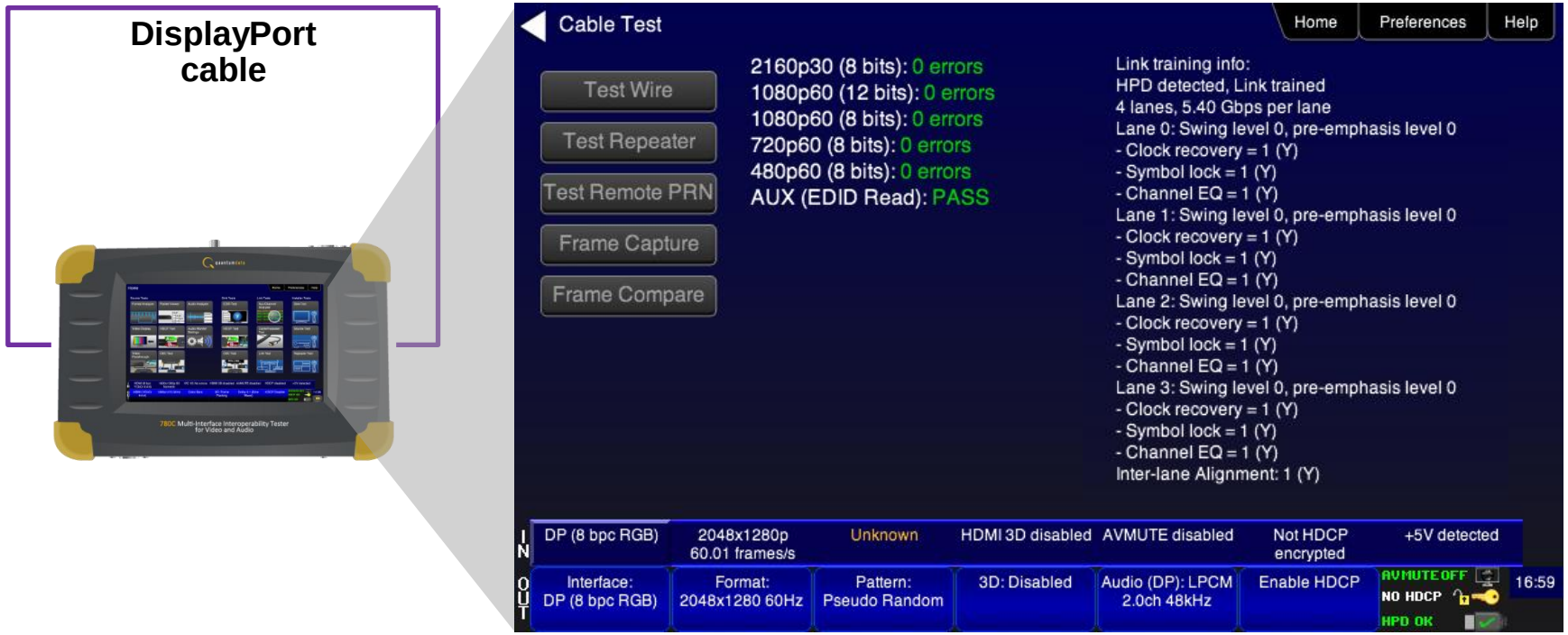
- DisplayPort Device Testing (780E)
  - Check for pixel errors on HDMI to DisplayPort converter.



780E Sample Application – DisplayPort Device Testing

- DisplayPort Device Testing (780E)
  - Check for pixel errors on DisplayPort to HDMI converter.



Sample Applications – DisplayPort Cable Test

- DisplayPort Cable Testing (780E)
  - Check for pixel errors on a DisplayPort cable.