

High-Definition Multimedia Interface

Version 2.0

Quantum Data MOI v1.0

Test ID: HF2-25

July 31, 2014

Preface

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Document Revision History

1.0 July 31, 2014 - Initial Release.

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Contact Information

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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 2.0.

Scope

This document provides testing procedures for HDMI CTS 2.0 Test ID HF2-25: Sink Video Timing – 21:9 (64:27).” The procedure below deals with single resolution and only one Test ID is considered at a time.

References Document

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 2.0, August, 2013.
HDMI Compliance Test Specification Version 2.0.

Informative Reference

No additional informative references.

Test ID HF2-25: Sink Video Timing – 21:9 (64:27)

Objective

Confirm that a "21:9" (64:27)-capable Sink DUT, whenever it receives any supported "21:9" (64:27) Video Format, correctly decodes and displays it.

Table 8-43 Sink Video Timing – 21:9 (64:27) Requirements

| Reference | Requirement |
|------------------|-----------------------------|
| [HDMI 2.0: 7.5] | <See reference for details> |

Capability(s)

The Sink supports one or more 21:9 (64:27) Video Formats.

Test Equipment

| Item | Generic Equipment | Vendor Specific Equipment | Quantity |
|------|-----------------------|--|----------|
| 1 | EDID analyzer | 980 Advanced Test Platform series: | 1 |
| 1 | TMDS Signal Generator | 980 HDMI 2.0 Video Generator module HDMI CTS 2.0 Compliance Test Package #4 | 1 |

Generic Procedure

Setup:

- 1 If the CDF field SINK_Video_Formats_21by9 is all "N", then SKIP this test.
[Check EDID listing of the supported "21:9" (64:27) formats]
 - 2 Connect the DUT to the EDID Analyzer.
 - 3 Read the EDID of the Sink DUT.
[Check consistency check EDID vs CDF field]
 - 4 For each of the VIC codes in the ranges 65..92 and 103..107, check the Short Video Descriptors and the CDF fields:
 - 4.1 If support for this Video Format is listed in the EDID but it is not declared in the CDF field, then FAIL.
 - 4.2 If support for this Video Format is not listed in the EDID but it is declared in the CDF field, then FAIL.
- [Check the DUT's capability to support the Video Formats]

- 5 Connect the Test Signal Generator to the Sink DUT.
- 6 For each of the VIC codes listed in CDF field SINK_Video_Formats_21by9, configure the Test Signal Generator to generate the Video Timing specified by the VIC code. The Test Signal Generator shall have a Pixel clock frequency accuracy of $\pm 0.05\%$ or better. Also configure the Test Signal Generator to output a test image that will allow the tester to observe if the Sink DUT displays the image properly (e.g., No distortions such as spurious dots, jitter, wrong colors; correct aspect ratio and position).
 - 6.1 If the Sink supports both VIC codes of a dual aspect ratio pair that share a common Video Timing (see the rows in CEA-861-F Table 1 that have two values in the “VIC” column), then test these VIC codes together by doing the following:
 - 6.1.1 If necessary, put the Sink is in an automatic mode using CDF field Sink_AutoZoomStretch_procedure, where the user has not forced a certain zoom or stretch.
 - 6.1.2 Configure the Test Signal Generator to send the Video Timing associated with the dual aspect ratio pair.
 - 6.1.3 Configure the Test Signal Generator to output an AVI InfoFrame containing the first VIC of the dual aspect ratio pair along with a test image matching the aspect ratio of the VIC being sent in the AVI, to allow the correct aspect ratio to be determined.
 - 6.1.4 Observe the displayed aspect ratio #1. If the displayed picture is not geometrically correct, then FAIL.
 - 6.1.5 Re-configure the Test Signal Generator to output an AVI InfoFrame containing the other VIC of the dual aspect ratio pair along with a test image matching the aspect ratio of the VIC being sent in the AVI - to allow the correct aspect ratio to be determined.
 - 6.1.6 Observe the displayed aspect ratio #2. If the displayed picture is not geometrically correct, then FAIL.
 - 6.2 For each unique Video Timing, test both the minimum and maximum permitted Pixel clock frequencies as follows:
 - For Video Formats with a 25Hz frame rate (or multiples thereof), these values are the nominal rate -0.5% and the nominal rate +0.5%.
 - For Video Formats with a 24 or 30Hz frame rate (or multiples thereof), these values are the nominal rate -0.6% and the nominal rate +0.5%.
 - 6.2.1 At each of the two Pixel clock frequencies, observe the image displayed on the Sink DUT. If it does not properly display the image, then FAIL.

Vendor Specific Test Procedure

Please Note: This MOI is approved with limited scope: it has been verified only for 21x9 VICs (Step 6). It has not been verified for dual aspect ratio VIC codes (step 6.1).

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.

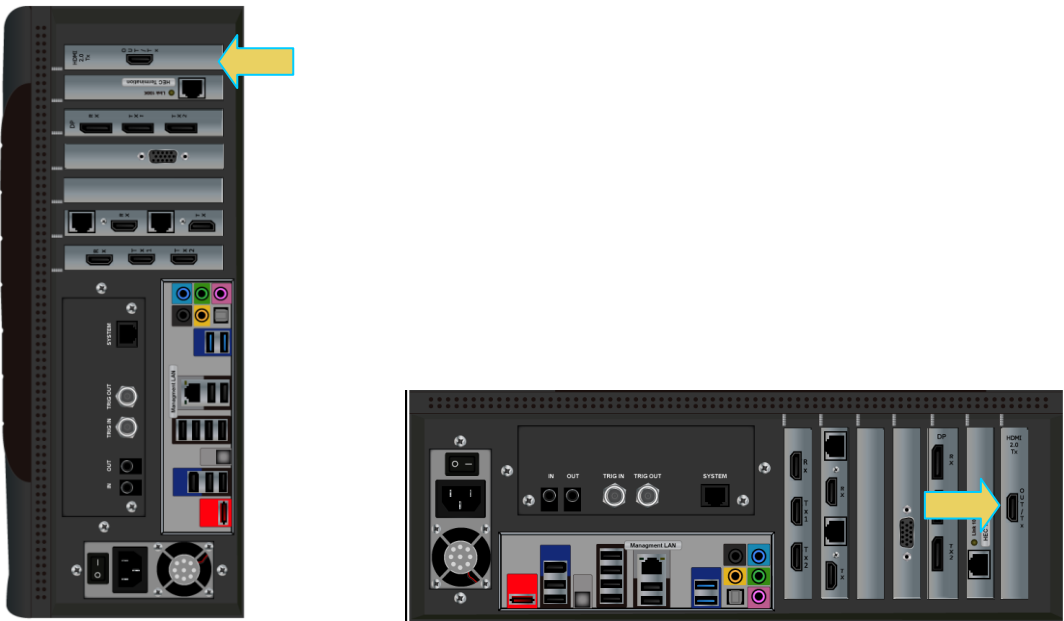
HDMI 2.0 Video Generator module

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 module |
| | | HDMI CTS 2.0 Compliance Test Package #4 |

980 HDMI 2.0 Video Generator Module with 980 Series Platform Configurations

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



Sink Video Timing – 21:9 (64:27)

Test ID HF2-25: Sink Video Timing – 21:9 (64:27)

1. Objective

Confirm that a "21:9" (64:27)-capable Sink DUT, whenever it receives any supported "21:9 (64:27) Video Format, correctly decodes and displays it.

Note that only VIC 65-67, 70-74, 77, 78 and 103-107 are supported by this MOI.

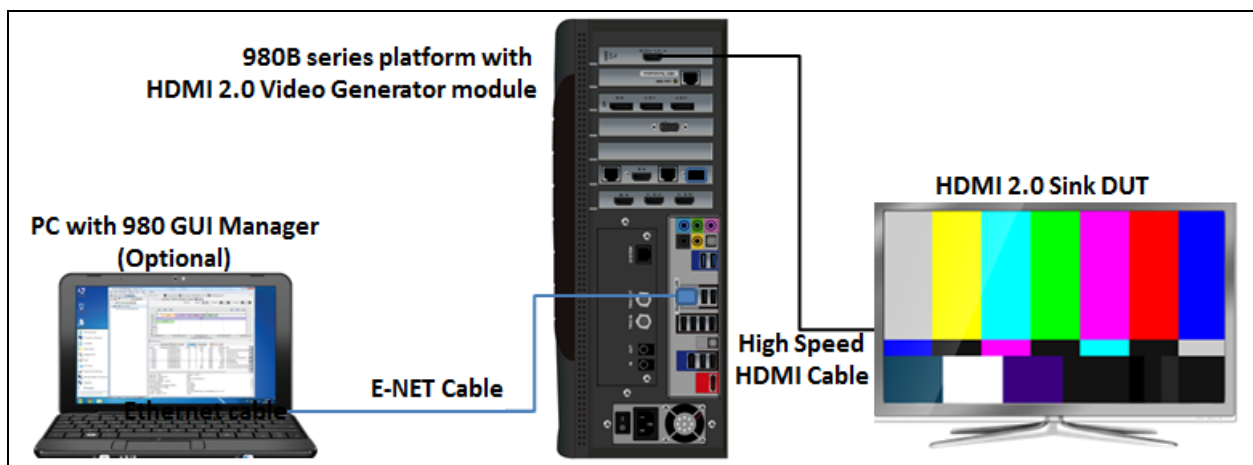
2. Test Overview

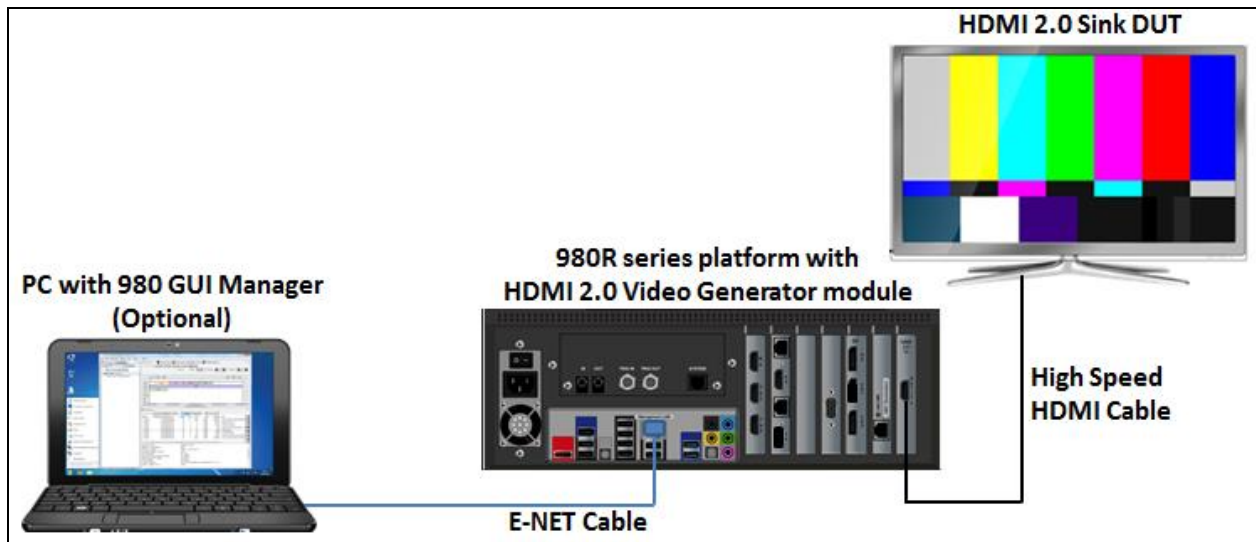
The Pass/Fail criteria for this test is assessed by human observation of an test image displayed on the sink DUT.

3. Procedure

Use the following procedure to conduct this test.

1. Connect Sink DUT to the Quantum Data 980 HDMI 2.0 Video Generator module HDMI Tx port. Use a High Speed HDMI cable. Refer to the figures below for reference.

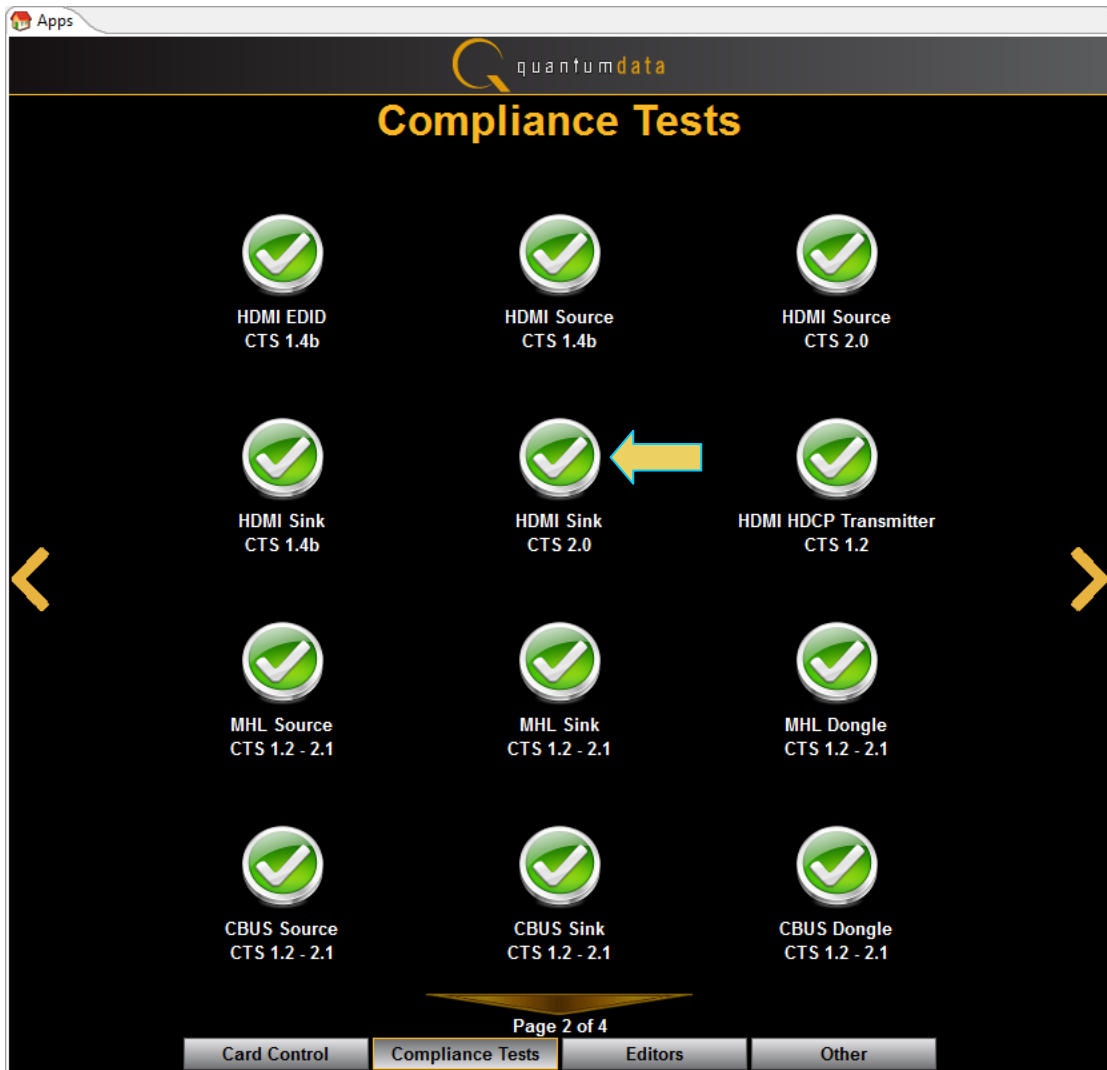




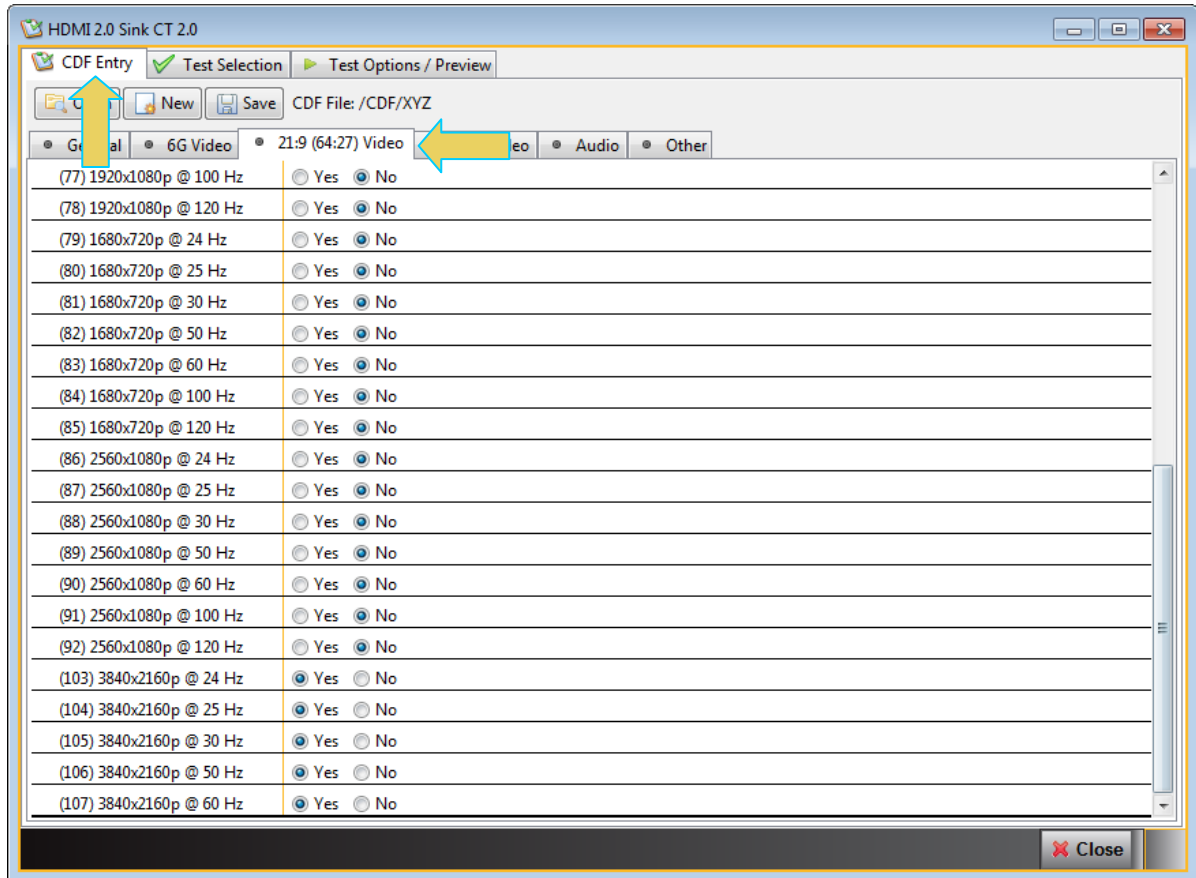
2. Use Quantum Data 980 Embedded Manager GUI (touchscreen) or invoke Quantum Data 980 External Manager GUI (Windows application).

Note: You will not need to connect the PC shown in the figures above if you are running the compliance test through the 980's embedded display. The PC running the 980 HDMI 2.0 Video Generator module's compliance test application is connected to the 980 through a standard Ethernet cable.

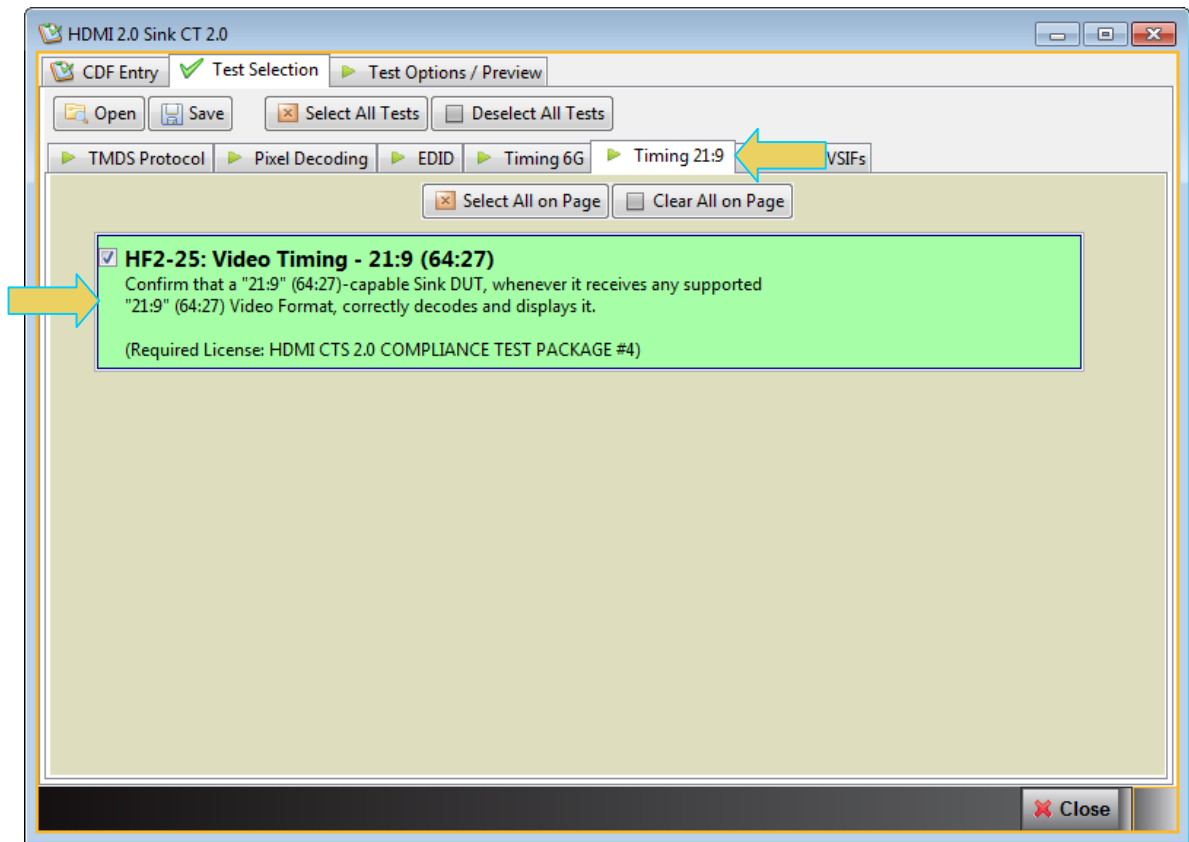
3. Complete the following steps:
 - 3.1 Click on the HDMI Sink CTS 2.0 icon in the Compliance Tests page of the Apps panel. Refer to the screen example below.



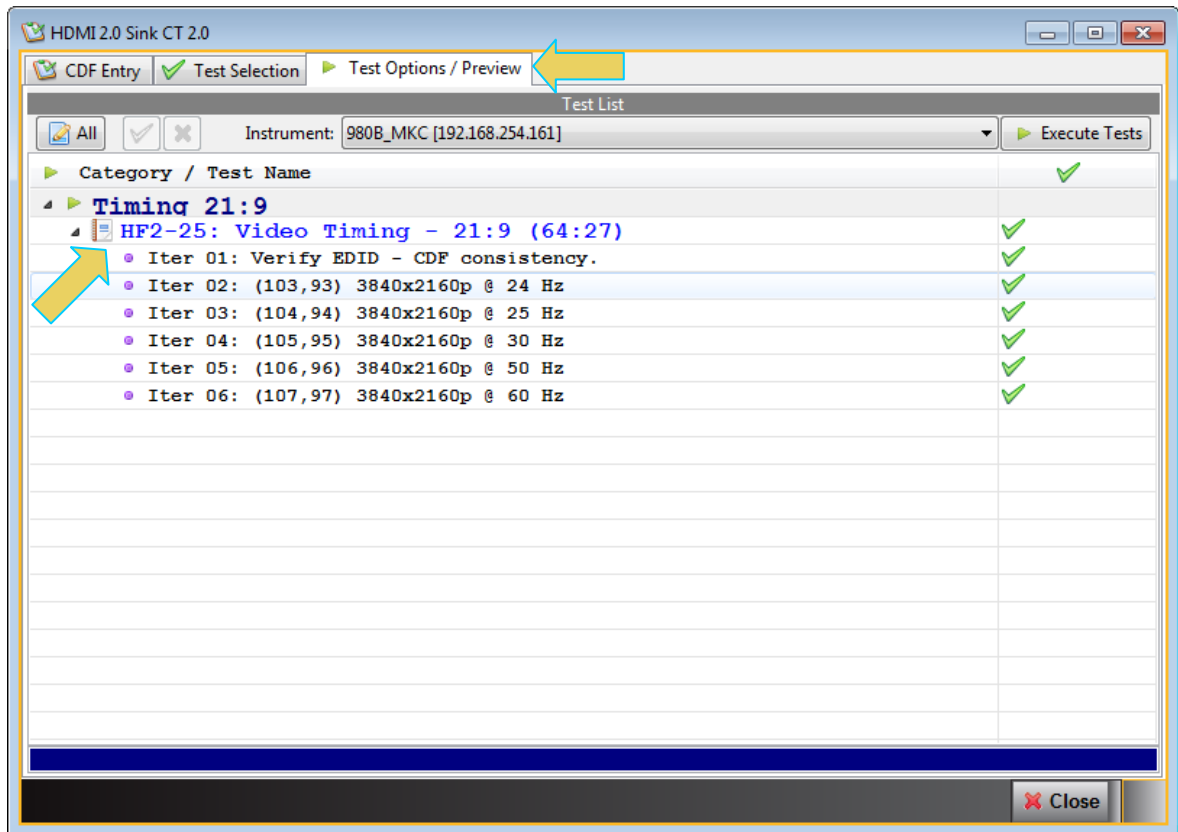
- 3.2 Navigate to the CDF tab if not already there. Complete the General sub tab and the 21:9 sub tab in the CDF. If there is a saved CDF file, then click on Open and select it. Otherwise, enter the DUT's CDF information and optionally click on Save to save the CDF. Refer to the screen example below.



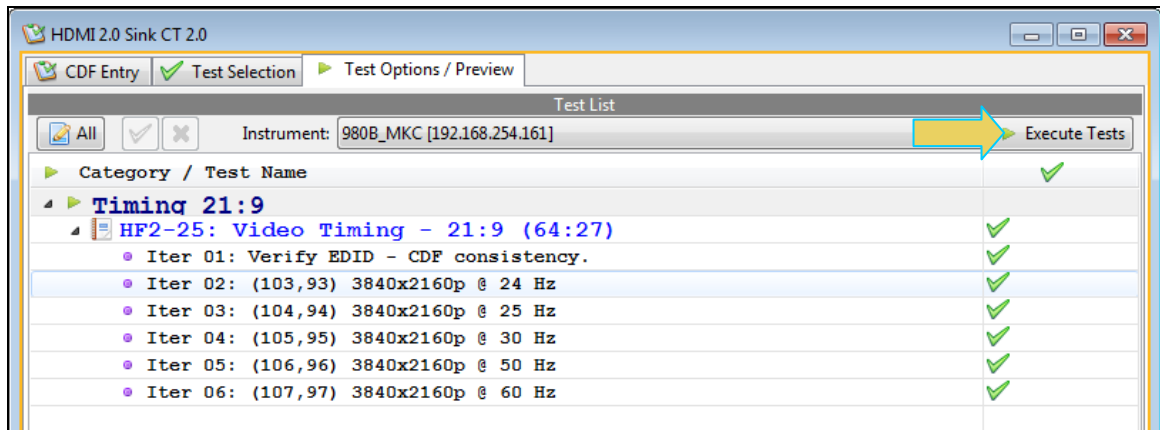
- 3.3 Click on the Test Selection tab, and select the Pixel Decoding tab and then the Test ID HF2-25: Sink Video Timing – 21:9 (64:27) Test. Refer to the screen example below.



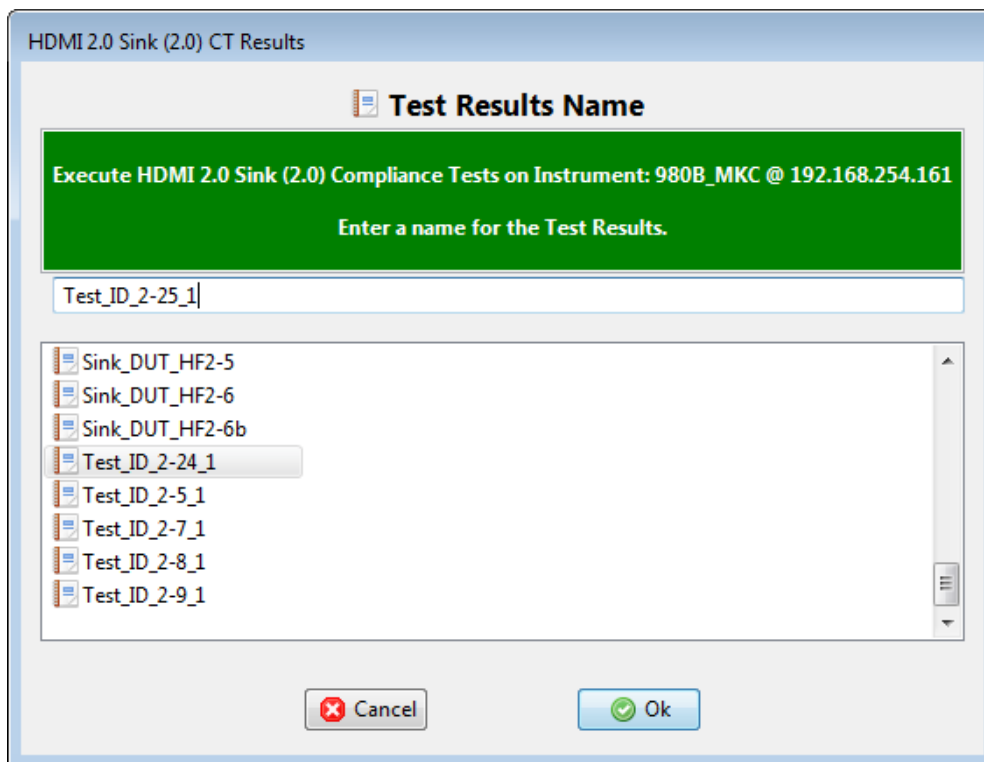
- 3.4 Click on Test Options / Preview tab and review the list of tests. Refer to the screen example below.



- 3.5 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.



A Test Results 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.

HDMI 2.0 Sink Compliance Test (2.0): "Test_ID_2-25_1"

Test List

Reset Status

| Category / Test Name | | Status |
|--|---|-------------|
| ▶ Timing 21:9 | ✓ | |
| ▶ HF2-25: Video Timing - 21:9 (64:27) | ✓ | In Progress |
| ▶ Iter 01: Verify EDID - CDF consistency. | ✓ | In Progress |
| • Iter 02: (103,93) 3840x2160p @ 24 Hz | ✓ | Not Tested |
| • Iter 03: (104,94) 3840x2160p @ 25 Hz | ✓ | Not Tested |
| • Iter 04: (105,95) 3840x2160p @ 30 Hz | ✓ | Not Tested |
| • Iter 05: (106,96) 3840x2160p @ 50 Hz | ✓ | Not Tested |
| • Iter 06: (107,97) 3840x2160p @ 60 Hz | ✓ | Not Tested |

Test Log

| Line | Message |
|------|--|
| 0003 | Assembling the test list. |
| 0004 | Transferring the CDF to the Test Instrument. |
| 0005 | --- Test HF2-25-01 |
| 0006 | Initializing the TX port |

Cancel the Compliance Test Pause Test Execution

Test Setup

Test Instructions

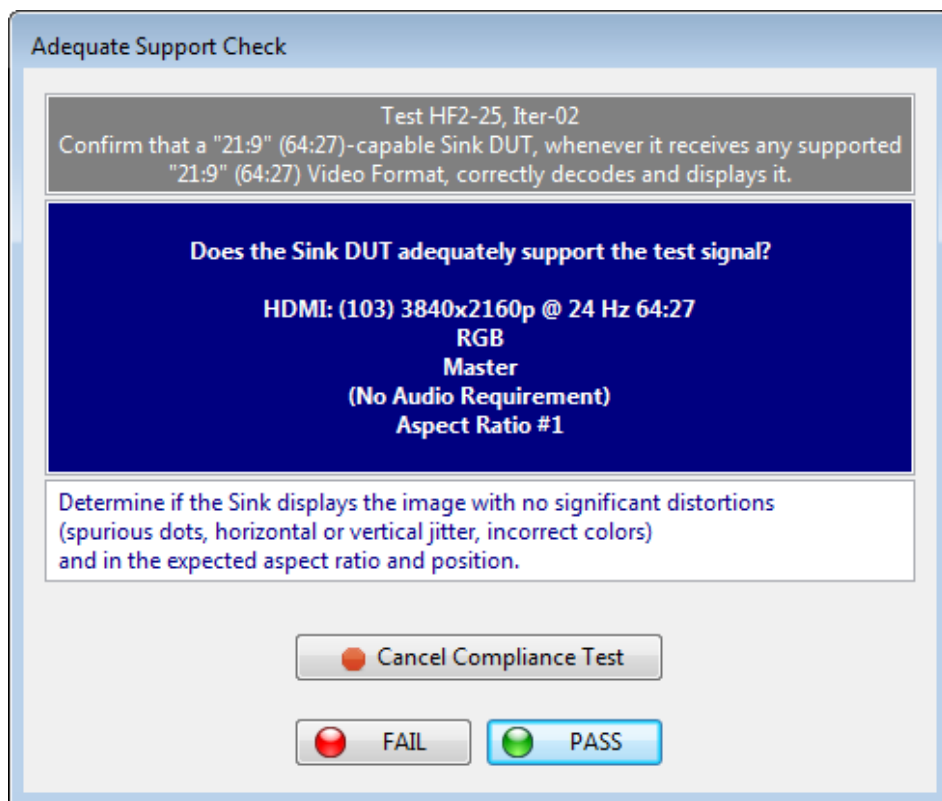
Connect the DUT input port to be tested to the transmitter port of the test instrument:

Test Instrument Port
Quantum Data, Inc. 980ATP HDMI2 generator
Card 1, Port 0 (TX)

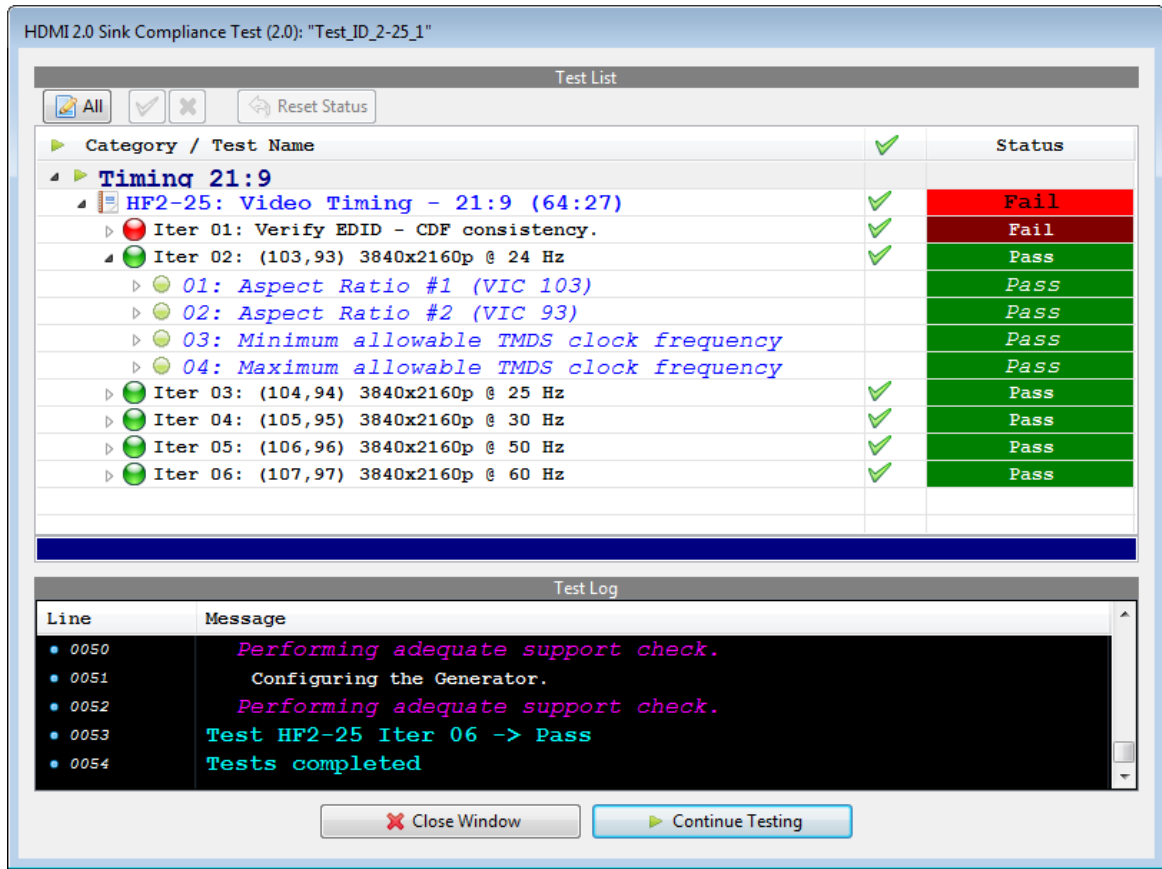
Cancel Compliance Test

Continue

The test results will be assessed user examination as described in the following dialog box. Click on the PASS or FAIL button depending on whether the image looks correct or not.



The results are indicated on the test window as shown below.



Note that Vendor Specific Test procedure corresponding to Step 6.2 of Generic Procedure for unique Video Timings (VIC 79-90) still has not been approved for this MOI.

4. 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 a Test Results Viewer screen will appear. Note that tests are skipped if the EDID does not support a particular format.

