quantumdata

780C MULTI-INTERFACE INTEROPERABILITY TESTER
for VIDEO AND AUDIO

Test multiple digital video interfaces with a single test instrument!
HDMI – HDBaseT – 3G-SDI

780C MULTI-INTERFACE INTEROPERABILITY TESTER

The Quantum Data 780C Multi-Interface Interoperability Tester is a portable digital video generator and analyzer that enables you to run tests on various digital video devices and network distribution devices on site or in the R&D lab. The 780C instrument provides a 7 inch color touch screen for operation and for viewing status of outgoing and incoming video and audio. The 780C is equipped with multiple interface types including HDMI, HDBaseT, 3G-SDI and component analog. Testing digital interfaces is supported by both an output port and an input port to allow testing of digital video sources, displays, audio devices and distribution devices. *Testing hybrid converter devices* supporting 3G-SDI, HDMI, HDBaseT distribution networks is a key application of the 780C as well.

MAIN FEATURES

Color Touch Screen - Large user friendly color touch screen enables you to operate the instrument and view incoming video and metadata from a one of the digital video source inputs.

Portability – Convenient size (7cm x 25cm x 15cm - 1.5Kg) enables easy transport throughout the lab or on site.

Test Pattern Library – Extensive test pattern library with over 50 patterns including 3D patterns and srolling and panning patterns. Optional test pattern packages from THX and Imaging Science Foundation (ISF) are also available.

Format Timing Library – Extensive video format library with over 300 resolutions.

Custom formats and patterns – Import custom test pattern bitmaps and video timings for use in testing.

One Button "Installer" Tests – Convenient test suites for HDMI and HDBaseT source, sinks and repeaters.

Real Time Status Bar - Provides a real time at-a-glance status of the output and input of any of the digital video outputs and inputs and provides the output status of the analog output.

Passthrough – Pass the incoming HDMI, HDBaseT or SDI out the HDMI output port for monitoring.

Auxiliary Channel Analyzer (ACA) – Monitor the connection sequence transactions for HDMI and HDBaseT for EDID exchange, connection detection and HDCP content protection transactions.

Protocol Tests – Run basic tests on HDMI and HDBaseT source and sink devices to verify InfoFrames, EDID, HDCP and CEC.

EDID Testing – Emulate any EDID including those from the Quantum Data EDID Library and test source response. Run automated EDID tests on HDMI and HDBaseT source devices.

Tilt Bail – Rests on a convenient angle on your benchtop for viewing and operating.

SD Card – Admin slot for upgrading and exporting test data.

RS-232 – Command line Interface for automated control and testing.

USB Port – Admin port used for command line control and transferring custom video formats, test patterns, EDIDs and exporting test reports.

HDMI

Output Port - Emulates an HDMI source. Operates up to 300MHz for testing on HDMI 2.0 4K-capable HDMI HDTVs and other sink devices even at 50/60Hz with HDMI 2.0 4:2:0 pixel encoding.

Input Port - Emulates an HDMI sink. Operates up to 300MHz for testing HDMI 2.0 4K-capable HDMI source devices. Provides basic analysis of HDMI source devices including timing, InfoFrames and protocol tests for HDCP, EDID, CEC and connection detection events.

HDBASET

Output Port - Emulates an HDBaseT source. Operates up to 300MHz for testing the inputs into an HDBaseT downstream distribution device or network or for testing sink devices such as 4K-capable projectors and A/V receivers with native HDBaseT inputs.

Input Port - Emulates an HDBaseT sink. Operates up to 300MHz for testing HDMI 2.0 4K-capable HDBaseT source devices. Provides basic analysis of HDBaseT source devices including timing, InfoFrames and protocol tests for HDCP, EDID, CEC and connection detection events.

SDI/HD-SDI/3G-SDI

Output Port - Emulates an SDI/HD-SDI/3G-SDI source. Operates up to 2.97Gb/s bitrate for testing SDI monitors and displays.

Input Port - Emulates an SDI/HD-SDI/3G-SDI display. Provides basic analysis of SDI/HD-SDI/3G-SDI video streams including displaying the video in real time, measuring timing and checking audio.

ANALOG COMPONENT

Output Port - Emulates an analog component or RGB source. Operates up to 80MHz for testing on component analog inputs on HDTVs or RGB analog for testing computer displays.

HDMI

The 780C Multi-Interface Interoperability Tester supports an HDMI output and an HDMI input. The following specifications apply to HDMI.

HDMI Specs	
Version	HDMI 1.4a and 2.0 (partial)
Connector	(1) Type A Tx; (1) Type A Rx
Protocol	HDMI, DVI
Video Colorimetry	ITU-R BT.601-5, ITU-R BT.709-5
Video Max Pixel Rate	300MHz (3.00Gbps/channel TMDS rate)
Color Depths	8, 10, 12 bits/component
Video Encoding	RGB, YCbCr
Video Sampling Modes	4:4:4, 4:2:2, 4:2:0 per HDMI 2.0
Audio – Formats	LPCM, Dolby (DD, DD+ TrueHD), DTS (ES, HD, Master Audio)
Audio LPCM Settings	Sampling rates (32.0 – 192kHz) Bit per sample (16, 20, 24)

HDBASET

The 780C Multi-Interface Interoperability Tester supports an HDBaseT output and an input. The following specifications apply to HDBaseT.

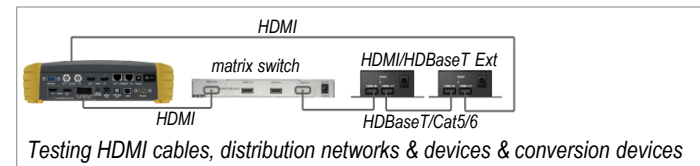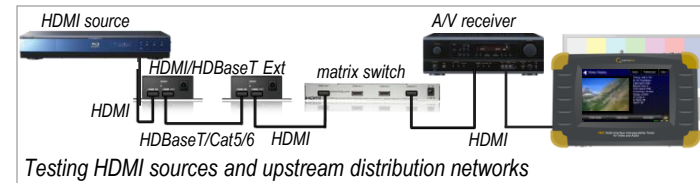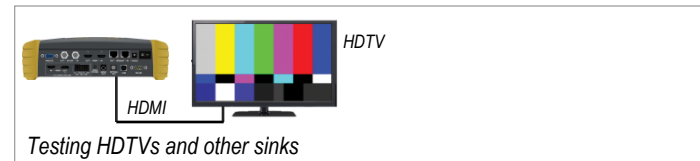| HDBaseTSpecs	
Version	1.0 (1.2 CTS)
Connector	(1) 8P8C (RJ-45) Tx; (1) RJ-45 Rx
Video Colorimetry	ITU-R BT.601-5, ITU-R BT.709-5
Video Max Bit Rate	9.0 Gbps
Color Depths	8, 10, 12 bits/component
Video Encoding	RGB, YCbCr
Video Sampling Modes	4:4:4, 4:2:2, 4:2:0 per HDMI 2.0
Audio – Formats	LPCM, Dolby (DD, DD+ TrueHD), DTS (ES, HD, Master Audio)
Audio LPCM settings	Sampling rates (32.0 – 192kHz) Bit per sample (16, 20, 24)

SDI/HD-SDI/3G-SDI

The 780C Multi-Interface Interoperability Tester supports an SDI/HD-SDI/3G-SDI output and input. The following specifications apply:

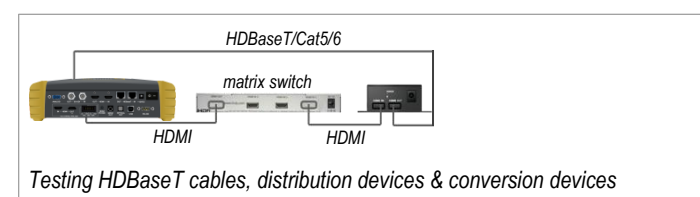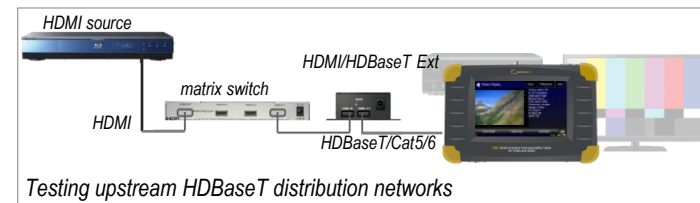| SDI / HD-SDI / 3G-SDI	
Version / Standards Formats	SMPTE 259M, 344M, 292M, 372M, 424M Level A (Level B is future)
Connector	BNC 75 ohm
Video Colorimetry	ITU-R BT.601-5, ITU-R BT.709-5
Video Max Bit Rates	SDI: 360Mb/s HD-SDI: 1.485Gbps 3G-SDI: 2.97Gbps
Encoding Bit Depths	10 bits/component
Video Encoding/Sampling	YCbCr - 4:2:2
Audio – Formats	LPCM, 8 Ch, 48kHz @ 24bits/sample

HDMI - APPLICATIONS

The HDMI interfaces support the following applications

Testing HDTVs and other sinks

Testing HDMI sources and upstream distribution networks

Testing HDMI cables, distribution networks & devices & conversion devices

HDBASET – APPLICATIONS

The HDBaseT interfaces support the following applications

Testing projectors and A/V receivers with HDBaseT native inputs

Testing upstream HDBaseT distribution networks

Testing HDBaseT cables, distribution devices & conversion devices

SDI/HD-SDI/3G-SDI – APPLICATIONS

The 3G-SDI interfaces support the following applications

Testing reference monitors and displays

Testing incoming 3G-SDI video stream

Rev. A3 – June 6, 2014