

High-Definition Multimedia Interface

Version 2.0

Quantum Data MOI v1.2a

Test ID: HF3-23

December 9, 2015

Preface

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Document Revision History

1.2a December 9, 2015 Updated diagrams to reflect test configurations and test equipment used.

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Contact Information

The URL for the HDMI Forum web site is: <http://www.hdmiforum.org/>

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Introduction

This document provides a set of Method of Implementation for test method described in HDMI Compliance Test Specification Version 2.0 (HDMI CTS 2.0). HDMI Forum created HDMI CTS 2.0 to specify a set of tests that should be performed to verify features described in HDMI Specification Version 2.0a.

Scope

This document provides testing procedures for HDMI CTS 2.0 Test ID HF3-23: “Repeater Repeated Input Port HDR”. The procedure below deals with single resolution and only one Test ID is considered at a time.

References

Normative References

High-Definition Multimedia Interface Specification Version 1.4b, October 11, 2011.
HDMI Compliance Test Specification Version 1.4b, October 11, 2011.
High-Definition Multimedia Interface Specification Version 2.0a, March 19, 2015.
HDMI Compliance Test Specification Version 2.0,

Informative Reference

No additional informative references.

Test ID HF3-23: Repeater Repeated Input Port HDR

Objective

Confirm that the HDMI input of a stream that is transported to an HDMI output is compliant.

This test is applied if the CDF field Repeater_HDR is “Y”.

This test will be performed using the “Mini-CDF” form, under the condition where a fully compliant reference HDMI Monitor and Speaker are attached to each relevant HDMI output of the DUT which may impact the behavior of the tested HDMI input.

Capability(s)

The Repeater DUT supports any HDR signal retransmission.

Table 9-14 Repeater Repeated Input Port - 6G – 2160p Generic Equipment

Item	Generic Equipment Reference	Qty.
1	Fully-compliant reference HDR Monitor and Speaker	1

Procedure

Setup:

- 1 Attach a fully compliant reference HDR Monitor and Speaker to each relevant HDMI output.
- 2 Configure the Repeater DUT to retransmit the signal from the tested HDMI input to the HDMI output.

Measure:

- 3 Perform Test ID HF2-54.

Vendor Specific Test Procedure

Test Equipment

A variety of equipment is needed for testing HDMI products. Each piece is authorized and included by name in this Compliance Test Specification. This section describes the Quantum Data test equipment.

HDMI 2.0 Video Generator module

The Quantum Data 980 HDMI 2.0 Video Generator module can be installed in the 980B or 980R Advanced Test Platforms. This 980 HDMI 2.0 Video Generator module serves the generic test functions called out in the HDMI 2.0 Generic CTS. Refer to the table below:

Item	Quantum Data Equipment	
1	980 Advanced Test Platform series:	
	Equipped with:	980 HDMI 2.0 Video Generator & HDMI 1.4 Protocol Analyzer modules
		HDMI CTS 2.0 Compliance Test Package #4

980 HDMI 2.0 Video Generator Module with 980 Series Platform Configurations

The figure below show depictions of the 980 HDMI 2.0 Video Generator module equipped in various 980B series platform. **Note:** Card positioning may vary depending on configuration.



Sink EDID – HDR Status Metadata Data Block

Test ID HF2-54: Sink EDID – HDR Status Metadata Data Block

1. Objective

Confirm that the Sink DUT contains a valid HDR Static Metadata Data Block.

2. Test Overview

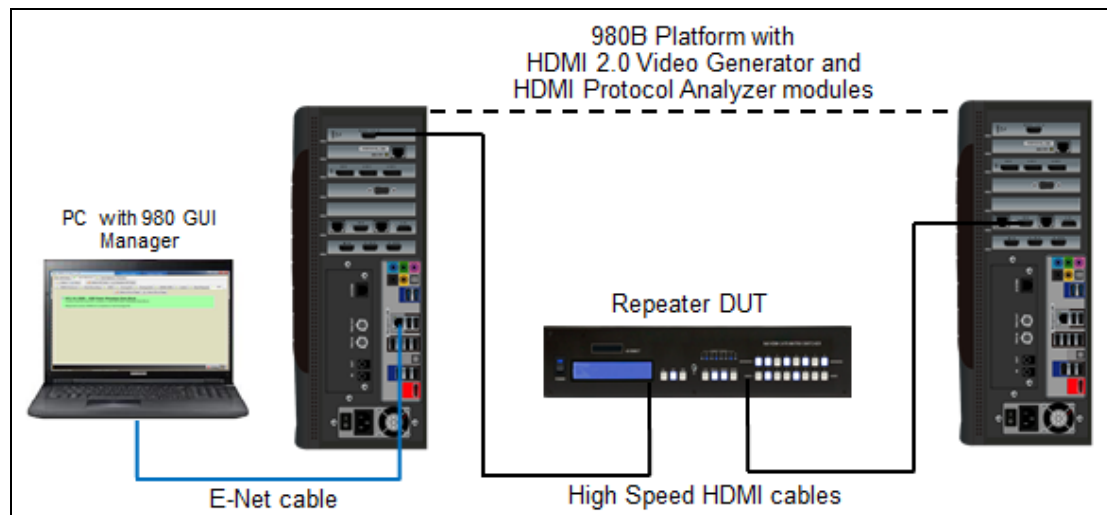
The Pass/Fail criteria for this test is assessed by the test application without any human observation required.

3. Procedure

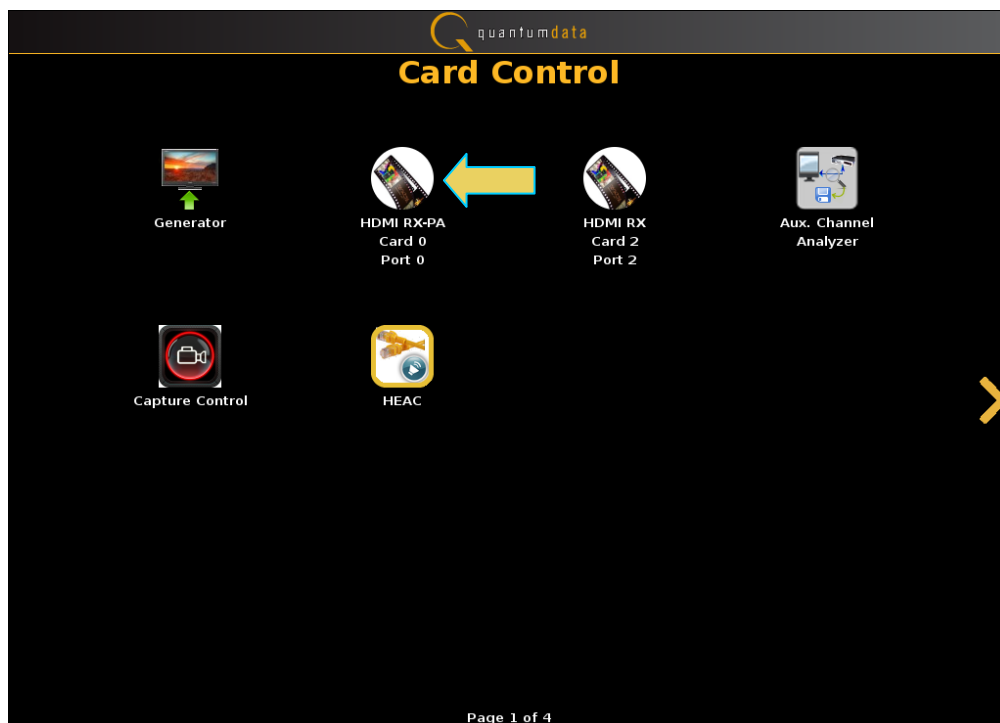
Use the following procedure to conduct this test.

1. Connect the Repeater DUT input to the Quantum Data 980 HDMI 2.0 Video Generator module HDMI Tx port. Use a High Speed HDMI cable.
2. Connect the Repeater DUT output to the 980 1.4 Protocol Analyzer module HDMI input port in accordance with the diagram below.

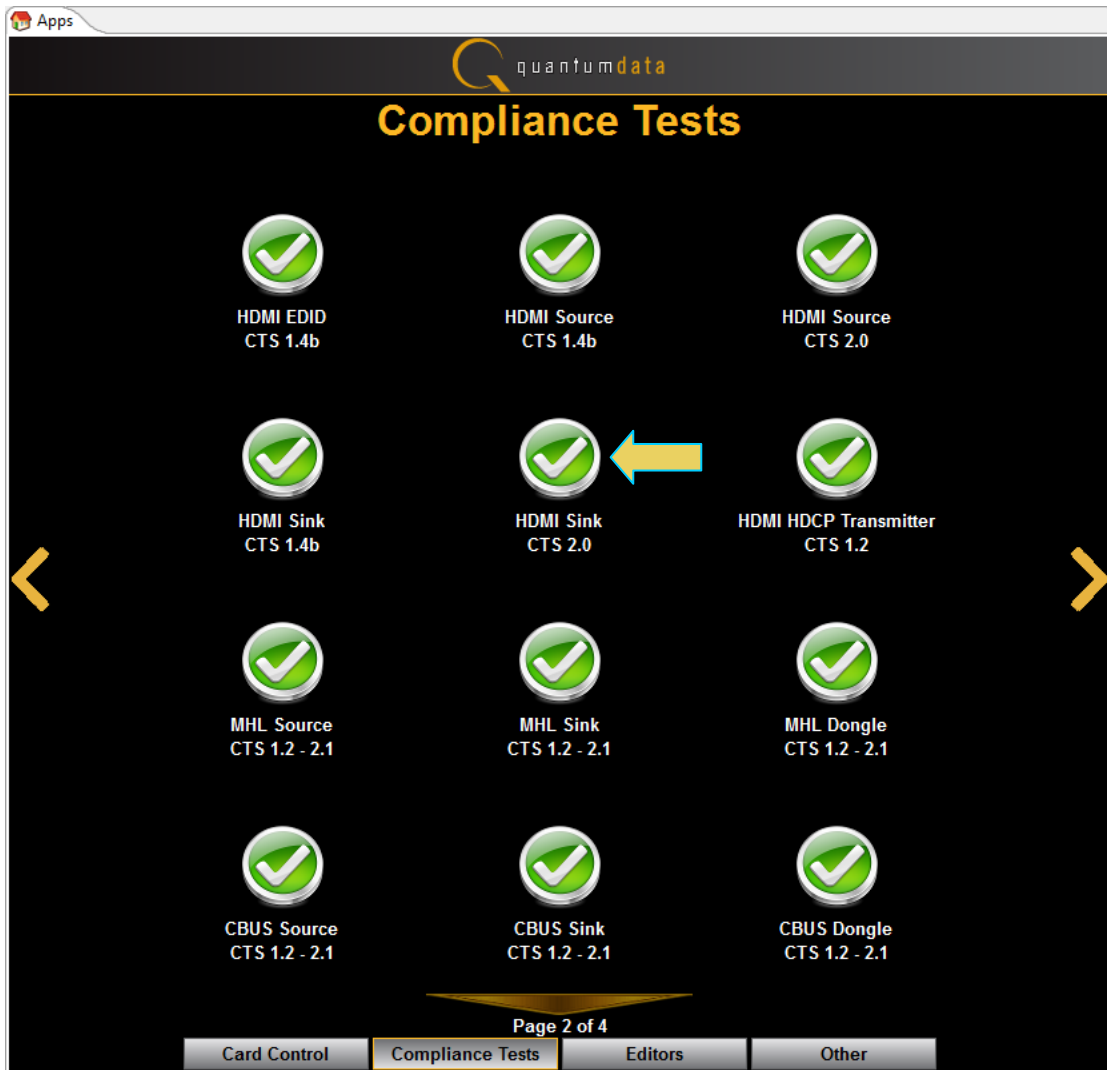
Note: Two 980B Platforms are depicted in the diagram below. Please note there is only one 980B platform required. Both required modules are equipped in a single 980B platform.



3. From the embedded touch screen GUI Manager, initiate the Real Time mode from the embedded GUI Manager. Refer to the screen example below.



4. From the external 980 GUI Manager running on the host PC, initiate the HF2-54 test.
5. Complete the following steps for the HF2-54 test:
 - 5.1 Click on the HDMI Sink CTS 2.0 icon in the Compliance Tests page of the Apps panel. Refer to the screen example below.



- 5.2 Navigate to the **CDF tab** if not already there. If there is a saved CDF file, then click on Open and select it. Otherwise, enter the DUT's CDF information for each tab and optionally click on Save to save the CDF. Select the items in the HDR tab that apply to the device under test.

HDMI 2.0 Sink CT 2.0

CDF Entry Test Selection Test Options / Preview

Open New Save CDF File: <not saved>

General 6G Video 21:9 (64:27) Video Y420 Video Audio HDR

Sink_HDR Does the product support any High Dynamic Range Video?
☒ Yes ☐ No

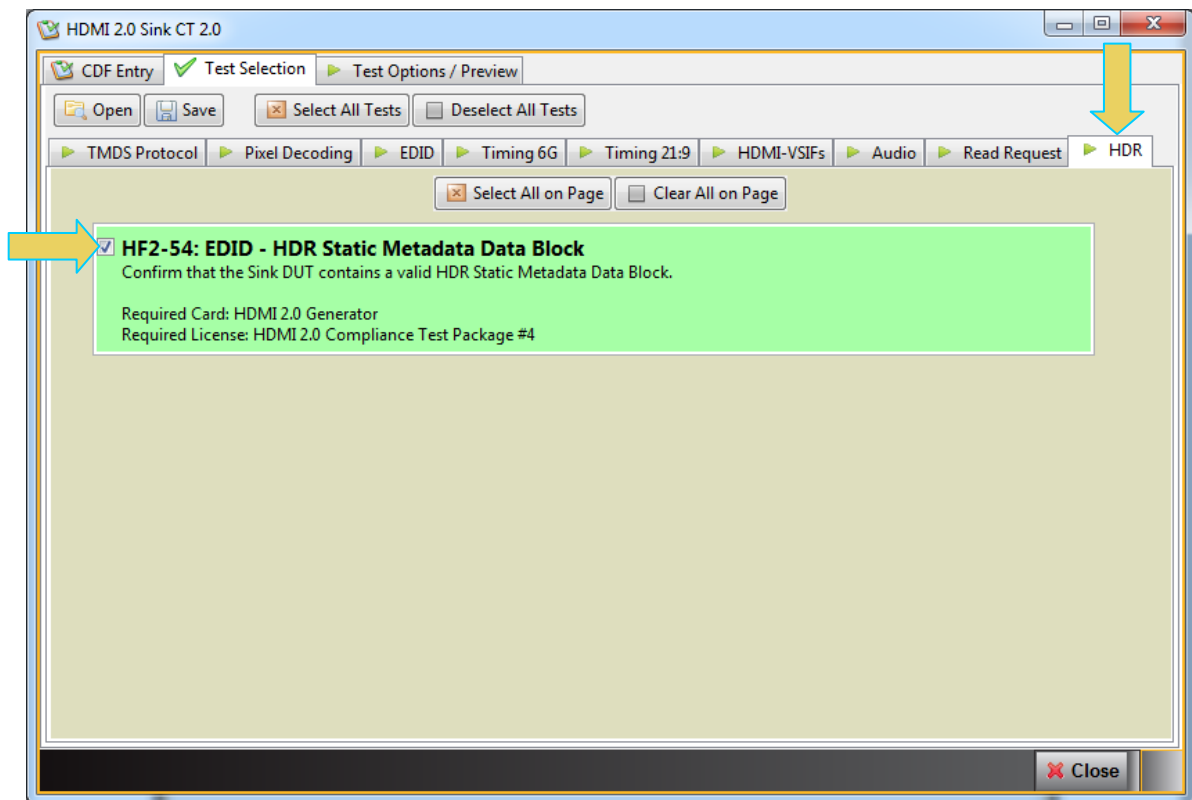
Sink_HDR_Traditional_SDR Does the product support Traditional Gamma SDR Luminance Range of High Dynamic Range Video?
☒ Yes ☐ No

Sink_HDR_Traditional_HDR Does the product support Traditional Gamma HDR Luminance Range of High Dynamic Range Video?
☒ Yes ☐ No

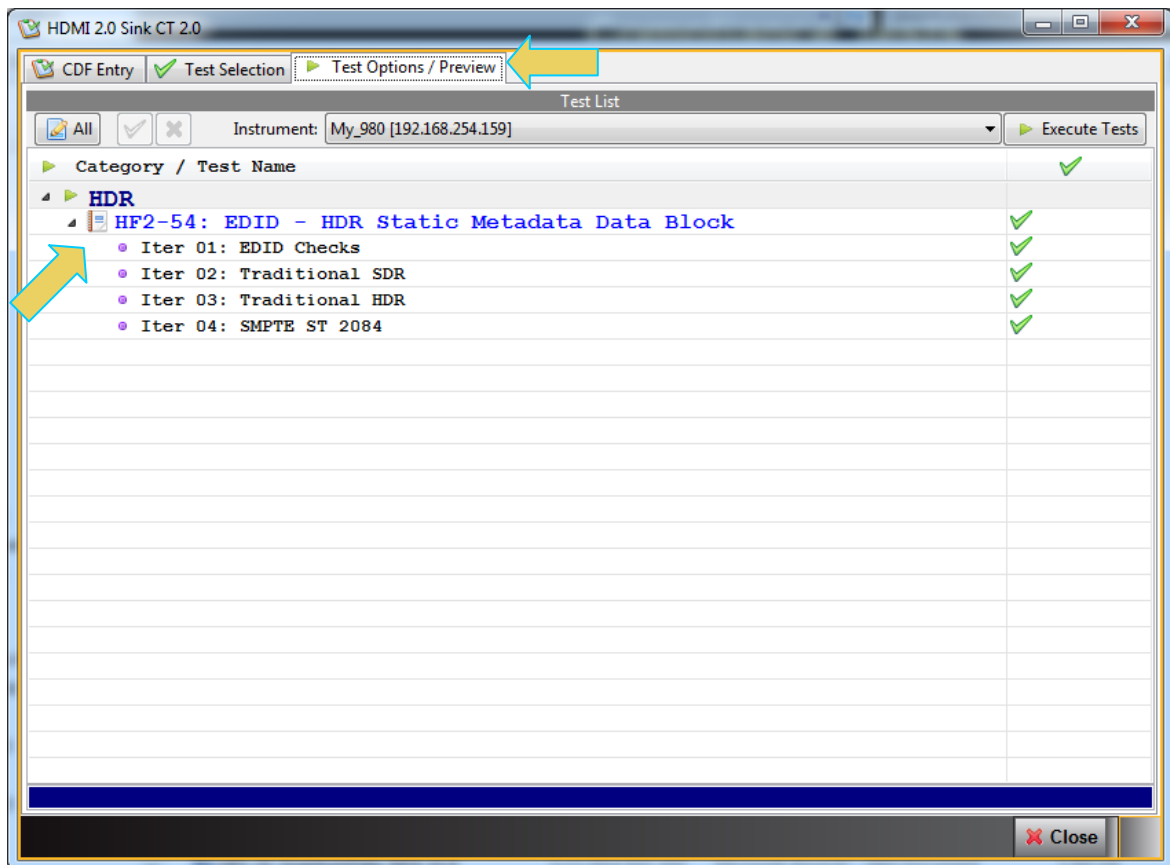
Sink_HDR_SMPTE_ST_2084 Does the product support SMPTE ST 2084 of High Dynamic Range Video?
☒ Yes ☐ No

Close

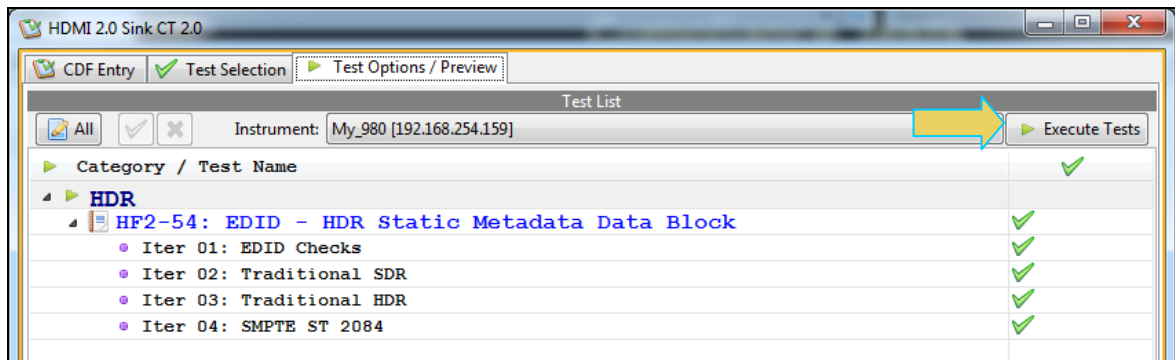
- 5.3 Click on the **Test Selection** tab, and select the HDR tab and then the Test ID HF2-54: Sink EDID – HDR Static Metadata Data Block Test. Refer to the screen example below.



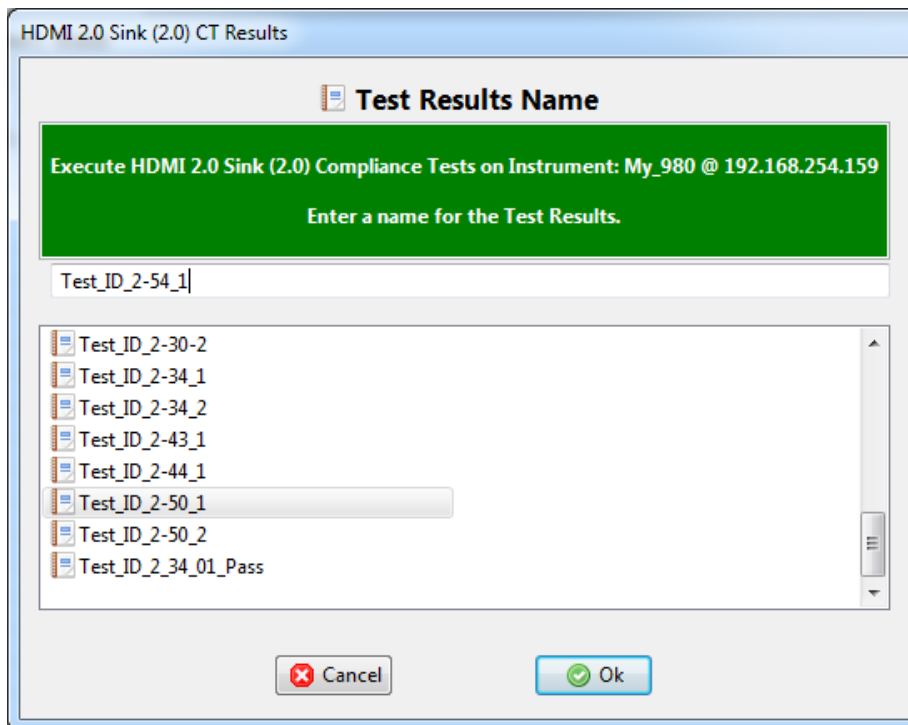
- 5.4 Click on **Test Options / Preview** tab and review the list of tests. Refer to the screen example below.



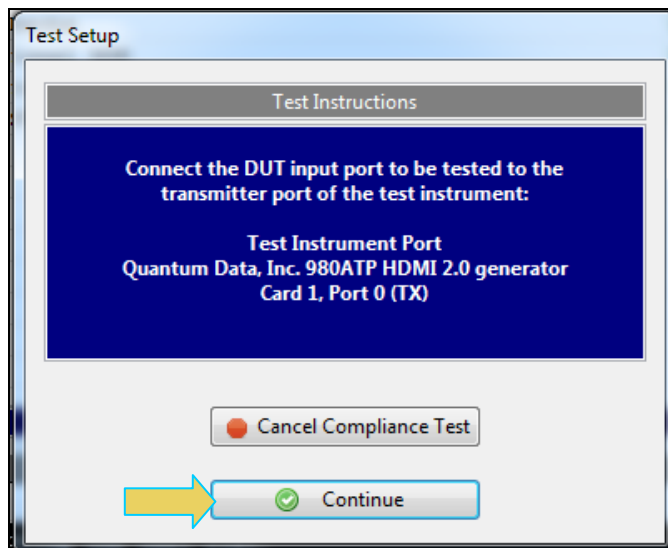
- 5.5 Click on the **Execute** tests activation button to initiate the test. Refer to the screen example below.



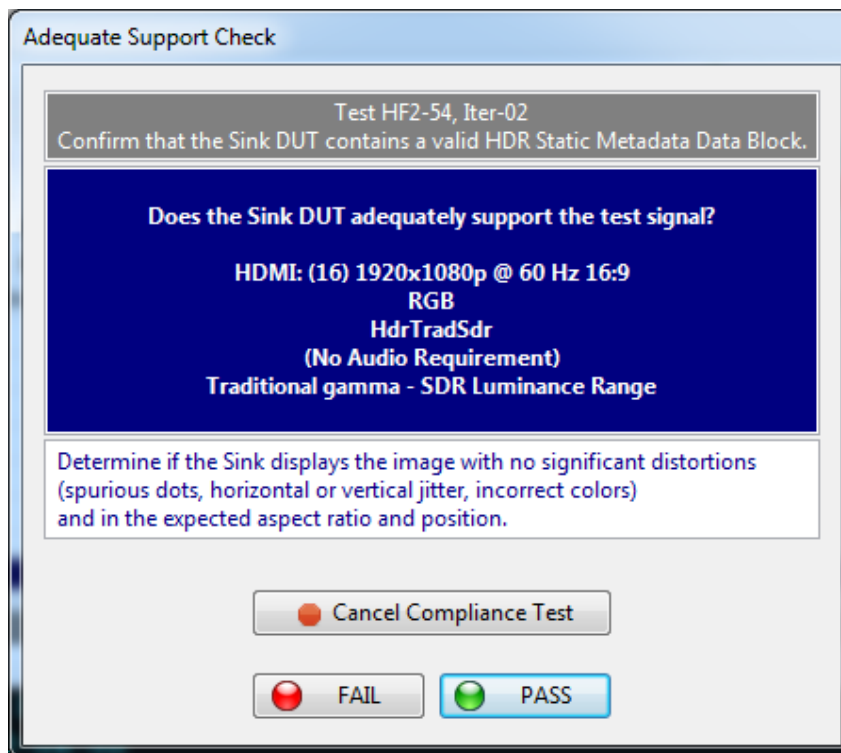
Note: You will be prompted with a dialog box to assign a name to the test results. Refer to the screen example below.



6. A Test window and log will appear and you will be prompted with the test setup description. Verify the test setup and click on **Continue** to run the test.

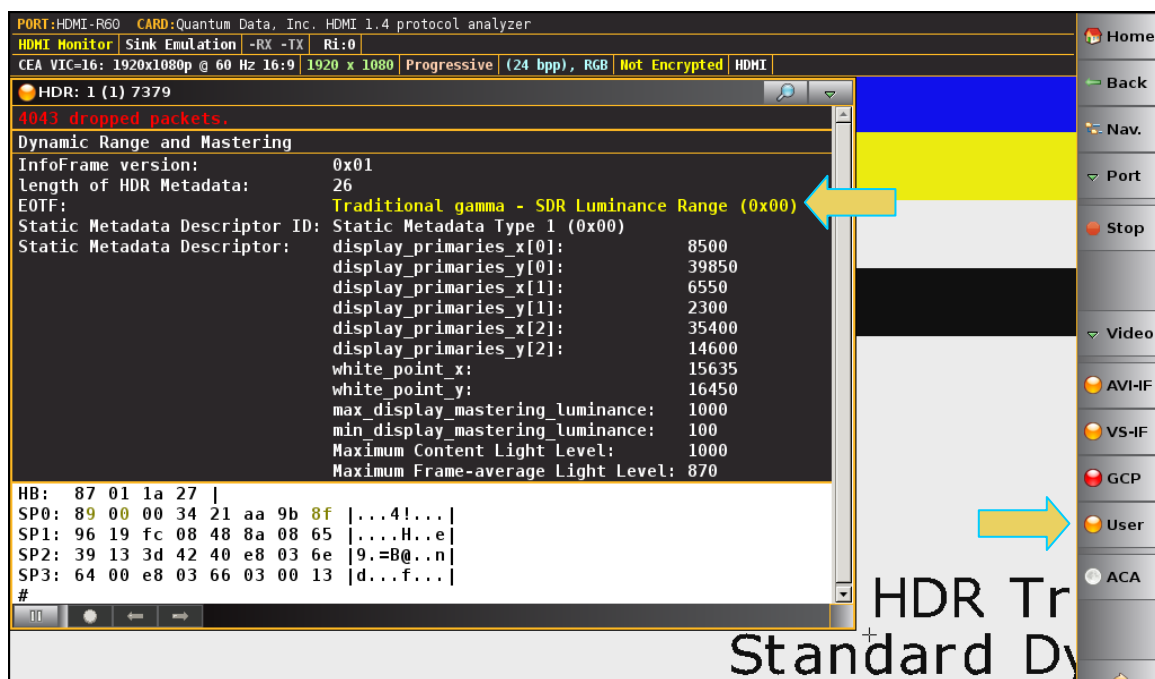


7. A dialog box will appear during the test (below) asking you to view an image on the embedded display. Follow the procedure below to assess PASS or FAIL.

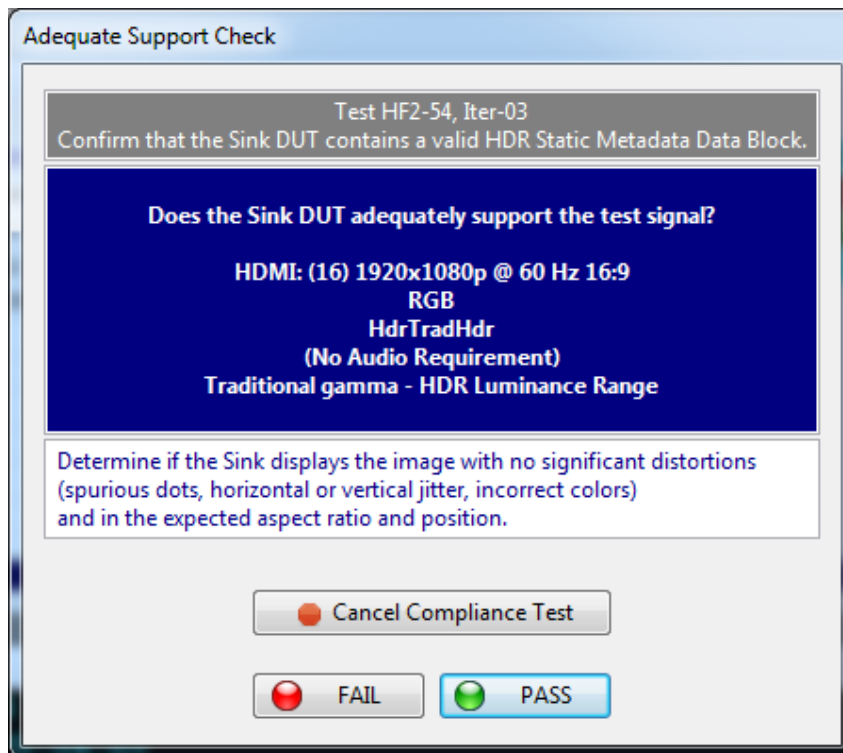


- 7.1 Verify the HDR content in the HDR InfoFrame on the embedded 980 GUI Manager's Real Time display. An example screen is shown below. Then click PASS or FAIL on the dialog box (above) depending on the content of the HDR InfoFrame.

Note: The HDR InfoFrame is available in the Real Time mode in the User flyout menu.



8. Another iteration of the test will occur and you will be prompted to assess an image (below). Follow the procedures below to assess PASS or FAIL.



- 8.1 Verify the HDR content in the HDR InfoFrame on the embedded 980 GUI Manager's Real Time display. An example screen is shown below. Then click PASS or FAIL on the dialog box (above) depending on the content of the HDR InfoFrame.

Note: The HDR InfoFrame is available in the Real Time mode in the User flyout menu.

PORT:HDMI-R60 CARD:Quantum Data, Inc. HDMI 1.4 protocol analyzer

HDMI Monitor Sink Emulation -RX -TX Ri:0

CEA VIC=16: 1920x1080p @ 60 Hz 16:9 1920 x 1080 Progressive (24 bpp), RGB Not Encrypted HDMI

HDR: 0 (0) 3033

33 dropped packets.

Dynamic Range and Mastering

InfoFrame version: 0x01

length of HDR Metadata: 26

EOTF: Traditional gamma - HDR Luminance Range (0x01)

Static Metadata Descriptor ID: Static Metadata Type 1 (0x00)

Static Metadata Descriptor:

display primaries_x[0]:	8500
display primaries_y[0]:	39850
display primaries_x[1]:	6550
display primaries_y[1]:	2300
display primaries_x[2]:	35400
display primaries_y[2]:	14600
white_point_x:	15635
white_point_y:	16450
max_display_mastering_luminance:	1000
min_display_mastering_luminance:	100
Maximum Content Light Level:	1000
Maximum Frame-average Light Level:	870

HB: 87 01 1a 27 |

SP0: 88 01 00 34 21 aa 9b 04 |...4!...|

SP1: 96 19 fc 08 48 8a 08 65 |....H..e|

SP2: 39 13 3d 42 40 e8 03 6e |9.=B@..n|

SP3: 64 00 e8 03 66 03 00 13 |d...f...|

HDR Tr

High Dyna

Home

Back

Nav.

Port

Stop

Video

AVI-IF

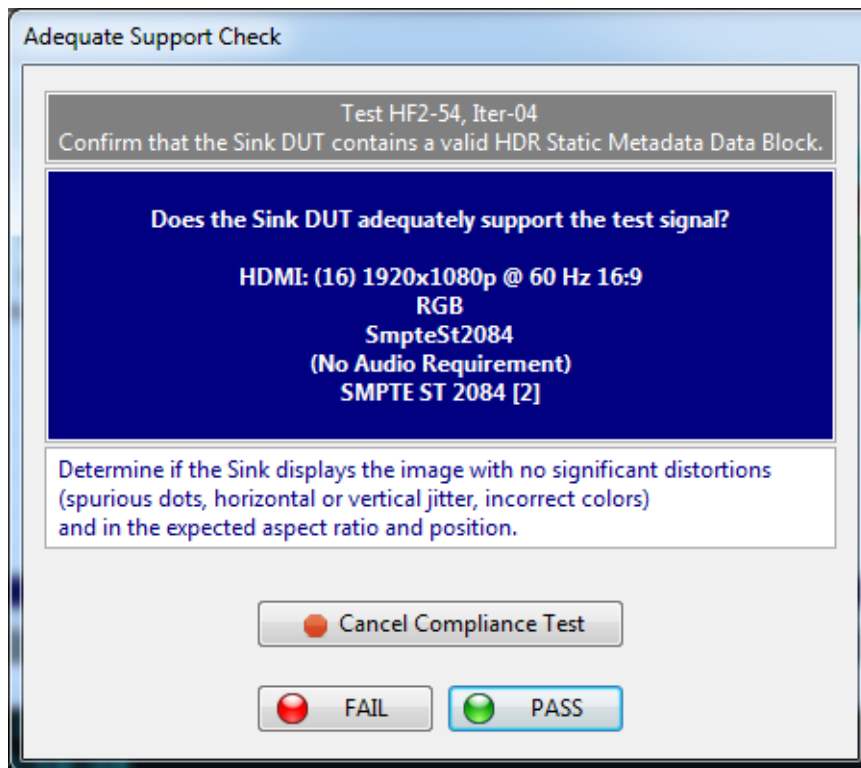
VS-IF

GCP

User

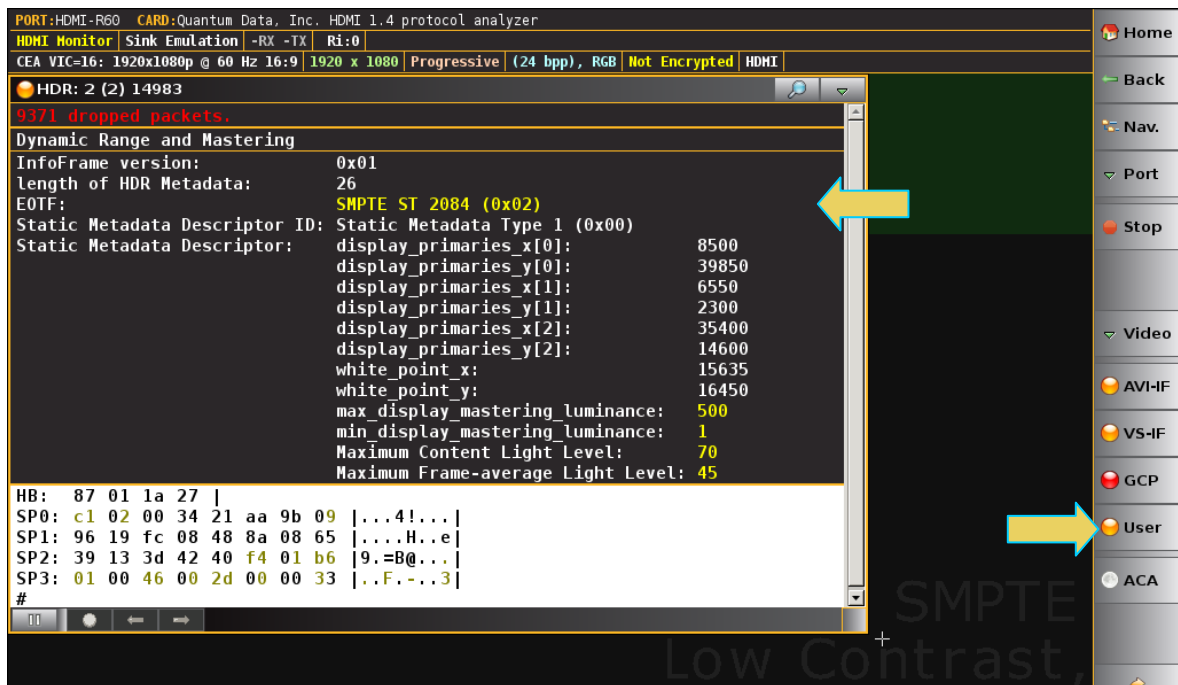
ACA

9. Another iteration of the test will occur and you will be prompted to assess an image (below). Follow the procedures below to assess PASS or FAIL.

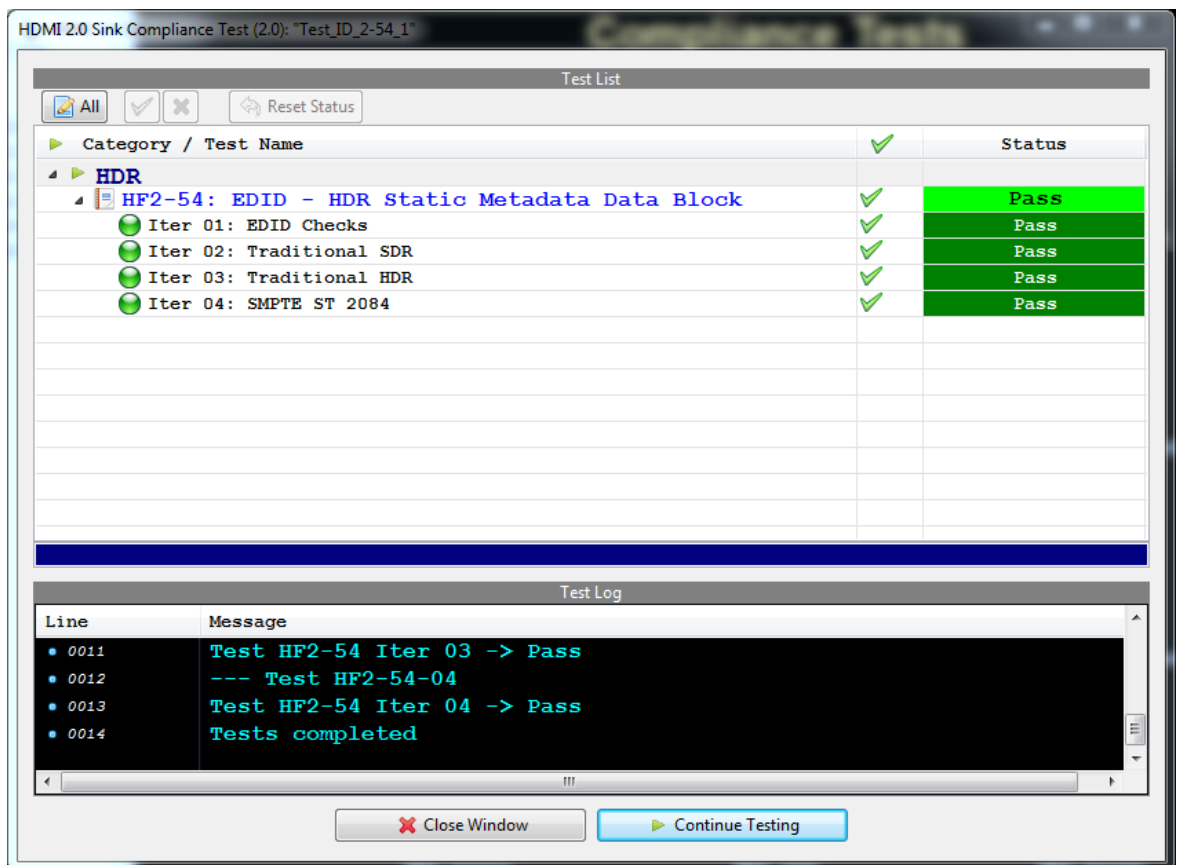


- 9.1 Verify the HDR content in the HDR InfoFrame on the embedded 980 GUI Manager's Real Time display. An example screen is shown below. Then click PASS or FAIL on the dialog box (above) depending on the content of the HDR InfoFrame.

Note: The HDR InfoFrame is available in the Real Time mode in the User flyout menu.



The test results will be indicated on the test window as shown below.



10. If the 980 HDMI 2.0 sink compliance test application reports PASS, then PASS. If the 980 HDMI 2.0 sink compliance test application reports FAIL, then FAIL.

When the test is completed and you close the Test Window the Test Results Viewer screen will appear.

