



980 HDMI VIDEO GENERATOR MODULE



The 980 HDMI Video Generator module supports video and audio functional testing at data rates up to 300MHz for testing Ultra HD TVs with 4K resolutions including **NEW!** at 50/60Hz using HDMI 2.0 4:2:0 pixel encoding. The module features two (2) HDMI outputs—both active simultaneously—for testing HDTVs with multiple HDMI inputs. The initial release of the module supports the video pattern testing for HDMI sink devices. Subsequent releases will optionally support analysis functions for testing source devices such as basic video and audio analysis and timing analysis.

The 980 HDMI Video Generator module can optionally be installed in either of the 980 Advanced Test Platforms: 980, 980B or **NEW!** 980R.

The 980 HDMI Video Generator module is equipped with all the standard video timings including **NEW!** HDMI 2.0 21:9 formats. The module also provides standard test patterns—including support for 3D—necessary for testing HDTVs including tests for HDMI protocols such as HDCP, EDID and CEC. The module provides compressed and uncompressed HDMI audio formats using a variety of audio test signals.

You can configure the list of format timings and test patterns using the Format List Editor and Image List Editor. This facilitates convenient and quick access during testing. The module provides a Format Editor for creating custom format timings or for quickly making modifications to existing timings for testing.

The 980 HDMI Video Generator module offers a variety of features for testing HDMI protocols. The Quantum Data Auxiliary Channel Analyzer (ACA) application enables you to monitor EDID and HDCP transactions between the module and a connected sink device. You can monitor in real time through the 980/980B's embedded touch display and save files for later viewing or for sharing with colleagues at other locations. You can also view HDMI data island packets transmitted from the video generator module and a connected display. Test images enable you to view the status and progress of HDCP authentication. The EDID Decode feature enables you to examine the contents of the EDID of the connected sink or display in human readable text.

The 980 HDMI Video Generator module also provides an HDMI input port for optional basic verification of HDMI source devices. The HDMI input port enables you to view images of the incoming video including 4K video and also view the essential video attributes. You can also emulate any EDID on the HDMI input port to test an HDMI sources response to known-good or known-bad EDIDs.

The optional CEC Tester application enables you to send CEC messages and run robustness tests or “irregular” tests on your CEC device using message with bit corruptions, timing variations. You can also simulate irregular non-acknowledgement and arbitration scenarios.

The 980 HDMI Video Generator module can be controlled either through the PC-based 980 GUI Manager or through the embedded 980 GUI Manager running on the 980 platform itself. The 980's built-in color touch screen provides a graphical user interface (GUI) to control the instrument and to view incoming video and metadata in the Real Time mode when using the module's optional analyzer feature available in subsequent releases.



STANDARD FEATURES / BENEFITS

Two (2) HDMI Outputs

1) Max pixel clock 24 bit color: 300MHz; e.g. 4Kx2K 30Hz
 Supports 4K 50/60Hz with HDMI 2.0 4:2:0 pixel encoding.
 Max pixel clock 36 bit color: 165MHz; e.g. 1080p60.
 Max TMDS rate 300MHz; 3.00Gb/s per channel.

Standard Video Formats (Timings)

Provides over 600 standard timings for consumer electronics and PC. Create your own custom formats with Format Editor Utility. Create custom format lists to facilitate testing with a specific set of formats.

Standard Video Patterns

Provides over 300 standard test patterns. Create custom pattern lists to facilitate testing with a specific set of test patterns.

HDMI Audio

Support HDMI LPCM and compressed audio formats including Dolby and DTS compressed audio. Offers various audio test tones with programmable amplitude, sampling rate and bit depths for LPCM.

OPTIONAL FEATURES / BENEFITS

CEC Tester Application

Test CEC message handling capability of CEC devices. Run robustness tests or "irregular" tests on your CEC device using message with bit corruptions, timing variations. Also simulate irregular non-acknowledgement and arbitration scenarios.

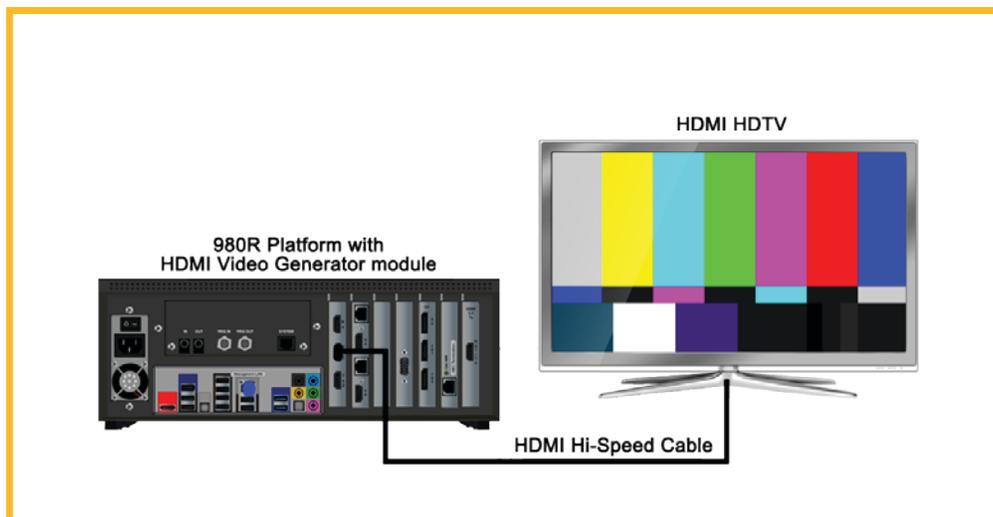
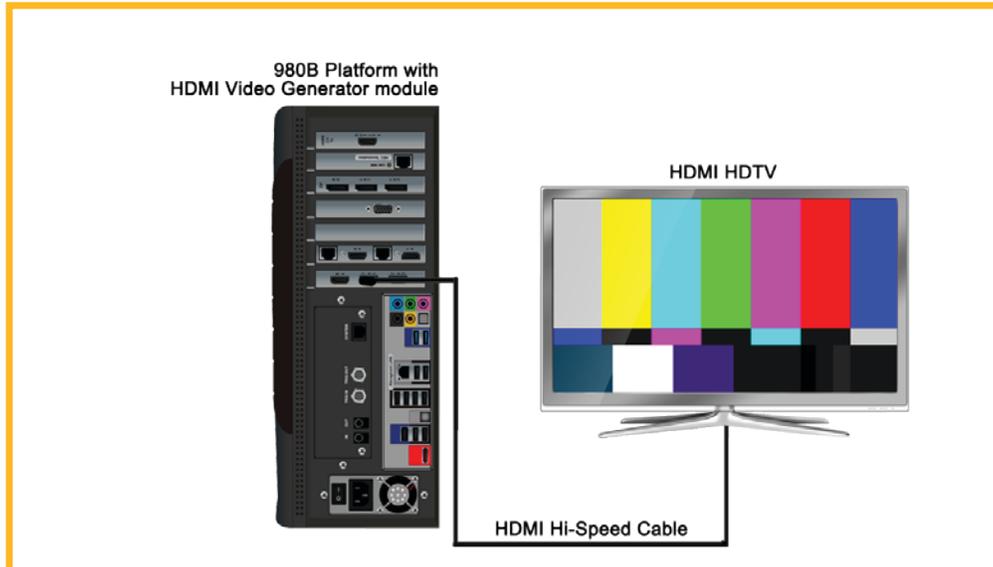
Auxiliary Channel Analyzer

Monitor DDC transactions—HDCP and EDID—as well as CEC messages with HDMI source or HDMI sink. Support monitoring with HDMI sink device under test.

HDMI Rx Basic Analyzer

View video and key video information from HDMI source devices to gain quick at a glance assurance that the source is sending the correct video.

HDMI TEST CONFIGURATIONS - 980B/980R



SPECIFICATION

Formats (timing)

Formats	Over 600 standard timings for Consumer Electronics, Computer
---------	--------------------------------------------------------------

Test Patterns

Patterns	Over 300 standard test patterns add custom bitmaps
Moving pattern	Scroll any test pattern using ImageShift feature
HDMI 3D	3D test images; add custom 3D bitmap images
3D Formats	Top-and-Bottom, Side-by-Side, Frame Packing
Special test patterns	Functions
HDCPprod	HDCP
EDIDTest	EDID
CEC	CEC Ping

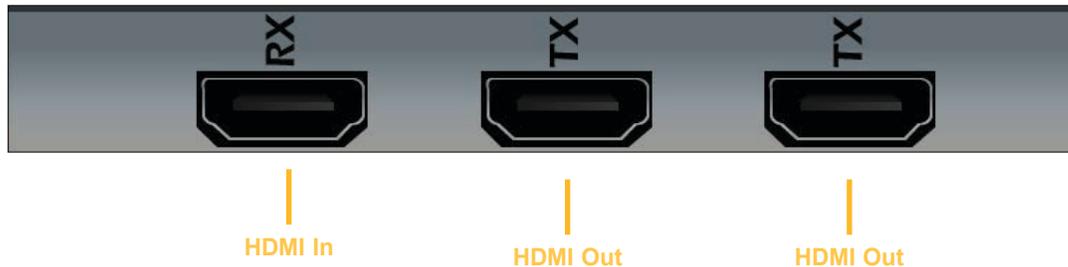
HDMI Input

Connector type	(1) one HDMI Type A
TMDS protocols	HDMI, DVI
Number of links	single
Pixel rate (MHz)	300

HDMI Output (includes DVI)

Connector	(2) two HDMI Type A
Video	
Pixel rate	up to 300 MHz
TMDS clock rate	up to 300 MHz (3.00 Gb/s per channel)
Max resolution	4K x 2K at 30Hz and 50/60Hz with 4:2:0 pixel encoding per HDMI 2.0
Encoding (HDMI)	RGB / YCbCr
Encoding (DVI mode)	RGB
Sampling mode (HDMI)	4:4:4 / 4:2:2 / 4:2:0 (per HDMI 2.0)
Sampling mode (DVI mode)	4:4:4
Color depth (HDMI)	24, 30 & 36 bits per pixel
Max TMDS clock rate with deep color	225MHz
Color depth (DVI mode)	24 bits per pixel
Color space	ITU BT.601 & BT.709
Audio	
Sampling rates (kHz)	32.0, 44.1, 48, 88.2, 96, 176.4, 192.0
Programmable LPCM (IEC 60958)	All sampling freq, up to 8 channel
DTS-ES 6.1	Noise patterns, 6.1
Dolby Digital (IEC 61937)	Noise patterns, 5.1

MODULE DESCRIPTION



Specifications are based on hardware and firmware revisions available as of April 2014, and are subject to change without notice.

Revised 04/01/14 Rev. A9