

User Guide 980 HDMI Protocol Analyzer HDMI HDCP 2.2 Compliance Tests

Rev: A5

With the set of the set	(Deen			_	_				
Note: The second sec		Chear HotMMLSS	.ma.ua.ma	(44) -	2				
	III Septent	al freets Dens C. For	4) (\$, 5yr	0	Legend				
NUMBER OF THE STREET OF THE		Zoom % 43	00073 🔍	Q.	[Mater]		D OMark		
ten no el la									(M) (H)
ner en	1905	0.09	c	A.0.7	VEN				
Image: Description:	10 PKC		_				VERC		
And the second s	HEINC	HEINC							
na second	APLTE								
are an analysis and an analysis of a second	DOC								
Park RUARDALL EVENTIALISME ENDER ALL PARK PARK PARK PARK PARK PARK PARK PARK	ORC								
The second secon	147.00.713.876	.90.804 1.411	0.111.04	278.484		Test	0.703.076.384 (HM-5.46.48.49	408 1.47.33.723.876.733.386 (m)	1-47/10.723.580.038.508
Normality Normality Normality Normality 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010 1010 1010 1010 1000 1010	III Owto Decode	11	_	_					
Name Tene Distribution Name	EP Septent	all freets (2, Find (3, Sync		winits]	Raw Date	0	- [
1.000 12122332800 2 1 1 2 1000 1000 1000 1000 1000 10	Packet	Time (HM45.ms.us.ms.pd)	Frame	Line	Post	Type	SubType	befo	
1 100 12012030400 2 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	+ 12055	147-10.723378.830-000	2		0	TMOS	HONG	HSYMC 88 clocks	
1.00 10120301700 2 1 0 0 000 AUT AUT AUT AUTOMONE 1.00 10120301700 2 1 0 0 000 AUT AUT AUTOMONE 1.00 10120301700 2 1 0 0 000 AUT AUTOMONE 1.00 10120301700 2 1 0 00 AUTOMONE </td <td> 12956 12957 </td> <td>147307235883000</td> <td>2</td> <td>- 1</td> <td>0</td> <td>TMDS</td> <td>VDINC</td> <td>VEYNC 50000 clecks General Control Packet (SCP)</td> <td>1</td>	 12956 12957 	147307235883000	2	- 1	0	TMDS	VDINC	VEYNC 50000 clecks General Control Packet (SCP)	1
1 Unit 1212/23/2318 0 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	* 12958	14710.723.576.877.742	2	- 1	42	TMDS	8115	Att bhaframe	
i log i i i i i i i i i i i i i i i i i i i	= 12959	3.4730.723.579.065.485	2		75	11405	AUD F	Audio Infoñrame	
• Like initialization makes of each of like initialization of the second	 12960 12960 	5.47:30.723.579.390.228 1.47:10.723.589.000.000		- 2	307	11405	VEN	Vendor-Specific Infoliame Auto Specific Infoliame	
All official states in the second state is a	• 12962	1-47-10-723-587 290-000	2		0	TMDS	HONG	HSYNC 88 clocks	
And the second s	202000	li calina i							10
planter mentality interaction in the first interaction of the formation interaction intera	active for	Mark-1	not a	de l'Loe	4				î
And which is proton and the second se	picture as colorimetr	geot ratio:	Bo D	a C.a					
The second secon	non-unifor	a postore scale:	no h	nown					
river reveal to the last of the last of the last of the reveal of the last of the reveal of the last o	IT content	in manger	80 G	ata i	apanta o		(Transf		1
International of total type bar, in the first service of the first servi	video form	ALI	WEC-	o citto i v	1deo 1de	stificat	ton Code A	vallable)	
1000 1000 100 100 100 100 100 100 100 1	11ne numbe	r of end of top bar:							
980	pixel numb	er of end of Left bar:	0						-
980	4								
980									M Close
980				_					
980									
980									
980									001
900									00/
									901
							6		

Table of Contents

1	Abo	ut the 980 Protocol Analyzer module	4
	1.1	What makes the 980 HDMI Protocol Analyzer Module Unique?	4
	1.2	Scope of this User Guide	5
	1.3	Changes to this User Guide	6
	1.4	What options are available with the 980?	6
	1.5	980 User Interface	8
	1.6	What kinds of data does the 980 Protocol Analyzer module allow you to view?	13
2	Get	ing Started	15
3	HDN	/I HDCP 2.2 Source Compliance Tests	16
	3.1	Workflow for running the HDMI HDCP 2.2 Source Compliance Tests	16
	3.2	Making the HDMI connections	17
	3.3	Setting the Link mode and the HDMI mode	18
	3.4	Setting the +5V levels	21
	3.5	Enabling HDCP 2.2 on Protocol Analyzer's Rx Port	21
	3.6	Completing the HDCP 2.2 Source Capabilities Declaration Form (CDF)	27
	3.7	Selecting the 1A series tests	32
	3.8	Executing the HDMI HDCP 2.2 1A Series Source Compliance Tests	37
	3.9	Viewing Details of 1A Source Compliance Test Results	42
	3.10	Selecting the 1B series tests	46
	3.11	Executing the HDMI HDCP 2.2 1B Series Source Compliance Tests	51
	3.12	Viewing Details of Source Compliance Test Results	60
	3.13	Canceling and Resuming the HDMI HDCP 2.2 Source Compliance	63
	3.14	Viewing the HDMI HDCP 2.2 Source Compliance Test Results from the Navigation View	63
	3.15	Viewing the HDMI HDCP 2.2 Source Compliance HTML test report	63
4	HDN	/I HDCP 2.2 Sink Compliance Tests	64
	4.1	Workflow for running the HDMI HDCP 2.2 Sink Compliance Tests	64
	4.2	Making the HDMI connections	64
	4.3	Running a Playback file	65
	4.4	Completing the HDCP 2.2 Sink Test CDF	71
	4.5	Selecting the 2C series tests	76
	4.6	Executing the HDMI HDCP 2.2 2C Series Sink Compliance Tests	80
	4.7	Viewing Details of 2C Sink Compliance Test Results	86
	4.8	Canceling and Resuming the HDMI HDCP 2.2 Sink Compliance	88
	4.9	Viewing the HDMI HDCP 2.2 Sink Compliance Test Results from the Navigation View	88
	4.10	Viewing the HDMI HDCP 2.2 Sink Compliance HTML test report	88
5	HDN	/I HDCP 2.2 Repeater Compliance Tests	89
	5.1	Workflow for running the HDMI HDCP 2.2 Repeater Compliance Tests	90
	5.2	Making the HDMI connections	90
	5.3	Setting the Link mode and the HDMI mode on the Protocol Analyzer Rx Port	92
	5.4	Setting the +5V levels	94
	5.5	Running an HDMI Playback File on the Protocol Analyzer Tx Port	94

980 U	ser Guide – HDMI HDCP 2.2 Compliance	Rev. A5
5.6	Enabling HDCP 2.2 on the Protocol Analyzer module Rx port	98
5.7	Enabling HDCP 2.2 on the Protocol Analyzer Tx Port	103
5.8	Completing the HDCP 2.2 Repeater Capabilities Declaration Form (CDF)	107
5.9	Selecting the 3A series tests	112
5.10	Executing the HDMI HDCP 2.2 3A Series Repeater Compliance Tests	117
5.11	Viewing Details of 3A Repeater Compliance Test Results	123
5.12	2 Viewing the HDMI HDCP 2.2 Repeater Compliance HTML test report	126
5.13	B Selecting the 3B series tests	127
5.14	Executing the HDMI HDCP 2.2 3B Series Repeater Compliance Tests	131
5.15	5 Viewing Details of Repeater 3B Compliance Test Results	137
5.16	5 Viewing the HDMI HDCP 2.2 Repeater Compliance HTML test report	138
5.17	Selecting the 3C series tests	138
5.18	Executing the HDMI HDCP 2.2 3C Series Repeater Compliance Tests	144
5.19	Viewing Details of Repeater 3C Compliance Test Results	155
5.20	Viewing the HDMI HDCP 2.2 Repeater Compliance HTML test report	156
6 V	iewing the HDMI HDCP 2.2 Compliance Test Results from the Navigation View	157
7 V	iewing the HDMI HDCP 2.2 Compliance HTML test report	159
8 C	anceling and Resuming the HDMI HDCP 2.2 Compliance	163
8.1	Canceling a Canceled HDCP 2.2 Test:	163
8.2	Resuming a Canceled HDCP 2.2 Test:	164
9 E	xporting Compliance Test Results Files to a PC	168
9.1	Transferring Compliance Test Files using the Data Transfer Utility	168
9.2	Exporting Compliance Test Files	173

1 About the 980 Protocol Analyzer module

This chapter provides an overview of features of the 980 HDMI Protocol Analyzer module and the 980 GUI Manager. The 980 HDMI Protocol Analyzer module is an analyzer for HDMI/MHL source devices. It provides visibility into the HDMI/MHL protocol to help resolve common interoperability problems in HDMI/MHL systems. The 980 GUI Manager is a PC application to manage and use the 980 HDMI Protocol Analyzer module and other 980 modules.

The module can be equipped in either of the 980 Advanced Test Platforms:

- 1) The 980 Advanced Test Platform 5-slot chassis with a 10.4 inch touch display.
- 2) The 980B Advanced Test Platform 5-slot chassis with a 15 inch touch display.
- 3) The 980R Advanced Test Platform 5-slot chassis with a 7 inch touch display.

Note: The module is always equipped in the first slot of the 980 platform from the factory.

The 980 HDMI Protocol Analyzer module is able to parse HDMI streams from source devices with a TMDS clock and pixel clock up to 300MHz.



1.1 What makes the 980 HDMI Protocol Analyzer Module Unique?

The 980 HDMI Protocol Analyzer module for HDMI or MHL source devices provides full visibility into the protocol, timing, control and auxiliary data. It captures and decodes encrypted or unencrypted metadata (audio sample, infoframes and other data packets) as well as DDC transactions and CEC messages (C-Bus transactions for MHL).

Competitive "analyzers" available on the market are more limited because they utilize commercial silicon chips. The 980 HDMI Protocol Analyzer module uses a proprietary solution and therefore can provide much greater visibility into the protocol, timing and control data. The competitive "analyzers" support some of the 980 HDMI Protocol Analyzer features but not nearly all of them. They support functional testing but not true interoperability

Rev. A5

testing. Functional test "analyzers" often support only real time monitoring. The 980 module supports capture, store and analysis as well as Real Time monitoring.

For these same reasons, the 980 HDMI Protocol Analyzer module can support all of the tests in the HDMI and MHL source protocol compliance test specification. Functional test instruments cannot. For example, the 980 HDMI Protocol Analyzer supports all the source Protocol tests in Test 7-17 of the HDMI Compliance Test Specification and the Basic Protocol source tests in the section 3.2.2.2 in the MHL Compliance Test Specification related to control periods, preamble and guard bands. Similarly the 980 HDMI Protocol Analyzer module can measure the audio sample rate precisely and therefore measure audio jitter correctly. Functional test instruments cannot support these tests correctly.

1.2 Scope of this User Guide

This User Guide provides descriptive and procedural information on the HDMI HDCP 2.2 compliance test option. Although you can run the compliance tests through the 980 HDMI Protocol Analyzer's "embedded GUI," all the examples used in the procedures in this document are taken from the external standalone PC 980 GUI Manager. The procedures are identical between the embedded GUI running through the 980 front panel display and the external standalone PC application but the look and feel is slightly different.

The following is a list of the User Guides available for the 980 systems:

- 980 HDMI Protocol Analyzer Gen 3 System Covers source analysis testing for HDMI and MHL source devices as well as various transmitter features. This user guide is specifically for the functions of the 980 HDMI Protocol Analyzer Gen 3 system sold through 2012.
- 980 Advanced Test Platform Quick Start Guide This Quick Start Guide covers startup procedures for the 980/980B platform. Used in conjunction with the 980 HDMI Protocol Analyzer Module User Guide for purchases in 2013.
- 980 HDMI Protocol Analyzer module Covers source analysis testing for HDMI and MHL source devices as well as various transmitter features. This user guide is specifically for the functions of the 980 HDMI Protocol Analyzer module equipped in one of the 980 Advanced Test Platform slots (980 Gen 3 or 980B). Used in conjunction with the 980 Advanced Test Platform Quick Start Guide.
- 980 HDMI Protocol Analyzer HDMI/MHL Source Compliance Test Covers source compliance testing for both MHL and HDMI sources. These compliance test applications are provided by the 980 HDMI Protocol Analyzer module or the 980 HDMI Protocol Analyzer Gen 3 system. Used in conjunction with the 980 Advanced Test Platform Quick Start Guide.
- 980 HDMI Protocol Analyzer HDMI/MHL Sink Compliance Test Covers sink compliance testing for both MHL and HDMI sinks (and MHL dongles). These compliance test applications are provided by the 980 HDMI Protocol Analyzer module or the 980 HDMI Protocol Analyzer Gen 3 system. Used in conjunction with the 980 Advanced Test Platform Quick Start Guide.
- 980 MHL CBUS Compliance Test Module Covers MHL CBUS compliance testing for both MHL sources as well as sinks and dongles. This compliance test applications are provided by the 980 CBUS Compliance Test module. Used in conjunction with the 980 Advanced Test Platform Quick Start Guide.
- 980 HDMI Video Generator module Covers the features and functions offered by the 980 HDMI Video Generator module. Used in conjunction with the 980 Advanced Test Platform Quick Start Guide.

- 980 HDMI Protocol Analyzer HDMI HDCP Source Compliance Test Covers HDMI HDCP compliance tests on source devices. These compliance test applications are provided by the 980 HDMI Protocol Analyzer module.
- 980 HDMI Protocol Analyzer HDMI HDCP 2.2 Compliance Test (This User Guide) Covers HDMI HDCP compliance tests on source and sink devices. These compliance test applications are provided by the 980 HDMI Protocol Analyzer module.

1.3 Changes to this User Guide

The following updates have been added to the HDMI compliance test descriptions and procedures:

• Updated to remove need to issue physical hot plug during sink and repeater test procedures.

Note: Please be sure to check the Quantum Data website for updates to this User Guide.

1.4 What options are available with the 980?

The 980 offers four options that you can purchase with the 980 HDMI Protocol Analyzer module. You must have a license to use these optional features: 1) Encrypted Link Analyzer mode for monitoring encrypted data between an HDMI source and sink device. 2) HDMI Source Compliance tests in accordance with HDMI 1.4 CTS Sections 7.4 through 7.8. 3) EDID Compliance test in accordance with Sections 8.2 and 8.5 of the HDMI 1.4 CTS. 4) HDMI Sink Compliance tests in accordance with HDMI 1.4 CTS. 4) HDMI Sink Compliance tests in accordance with HDMI 1.4 CTS Sections 8.2 and 8.4 through 8.8. 5) MHL Source Compliance tests in accordance with MHL 1.2 & 2.0 CTS Section 3. 6) MHL Sink Compliance tests in accordance with MHL 1.2 & 2.0 CTS Section 3. 6) MHL Sink Compliance tests in accordance with MHL 1.2 & 2.0 CTS Section 3. 6) MHL Sink Compliance tests in accordance with MHL 1.2 & 2.0 CTS Section 3. 6) MHL Sink Compliance tests in accordance with MHL 1.2 & 2.0 CTS Section 3. 6) MHL Sink Compliance tests in accordance with MHL 1.2 & 2.0 CTS Section 3. 6) MHL Sink Compliance tests in accordance with MHL 1.2 & 2.0 CTS Section 3. 6) MHL Sink Compliance tests in accordance with MHL 1.2 & 2.0 CTS Section 4. 7) HDMI HDCP Source Compliance test in accordance with HDCP 1.2 CTS. 8) HDMI HDCP 2.2 Source and Sink Emulators for HDMI 1.4b HDCP 2.2 functional test in accordance with HDCP 2.2 CTS. 9) HDMI HDCP 2.2 Source Compliance test in accordance with HDCP 2.2 CTS, 10) HDMI HDCP 2.2 Sink Compliance test in accordance with HDCP 2.2 CTS, 11) HDMI HDCP 2.2 CTS.

You can determine what options the 980 is provisioned with by looking at the label on the bottom of the 980 or by accessing the **Instrument** Information screen on either the built-in or external 980 GUI manager. You will need to access the **Instrument** Information panel through embedded 980 GUI Manager as shown below.





The information is then displayed in a separate window. The information on the **Instrument Information** window will provide you with the information about what options are supported and will also be helpful if you call Quantum Data customer support during an upgrade process.

x

Instrument Information

```
Instrument: My_980
IP Address: 192.168.254.153
 Net Mask: 255.255.255.0
Gateway IP: 192.168.254.1
Free Space: 78.47 GB of 144.22 GB (54.4%)
Advanced Test platform Version: 4.12.8
HDMI Video Generator in slot 2:
 Gateware: [Version: 4.16.1 Build Number: 1 (01:30:2013 00) pcb: 297b C]
 Firmware: [Version: 4.12.8 Build Number: 10157 (ssingh 10:01:2014 08:11:09 CDT)]
HDMI 1.4 980 Protocol Analyzer [9DE79D010000] in slot 4 [DDR 4096MB]:
 Gateware: [Version: 4.10.18 Build Number: 46 (08:11:2014) Gen: 3 pcb: 297b/D]
 Firmware: [Version: 4.12.8 Build Number: 10169 (ssingh 10:02:2014 15:11:28 CDT) ]
System Information:
 System SN : [ 47A7D6CF30A38577::N/A]
 HDMI PA SN : [ 9DE79D010000::N/A]
 Main Board : [
                      "DP67DE"]
 CPUx2
                    6.42.7 "Intel(R) Core(TM) i3-2100 CPU @ 3.10GHz"]
             : [
 DDR
             : [
                  2 GB1
  HD
             : [ WD1600BEVT-0]
             : [ Linux xpscope-58 2.6.26-2-686 #1 SMP Wed Sep 21 04:35:47 UTC 2011 i686 GNU/Linux]
 OS
 GUI manager : [ Version 4.11.33_8138_201407030658]
 1
             : [ lo
                       inet 127.0.0.1/8 scope host lo]
             : [ eth0
                        inet 192.168.254.153/24 brd 192.168.254.255 scope global eth0]
  2
 PCTE3
             : [ 2.5x1]
  HDMI SINK CT: [ 4.6.1]
 HDMI SRC CT : [ 4.11.2]
  HDCP SRC CT : [ 4.8.0]
  HDMI 2.0 SRC CT: [ 1.0.2]
 MHL SINK CT : [ 4.8.0]
 MHL SRC CT : [ 4.8.0]
 HDMI SINK CTS: [ 3.2.0]
Licensed Features
  Licensed: 01 [PASSTHROUGH]
 Licensed: 02 [HDMI CTS 1.4B COMPLIANCE TEST FOR SOURCES]
 Licensed: 03 [HDMI CTS 1.4B EDID COMPLIANCE TEST FOR SINKS]
  Licensed: 04 [ENCRYPTED LINK ANALYZER]
 Licensed: 06 [HDMI CTS 1.4B COMPLIANCE TEST FOR SINKS]
 Licensed: 07 [MHL CTS 2.0/1.2 SYSTEM/PROTOCOL COMPLIANCE TEST FOR SINKS/DONGLES]
 Licensed: 08 [MHL CTS 2.0/1.2 SYSTEM/PROTOCOL COMPLIANCE TEST FOR SOURCES]
 Licensed: 09 [MHL CTS 2.0/1.2 CBUS COMPLIANCE TEST FOR SOURCES]
 Licensed: 10 [MHL CTS 2.0/1.2 CBUS COMPLIANCE TEST FOR SINKS/DONGLES]
 Licensed: 11 [HDMI ACA]
 Licensed: 12 [CEC ITE]
 Licensed: 13 [HDCP CTS 1.2 COMPLIANCE TEST FOR SOURCES]
 Licensed: 26 [HDMI HDCP 2.X SOURCE AND SINK EMULATORS]
 Licensed: 28 [HDMI HDCP CTS 2.2 COMPLIANCE TEST FOR SOURCES]
 Licensed: 29 [HDMI HDCP CTS 2.2 COMPLIANCE TEST FOR SINKS]
  Licensed: 30 [HDMI HDCP CTS 2.2 COMPLIANCE TESET FOR REPEATERS]
                                                                                              OK
```

1.5 980 User Interface

The 980 Protocol Analyzer module provides a graphical user interface for operation. This GUI can run both on the 980 itself through the built-in color touch screen display or as a standalone application running on a PC. The look and feel and functions are similar but not identical.

1.5.1 External 980 GUI Manager

The external 980 GUI Manager provides easy access to the captured data on your PC for sharing with others. Also the external 980 GUI Manager enables you to operate the 980 HDMI Protocol Analyzer through a larger interface which allows you to use multiple panels at the same time.

1.5.2 Embedded 980 GUI Manager

You can operate the 980 HDMI Protocol Analyzer module fully through the built-in color touch screen display. In addition to the basic operation of the 980 HDMI Protocol Analyzer module the touch screen display GUI there are two key features that are only available in the embedded 980 GUI Manager GUI: 1) viewing the video in real time, 2) viewing the MHL video/audio metadata and DDC (MHL C-Bus) transactions in real time using the **Real Time** mode. You can view the incoming video from a source even when encrypted with HDCP content protection. The ability to view the incoming video also enables you to control the menus of the HDMI and MHL source device to ensure that it is in the correct mode. The built-in GUI also enables you to view the HDMI and MHL video metadata and DDC and MHL C-Bus transactions in real time, as they are being captured, using the **Real Time** mode.

You can transfer data captures taken from the built-in touch display to your PC where they can be viewed through the external 980 GUI Manager and also disseminated to others for analysis.

1.5.3 Embedded 980 GUI Manager and External GUI Manager layout differences

Aside from the "Real Time" mode using the receiver there are a few other differences in the layouts between the embedded 980 GUI Manager and the External 90 GUI Manager. The primary difference is the Navigator panel which enables you to access the data elements and test results from an instrument. In the External 980 GUI Manager, the **Navigator** panel is always present on the left side of the 980 GUI Manager application window as shown below.



File Edid Instrum int Help		
Ran Navigator	Apps	
Compliance ACA EDID EDID Kormats Images		
	quantumdata	
	Other	
Name Date /	other	
E HDMI EDID CT CT		
Test Selections		
Results		
b 🗁 HDMI Sink CT		
A 🗁 HDMI HDCP TX CT	ACA Data Capture Viewer CBUS Plot Viewer	CT Results Viewer
D CDF	Viewer	
Prest Selections Results		
MHL Src CT		
D DF		
Test Selections		
Results		
General CT	Command Console Instrument Network About the	Install Software
GBUS Src CT	Settings 980 Manager	Update
CBUS Sink CT		
> 🗁 CBUS Dongle CT		
	Level CT Carlet And And ATD And And And And	
	Install CT Script Apply AIP Apply Demo	Generate
	Page 4 of 4	
	Card Control Compliance Tests Editors C	Ither

In the Embedded 980 GUI Manager, the **Navigator** panel must be opened. You can access it either from the Other Page of the Apps window, refer to the first screen example below or you can access the Navigator from the Real Time window as shown in the second screen example. Finally you can also access the Navigator from any window in the embedded GUI using the activation key at the bottom of any screen as shown below.

Rev. A5

Rev. A5

		C, qua	ntumdata		
		Ot	ner		
	Navigator	Capture Viewer	CBUS Plot Viewer	CT Results Viewer	
		V	\overline{i}	a state	
	Command Console	Instrument Network	About the	Calibrate	
		Settings	980 Manager	the LCD	
	0	0			
	Apply ATP License	Apply Demo License			
		Page	4 of 4		
	Card Control	Compliance Tests	Editors	Other	
🖙 Back	🕏 Navigator DHCP: 192.168.254.	160 ATP Version: 4	.8.15 (3 cards detected	i)	×



When you access the Navigator it will appear in the window as shown below.

Rev. A5

🕾 Navigator				·
▶ Captures 🔯 Compliance 🕞 ACA 🔤 EDID	Formats	国 Images	Instruments	
Name			Date / Time	
HDMI EDID CT CT				
a 🗁 HDMI Src CT				
DF				
Dest Selections				
Results				
HDMI Sink CT				
a 🗁 HDMI HDCP TX CT				
DF				
Dest Selections				
A Desults				
Acme_XYZ_HDMI_HDCP_Source_Results_3			2013/08/05 13:18:13	
Acme_XYZ_HDMI_HDCP_Source_Results_2			2013/08/05 11:53:30	E
Acme_XYZ_HDMI_HDCP_Source_Results_1			2013/08/05 11:18:22	
🔯 CDF			2013/08/05 10:12:46	
Summary				
📃 Details				
Log				
Report_Cdf.htm				
▷ ► 1A_01_01				
▷ ► 1A_02_01				
▷ ► 1A_03_01				
▷ ▶ 1A_04_01				
▷ ▶ 1A_05_01				
▷ ► 1A_06_01				
▷ ► 1A_07_01				
▷ ▶ 1B_01_02				
▷ ▶ 1B_04_02				
▶ ► 1B_05_01				
▶ 1 0/_26_2013_12_26_34_804A			2013/07/26 13:57:41	
MHL Src CI				-
k lien (The				

1.6 What kinds of data does the 980 Protocol Analyzer module allow you to view?

By providing visibility into the HDMI and MHL protocol, metadata, video, audio and auxiliary data, the 980 HDMI Protocol Analyzer module enables you to detect changes and identify anomalies in the HDMI or MHL signal. The following is a list of the data types you can view (currently):

- Video
 - o Timing parameters
 - \circ Pixel values
- Protocol Data
 - o Guard band
 - o Preamble
- Data Islands, including:
 - Infoframes (AVI, Audio, Source Product Descriptor, etc.)

- o General Control Packet (GCP)
- Audio Clock Regeneration (ACR)
- Audio Sample Packet Header including Channel Status Blocks
- Hot plug events
- DDC, C-Bus (MHL) transactions, including:
 - HDCP
 - o EDID
- Control data (vsync, hsync, encryption enable)
- HDMI CEC transactions
- HDMI Audio Return Channel (ARC) data

2 Getting Started

Please refer to the *980 Advanced Test Platform Quick Start Guide* for detailed Getting Started Procedures. This Quick Start Guide is available on the Quantum Data Downloads page or the 980 product pages.

3 HDMI HDCP 2.2 Source Compliance Tests

This chapter describes how to use the *optional* HDMI HDCP 2.2 source compliance test feature of the 980 HDMI Protocol Analyzer module. Please note you will have to purchase the HDCP 2.2 Compliance Test for Sources license in order to run these tests.

The 980 supports the following test sections in the HDMI HDCP 2.2 Compliance Test specification:

- Transmitter Downstream w/Receiver) w/HDMI Capable Receiver
 - 1A-01: Regular Procedure: With previously connected Receiver (with stored Km)
 - 1A-02: Regular Procedure: With newly connected Receiver (without stored Km)
 - 1A-03: Regular Procedure: Receiver disconnect after AKE_Init
 - 1A-04: Irregular Procedure: Receiver disconnect after Km
 - 1A-05: Regular Procedure: Receiver disconnects after locality check.
 - 1A-06: Regular Procedure: Receiver disconnects after Ks
 - 1A-07: Regular Procedure: Receiver sends REAUTH_REQ after Ks.
 - 1A-08: Irregular Procedure: Rx Certificate not received.
 - 1A-09: Irregular Procedure: Verify Receiver Certificate.
 - 1A-10: Irregular Procedure: SRM.
 - 1A-11: Irregular Procedure: Invalid H'.
 - 1A-12: Irregular Procedure: Pairing Failure.
 - 1A-13: Irregular Procedure: Locality Failure.
- Transmitter w/ Downstream Repeater
 - 1B_01 Regular Procedure: With Repeater.
 - 1B_02 Irregular Procedure: Timeout of Receiver ID list.
 - 1B_03 Irregular Procedure: Verify V'.
 - 1B_04 Irregular Procedure: MAX_DEVS_EXCEEDED.
 - 1B_05 Irregular Procedure: MAX_CASCADE_EXCEEDED.
 - 1B_06 Irregular Procedure: Incorrect seq_num_V
 - 1B_07 Regular Procedure: Re-authentication on HDCP_HPD.
 - 1B_08 Regular Procedure: Re-authentication on REAUTH_REQ.
 - 1B_09 Irregular Procedure: Rollover of seq_num_V
 - 1B_10 Irregular Procedure: Failure of Content Stream Management

3.1 Workflow for running the HDMI HDCP **2.2** Source Compliance Tests

The following is the high level workflow for running the HDMI HDCP 2.2 Source Compliance Tests. This workflow assumes that you have powered up the 980 and established an Ethernet session with the 980 as described in <u>Connection for 980 GUI Manager and 980</u>.

The following is the high level workflow for running the HDMI HDCP 2.2 Source Compliance Tests.

- 1. Connect the source device under test to the 980 HDMI Protocol Analyzer module via HDMI.
- 2. Activate HDCP 2.2 in the source device under test.
- 3. Set the monitor mode properly to HDMI and Sink Emulation.
- 4. Enable HDCP 2.2 in the 980 HDMI Protocol Analyzer module.
- 5. Complete (or load an existing) Capabilities Declaration Form (CDF) for the device under test using the **CDF Entry** panel.
- 6. Select the tests that you wish to run from the **Test Selection** panel.
- 7. Initiate the tests through the **Test Options / Review** panel.
- 8. View the detailed data for test failures if failures occur.

9. View the results in the Test Results panel under the Navigator panel.

3.2 Making the HDMI connections

This procedure describes how to establish an HDMI connection between the HDMI source device under test and the 980. This procedure assumes that you have assembled the 980 and source device under test and applied power to all these devices. Refer to the procedures and diagram below.



HDMI connection for source compliance test – 980 Rev D Protocol Analyzer module



HDMI connection for source compliance test – 980B



HDMI connection for source compliance test – 980R

1. Connect your HDMI source device under test to the HDMI Rx connector (the top most HDMI connector shown in the figure below) on the 980 HDMI Protocol Analyzer module. Use a high speed HDMI cable.

3.3 Setting the Link mode and the HDMI mode

Use the following procedures to set the 980 HDMI Protocol Analyzer to the HDMI mode and set the link mode to Sink Emulation. These procedures assume that you are using the external 980 GUI. Exceptions will indicate different screens for the embedded GUI.

To set the 980 mode to HDMI and the Link Mode to Sink Emulation:

1. From the Card Control window, select Receiver.

💮 Apps					
		C, qua	ntum <mark>data</mark>		
		Card C	ontrol		
	Generator	Rece	Piver	ACA Remote Control	
	Capture Control	HE	AC		>
		Page	1 of 4		
	Card Control	Compliance Tests	Editors	Other	

The Rx Control and Configuration dialog box appears.

From the **Rx Control and Configuration** dialog box, select the **Mode** tab and then select HDMI as the mode and select Sink Emulation as the Link mode.



2. If you are using the embedded GUI, Select the **Mode** flyout menu on the lower right of the Real Time window as shown below. Then select the **HDMI Monitor** radio button and the **Sink Emulation** radio button. Refer to the screen example below.



The Link Mode menu will show HDMI (or MHL accordingly) as the Link Mode.

3.4 Setting the +5V levels

The 980 enables you to view the +5V levels from the source device under test and to set the current load on the +5V lead.

1. Select the RX 5 Volts... item from the Instrument pull-down menu on the built-in front panel as shown below.

RX Control and	RX Control and Configuration					
MV980_DP (192. HDMI Protocol & HDMI-R40	IV980_DP (192.168.254.153) IDMI Protocol Analyzer RX - Card 4 IDMI-R40					
Mode	HP	5-Volts	HDCP	HDCP 2.2		
Measured: 0.0	00 V					
Load:	6.75	mA (6.06 - 14	48.00)			
, <u> </u>						
		Apply 🔶	Refresh			
				🐹 Close		

The RX 5V Status/Configuration dialog box is displayed as shown below.

- 2. Note the current Measured 5V level (4.98 in the example above).
- Select the Threshold Level using the upper slidebar (0.0 to 5.3V). Be sure to select the Apply button. Then hit Refresh to view the new value. You may wish to lower the threshold to enable testing of a source whose 5V level is too low. If you specify a threshold higher than the voltage detected there will be no effect on the ability to test.
- 4. Select the current Load using the lower slidebar provided. Increasing the current load will cause the detected voltage to fall. Be sure to select the **Apply** button. Then hit **Refresh** to view the new value.

3.5 Enabling HDCP 2.2 on Protocol Analyzer's Rx Port

The 980 Protocol Analyzer module's Rx port has to be configured to respond to HDCP 2.2 authentication from a source. Use the following procedure to enable HDPC 2.2 authentication in the 980 Protocol Analyzer module. You can enable HDCP 2.2 on the Protocol Analyzer receiver either through the embedded 980 GUI or the external 980 GUI. The following procedures assume you are using the external GUI but exceptions are provided instructing you how to enable HDCP 2.2 through the embedded GUI.

1. From the **Card Control** window, select **Receiver**. Refer to the screen example below.



The Rx Control and Configuration dialog box appears as shown below.



If you are working from the embedded 980 GUI, the Real Time screen will appear and you will have to select the **Tools** button on the lower right. Refer to the following screen examples for the workflow using the embedded 980 GUI.

980 User Guide – HDMI HDCP 2.2 Compliance

PORT: HDHI- R40 CARD: Quantum Data.	Inc. HDMI 1.4 protocol analyzer			
HDHI Honitor Sink Emulation - RX	TX Ri:0			🖰 Home
CEA VIC=4: 1280x720p @ 60 Hz 16:9	1280 x 720 Progressive (24 bpp), R	GB Not Encrypted HDMI		<u> </u>
				🥽 Back
				🏣 Nav.
				🛑 Stop
				⇔ Video
				⊖ AVI-IF
				😝 VS-IF
				😝 GCP
				😝 User
			EUID Set EDID	💮 АСА
			© Control/Config	<i>(</i>
			🔅 Pixel Error Test	⇔ Mode
			🔅 PRN Error Test	▽ Tools
				5.DB.D3

2. From the embedded GUI Real Time window, select the **Control/Config** item as shown above.

The Control and Configuration dialog box appears as shown below.

RX Control and Configu	Iration		
	5-Volts	НОСР	HDCP 2.2
	Duration 100	ms (100 - 4000)	
	🛛 🛛 🖉 Generate	e Hot-Plug	
			💢 Close

3. Select the **HDCP 2.2** tab indicated in the screen example above.

Refer to the following screen example.

RX Control and Cor	nfiguration		
NK_980 (192.168.254	.174)		
HDMI Protocol Analy	yzer RX - Card 4		
Mode	HP 5-V	olts HI	HDCP 2.2
	HDCP 2	.2 Test	
	Enabled	Disabled	
	HDCP	Status	
	(🕿 R/	efresh	
I	XTX	:NA	
1	XCAPS	:NA	
4	KE_INIT	:NOT_RCVD	
I	X_CERT	:NOT_RCVD	
5	STORED_KM	:NOT_RCVD	
l l	IO_STORED_KM	:NOT_RCVD	
E	IPRIME	:NOT_RCVD	
I	PAIRING	:NOT_RCVD	
I	LC_INIT	:NOT_RCVD	
1	PRIME	:NOT_RCVD	
2	SKE	:NOT_RCVD	
4	UTHENTICATED	:NO	
I	REPAUTH_RCVIDI	.ST:MSG_NOT_SND	
I	RCVIDLST ACK	:NOT_RCVD	
2	STRM_MGMT	:NOT_RCVD	
2	STRM_RDY	:MSG_NOT_SND	

4. Enable HDCP 2.2 by clicking on the **Enabled** radio button as shown below.

RX Control and Configuration						
NK_980 (192.168.254 HDMI Protocol Analy HDMI-R40	NK_980 (192.168.254.174) HDMI Protocol Analyzer RX - Card 4 HDMI-R40					
Mode	HP 5-	Volts	HDCP	HDCP 2	.2	
	HDCP 2	.2 Test				
	Enabled	O Disable	d			
	HDCF	^o Status				
	Refresh					
	RTX	:NA				
	TXCAPS	:NA				
	AKE_INIT	:NOT_RCVD				
	RX_CERT	:NOT_RCVD				
	STORED_KM	:NOT_RCVD				
	NO_STORED_KM	:NOT_RCVD				
	HPRIME	:NOT_RCVD				
	PAIRING	:NOT_RCVD				
	LC_INIT	:NOT_RCVD				
	LPRIME	:NOT_RCVD				
	SKE	:NOT_RCVD				
	AUTHENTICATED	:NO				
	REPAUTH RCVID	LST:MSG_NO	T_SND			
	RCVIDLST_ACK	NOT_RCVD				
	STRM_MGMT	INGT_RCVD	CNID			
	STRM_RD1	MSG_NOT_	SRD			
				X Close		

5. Select the HP tab and generate a hot plug. Refer to the screen example below.



6. Return to the **HDCP 2.2** tab and click on **Refresh** to view the status of the HDCP 2.2 authentication. Refer to the screen example below.



HDCP 2.2 is now active.

3.6 Completing the HDCP **2.2** Source Capabilities Declaration Form (CDF)

Use the following procedures to complete the CDF for the HDMI source compliance tests.

To complete the CDF:

1. From the **Compliance Tests** page of the **App**s panel, enable viewing of the **HDMI HDCP Source Compliance Test**.

Rev. A5

💮 Apps					
		🔍 quantum	data		
		Compliance	e Tests		
	\checkmark	\bigcirc		\bigcirc	
	HDMI 1.4b EDID CTS 1.4b	HDMI 1.4b Sou CTS 1.4b	rce	HDMI 2.0 Source CTS 2.0	
		\checkmark			
	HDMI 1.4b Sink CTS 1.4b	HDMI 2.0 Sin CTS 2.0	k	HDMI HDCP 1.4 Transmit CTS 1.2	ter
				\checkmark	
	HDMI HDCP 2.2 Transmitter CTS 1.0	MHL Source CTS 1.2 - 2.2		MHL Sink CTS 1.2 - 2.2	
	Card Control	Page 2 of 4 Compliance Tests	Editors	Other	

2. Select the **CDF Entry** panel as shown below.

980 User Guide – HDMI HDCP 2.2 Compliance

	P 2.2 TX CT 1.0
CDF Entry	Selection Test Options / Preview
Copen	New Save CDF File: < not saved>
General	
Manufacturer	What is the product manufacturer's name?
Model	What is the model name/number of the product?
Port_Tested	What port is being tested?
	X Close

3. To create a new CDF, click on the **New** activation button as can be seen in the screen example above.

You will be prompted with a confirmation that you want to start a new CDF and reset the values. Click **OK** to proceed.

New CDF	×
Start a new CDF? All CDF values will be reset to default	s.
	OK Cancel

4. To open an existing CDF, click on the **Open** activation button.

You will be prompted with a dialog box that enables you to open a CDF. Select a CDF and then **OK** to proceed.

Rev. A5

🐞 Open CDF	
Local Fi	les
🔺 🗁 CDF	
🛛 🔯 XYZ_22_Source	
🗹 Ok	🙆 Cancel

5. Complete the items in the **Products** tab of the CDF Entry panel shown below.

10 HDMI HDCP 2.2 TX CT 1.0	- • ×
🕲 CDF Entry 🧹 Test Selection 🕨 Test Options / Preview	
CDF File: /CDF/XYZ_22_Source	
• General	
Ma acturer What is the product manufacturer's name? Acme	
Model What is the model name/number of the product?	
Port_Tested What port is being tested?	
	X Close

6. Save the CDF. A confirmation box with a default name will appear as shown below. Edit the name if necessary and click OK.

🕸 Save CDF			
Local Files			
🔺 🗁 CDF			
10 804A_CDF			
🔯 Acme_XYZ_HDCP_Source_CDF			
🔎 🖢 New 🕽 🤇 🎦 Rename 🔵 🤇 🐹 Delete			
🥒 New 🖉 🧏 Rename 🖉 🎇 Delete 🤇			
Path: /CDF			
New (¹ / ₂ Rename) (X Delete) Path: /CDF Name: Acme_XYZ_HDCP_Source_CDF			
New Acme_XYZ_HDCP_Source_CDF			

CDF name in use is shown on panel.

🖄 HDMI HDC	P 2.2 TX CT 1.0
墜 CDF Entry	/ V Test Selection > Test Options / Preview
Concerned	New Save CDF File: /CDF/XYZ_22_Source
General	
Manufacturer	What is the product manufacturer's name? Acme
Model	What is the model name/number of the product? XYZ
Port_Tested	What port is being tested? 1
	X Close

3.7 Selecting the 1A series tests

Use the following procedures to select the tests to run. There are multiple tabs which correspond to each section in the CTS.

To select the tests to run:

- 1. Select the **Test Selection** panel as shown below.
- 2. If you have an existing Test Selection option file saved you can recall that for use in your testing. Simply click on the **Open** activation button.

B HDMI HDCP 2.2 TX CT 1.0	
CDF Entry V Test Selection > Test Options / Preview	
Copen Save Select All Tests Deselect All Tests	
TX with Receiver TX with Repeater	
🛛 Select All on Page 🔲 Clear All on Page	
IA-01: Regular Procedure: With previously connected Receiver (With stored Km) Verify the Transmitter's implementation of the HDCP protocol when an HDCP Receiver (that was previously connected) is attached.	Î
IA-02: Regular Procedure: With newly connected Receiver (Without stored Km) Verify the Transmitter's implementation of the HDCP protocol when an HDCP Receiver (not previously connected) is attached.	
IA-03: Regular Procedure: Receiver disconnect after AKE_Init Verify the Source DUT restarts authentication after the receiver is disconnected and reconnected following the write of AKE_Init with a new r_tx value.	E
IA-04: Regular Procedure: Receiver disconnect after Km Verify the Source DUT restarts authentication after the receiver is disconnected and reconnected following the exchange of Km.	
IA-05: Regular Procedure: Receiver disconnect after locality check Verify the Source DUT restarts authentication after the receiver is disconnected and reconnected after locality check is initiated.	
IA-06: Regular Procedure: Receiver disconnect after Ks Verify the Source DUT restarts authentication after the receiver is disconnected and reconnected following the exchange of Ks.	
IA-07: Regular Procedure: Receiver sends REAUTH_REQ after Ks Verify the Source DUT restarts authentication after the receiver sends REAUTH_REQ following the exchange of Ks.	
IA-08: Irregular Procedure: Rx certificate not received. Verify the Source DUT considers it a failure of authentication when the certificate is not received from the Rx during AKE.	-
	Close

A dialog box will appear as follows. Simply select the file and click on the **OK** activation button.

1.001.7.00

HDMI HDCP 2.2 TX Compliance Test		
Open Test Selection File		
Select an Test Selection file to open.		
HDCP_22_Test1.xml		
Cancel Ok		

3. Complete the items in the **1A Tests** tab of the **Test Selection** panel shown below.

For convenience you can **Select All Tests** or **Deselect All Tests** for both tabs or for group selection over each page **Select All on Page** or **Clear All on Page** tests using the activation buttons provided.

The following screens examples show the tests selected.

980 User Guide – HDMI HDCP 2.2 Compliance

🙄 HDMI HDCP 2.2 TX CT 1.0	×
CDF Entry V Test Selection Test Options / Preview	
Copen 🔛 Save Select All Tests Deselect All Tests	
TX with Receiver TX with Repeater	
Select All on Page Clear All on Page	
✓ 1A-01: Regular Procedure: With previously connected Receiver (With stored Km) Verify the Transmitter's implementation of the HDCP protocol when an HDCP Receiver (that was previously connected) is attached.	Î
IA-02: Regular Procedure: With newly connected Receiver (Without stored Km) Verify the Transmitter's implementation of the HDCP protocol when an HDCP Receiver (not previously connected) is attached.	
✓ 1A-03: Regular Procedure: Receiver disconnect after AKE_Init Verify the Source DUT restarts authentication after the receiver is disconnected and reconnected following the write of AKE_Init with a new r_tx value.	E
IA-04: Regular Procedure: Receiver disconnect after Km Verify the Source DUT restarts authentication after the receiver is disconnected and reconnected following the exchange of Km.	
IA-05: Regular Procedure: Receiver disconnect after locality check Verify the Source DUT restarts authentication after the receiver is disconnected and reconnected after locality check is initiated.	
IA-06: Regular Procedure: Receiver disconnect after Ks Verify the Source DUT restarts authentication after the receiver is disconnected and reconnected following the exchange of Ks.	
✓ 1A-07: Regular Procedure: Receiver sends REAUTH_REQ after Ks Verify the Source DUT restarts authentication after the receiver sends REAUTH_REQ following the exchange of Ks.	Ŧ
K Close	

980 User Guide – HDMI HDCP 2.2 Compliance

🖄 HDMI HDCP 2.2 TX CT 1.0	•
CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
🔄 Open 🔄 Save 🛛 Islect All Tests	
TX with Receiver TX with Repeater	
Select All on Page Clear All on Page	
	-
✓ 1A-07: Regular Procedure: Receiver sends REAUTH_REQ after Ks Verify the Source DUT restarts authentication after the receiver sends REAUTH_REQ following the exchange of Ks.	
IA-08: Irregular Procedure: Rx certificate not received. Verify the Source DUT considers it a failure of authentication when the certificate is not received from the Rx during AKE.	
IA-09: Irregular Procedure: Verify Receiver Certificate Verify the Source DUT considers it a failure of authentication when verification of Receiver certificate fails.	
IA-10: Irregular Procedure: SRM Verify the Source DUT considers it a failure of authentication when the Receiver ID is on the revocation list.	
✓ 1A-11: Irregular Procedure: Invalid H' Verify the Source DUT considers it a failure of authentication if the Receiver provides a value for H' that does not match H, or does not respond with H' in the allotted time.	Ξ
✓ 1A-12: Irregular Procedure: Pairing Failure Verify the Source DUT considers it a failure of authentication if the Receiver does not send AKE_Send_Pairing_Info.	
IA-13: Irregular Procedure: Locality Failure Verify the Source DUT considers it a failure of authentication if the Receiver provides a value for L' that does not match L, or does not respond with L' in the allotted time.	Ţ
	se

4. You can save the Test Selection options using the **Save** activation button.

100 HDMI HDCP 2.2 TX CT 1.0	- • ×
🔯 CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
Image: Open Image: Save Image: Save	
Select All on Page Clear All on Page	
IA-01: Regular Procedure: With previously connected Receiver (With stored Km) Verify the Transmitter's implementation of the HDCP protocol when an HDCP Receiver (that was previously connected) is attached.	

A dialog box will appear as follows. Simply assign a name and click on the **OK** activation button. Click **Cancel** to exit.

Rev. A5

HDMI HDCP 2.2 TX CT: Save Test Selections
Test Selection File
Enter a file name for the Test Selection.
HDCP_22_Test2.xml
HDCP_22_Test1.xml
Cancel Ok
3.8 Executing the HDMI HDCP 2.2 1A Series Source Compliance Tests

Use the following procedures to initiate the execution of an HDMI HDCP 2.2 1A series Source Compliance test series.

Note: You can monitor the HDCP 2.2 transactions using the Auxiliary Channel Analyzer (ACA) utility. Please refer to the main 980 HDMI Protocol Analyzer module User Guide for instructions on using the ACA.

To initiate a test series:

1. Select the **Test Options / Preview** panel as shown below.

S HDMI HDCP 2.2 TX CT 1.0	•
🕲 CDF Entry 🗹 Test Selection 🕨 Test Options / Preview	
Test List	
📝 All 🔗 💥 Instrument: [MV980_DP [192.168.254.153] 🗸 🕨 Exec	ute Tests
Category / Test Name	V
▲ ► TX with Receiver	
1A-01: Regular Procedure: With previously connected Receiver (With stored Km)	\checkmark
▶ ▷ 📃 1A-02: Regular Procedure: With newly connected Receiver (Without stored Km)	\checkmark
🕨 🗏 1A-03: Regular Procedure: Receiver disconnect after AKE Init	\checkmark
🕨 þ 📑 1A-04: Regular Procedure: Receiver disconnect after Km	\checkmark
> 🗏 1A-06: Regular Procedure: Receiver disconnect after Ks	\checkmark
> 📃 1A-07: Regular Procedure: Receiver sends REAUTH REQ after Ks	\checkmark
▲ 📑 1A-11: Irregular Procedure: Invalid H'	\checkmark
• Iter 01: Invalid H'	\checkmark
Iter 02: H' Timeout with previously paired Recv Id	V
• Iter 03: H' Timeout with previously unpaired Recv Id	V
A-12: Irregular Procedure: Pairing Failure	V
A TAIL AND A Procedure: Locality Failure	×
• Iter UI: Locality failure	
• Iter 52: Locality Inmout	V
	ose

2. (Optional) Review the list of tests for each category. If you wish to skip some of the tests. You can skip tests by clicking on the Check mark on the right side of the **Test Options / Preview** panel.

The screen shot below shows some of the tests that have been skipped (highlighted in yellow with a red X).

🖄 HDMI HDCP 2.2 TX CT 1.0	
🔯 CDF Entry 🗹 Test Selection 🕨 Test Options / Preview	
Test List	
All V X Instrument: MV980_DP [192.168.254.153]	cute Tests
Category / Test Name	1
TX with Receiver	
b 1 1A-01: Regular Procedure: With previously connected Receiver (With stored Km)	\checkmark
IA-02: Regular Procedure: With newly connected Receiver (Without stored Km)	\checkmark
> 📙 1A-03: Regular Procedure: Receiver disconnect after AKE Init	\checkmark
> 🗏 1A-04: Regular Procedure: Receiver disconnect after Km	\checkmark
b 1 1A-06: Regular Procedure: Receiver disconnect after Ks	\checkmark
🔺 📑 1A-07: Regular Procedure: Receiver sends REAUTH REQ after Ks	×
💥 Iter 01:	×
🔺 📙 1A-11: Irregular Procedure: Invalid H'	\checkmark
• Iter 01: Invalid H'	\checkmark
 Iter 02: H' Timeout with previously paired Recv Id 	\checkmark
• Iter 03: H' Timeout with previously unpaired Recv Id	\checkmark
[] 1A-12: Irregular Procedure: Pairing Failure	\checkmark
🔺 📃 1A-13: Irregular Procedure: Locality Failure	×
😙 🙀 Iter 01: Locality Failure	×
K Iter 02: Locality Timeout	×
·	
1A-13: Irregular Procedure: Locality Failure	
	ose

3. Select the 980 Test Instrument from the pull-down menu of the HDCP **Test Options / Preview** tab shown below.

₩ HDMI HDCP 2.2 TX CT 1.0	
🔯 CDF Entry 🗹 Test Selection 🕨 Test Options / Preview	
A Test List	
All 🖌 🗶 Instrument: MV980_DP [192.168.254.153]	► Execute Tests
Category / Test Name	V

Click on the **Execute Tests** activation button to initiate the test suite. You will be prompted for a name for the tests. This dialog box is shown below.

Rev. A5

1	HDMI HDCP TX CT Results					
	Test Results Name					
	Execute HDMI HDCP TX Compliance Tests on Instrument: 980B_JB @ 192.168.254.160					
	Enter a name for the Test Results.					
	Acme_XYZ_HDMI_HDCP_Source_Results_1					
	07_26_2013_12_26_34_804A					
	Cancel Ok					

During the tests a **Source Test Configuration** dialog box will appear which requires that you to verify that the source device under test is connected properly. The following screen shot depicts this. Press **Continue** when you have the source device connected properly. You can cancel the test using the **Cancel Compliance** Test button.



If you do not have the source device under test in the proper mode, an error dialog box will appear.

During the test, the test results are shown as they occur in the **Test Options / Preview** panel. There is a green progress arrow $\stackrel{>}{\Rightarrow}$ which points to the test that is currently being run. Refer to the screen shot below.

Test List				
🔀 All 🗸 🛠 Reset Status				
Category	/ Test Name 🛛	Status		
🔺 🕨 TX wit	th Receiver			
IA −0	1: Regular Procedure: With previously connected Receiv€	In Progress		
📄 👘 Ite	er 01:	In Progress		
▶ 1A-0	2: Regular Procedure: With newly connected Receiver (WiV	Not Tested		
▶ 📑 1A-0	3: Regular Procedure: Receiver disconnect after AKE Iniv	Not Tested		
▶ ■ 1A-0	4: Regular Procedure: Receiver disconnect after Km 🛛 🗸	Not Tested		
▶ ■ 1A-0	6: Regular Procedure: Receiver disconnect after Ks	Not Tested		
▶ ■ 1A-0	7: Regular Procedure: Receiver sends REAUTH REQ after W	Not Tested		
⊿ 📑 1A-1	1: Irregular Procedure: Invalid H'	Not Tested		
Ite	er 01: Invalid H'	Not Tested		
Ite	er 02: H' Timeout with previously paired Recv Id	Not Tested		
• Ite	er 03: H' Timeout with previously unpaired Recv Id	Not Tested		
▶ 📑 1A-1	2: Irregular Procedure: Pairing Failure	Not Tested		
⊿ 📑 1A-1	3: Irregular Procedure: Locality Failure	Not Tested		
Ite	er 01: Locality Failure	Not Tested		
Ite	er O2: Locality Timeout	Not Tested		
	Test Log			
Line	Message			
• 0001	Compliance Test Started.			
0002	Initialization.			
• 0003	Assembling the test list.			
• 0004	Transferring the CDF to the Test Instrument.			
0005	Test 1A-01-01			
- 0000	Set Configuration to: SOURCE			
0000	See configuration ber beened			

The lower panel **Test Log** shows the testing activity as it occurs. You can cancel the compliance test or pause at any time. If you pause the test you can resume later at any time even if you exit the 980 Manager application. Refer to the following screen examples.

Test List		
All 🖉 🗶 🤄 Reset Status		
Category / Test Name	V	Status
TX with Receiver		
▲ 🗏 1A-01: Regular Procedure: With previously connected Receiver (With stored Km) 🖌	Fail
▷ \varTheta Iter 01:	1	Fail
▲ 🗏 1A-02: Regular Procedure: With newly connected Receiver (Without stored Km)	1	Fail
▷ \varTheta Iter 01:	1	Fail
🔺 📃 1A-03: Regular Procedure: Receiver disconnect after AKE Init	1	Pass
▷	1	Pass
🔺 📃 1A-04: Regular Procedure: Receiver disconnect after Km	\checkmark	Pass
▷ 🕒 Iter 01:	1	Pass
🔺 📃 1A-06: Regular Procedure: Receiver disconnect after Ks	1	Pass
▷	1	Pass
🔺 📃 1A-07: Regular Procedure: Receiver sends REAUTH REQ after Ks	1	In Progress
📦 Iter 01:	1	In Progress
🔺 📃 1A-11: Irregular Procedure: Invalid H'	1	Not Tested
• Iter 01: Invalid H'	1	Not Tested
Iter 02: H' Timeout with previously paired Recv Id	1	Not Tested
Iter 03: H' Timeout with previously unpaired Recv Id	\checkmark	Not Tested
Test Log		
0026 Test 1A-06-01		
027 Executing the test.		
Processing test results.		
10/29 Test 1A-06 Iter 01 -> Pass		
0030 Test 1A-07-01		
0031 Executing the test.		

HDMI HDCP 2.2 TX Compliance Test (1.0): "HDCP_22_Test3"			
Test List			
All V Reset Status			
Category / Test Name	×	Status	~
▶ 📦 Iter 01:	×	Fail	
A 12 1A-02: Regular Procedure: With newly connected Receiver (Without stored	Km) 🖌	Fail	
▶ \varTheta Iter 01:	×	Fail	
▲ 🗏 ÎA-03: Regular Procedure: Receiver disconnect after AKE Init	Image: A start of the start	Pass	
▶ \varTheta Iter 01:	V	Pass	
▲ 🗏 1A-04: Regular Procedure: Receiver disconnect after Km	V	Pass	
▷ 🕒 Iter 01:	\checkmark	Pass	
🔺 🗏 1A-06: Regular Procedure: Receiver disconnect after Ks	\checkmark	Pass	
b 😝 Iter 01:	\checkmark	Pass	
▲ 🗏 1A-07: Regular Procedure: Receiver sends REAUTH REQ after Ks	\checkmark	Pass	
▶ 😝 Iter 01:	\checkmark	Pass	=
A 🗏 1A-11: Irregular Procedure: Invalid H'	\checkmark	Pass	
Iter 01: Invalid H'		Pass	_
Iter 02: H' Timeout with previously paired Recv Id	V	Pass	_
Iter 03: H' Timeout with previously unpaired Recv Id	×	Pass	
4 📃 1A-12: Irregular Procedure: Pairing Failure	×	Fail	
▶	×	Fail	
• 📑 1A-13: Irregular Procedure: Locality Failure		Pass	
b lter 01: Locality Failure		Pass	_
Iter 02: Locality Timeout		Pass	*
٠			P.
Test Log			
Line Message			~
• 0051 Executing the test.			
• 0052 Processing test results.			
• 0053 Test 1A-13 Iter 01 -> Pass			
• 0054 Test 1A-13-02			
• 0055 Executing the test.			
• 0056 Processing test results.			
• 0057 Test 1A-13 Iter 02 -> Pass			
• 0058 Tests completed			=
			∇
X Close Window Continue Testing			

When the tests are completed the Test Log will indicate Test Completed as shown below.

HDMI HDCP 2.2 TX Compliance Test (1.0): "HDCP_22_Test3"			
Test List			
All V X Reset Status			
Category / Test Name	V	Status	*
▶ → Iter 01:	V	Fail	
▲ 📃 1A-02: Regular Procedure: With newly connected Receiver (Without stored Km)	\checkmark	Fail	
▶ \varTheta Iter 01:	V	Fail	
▲ 📃 1A-03: Regular Procedure: Receiver disconnect after AKE Init	\checkmark	Pass	
▶ 😝 Iter 01:	\checkmark	Pass	
4 🗏 1A-04: Regular Procedure: Receiver disconnect after Km	\checkmark	Pass	
▶ 😝 Iter 01:	\checkmark	Pass	
▲ 📑 1A-06: Regular Procedure: Receiver disconnect after Ks	V	Pass	
▶ Iter 01:	V	Pass	
4 📑 1A-07: Regular Procedure: Receiver sends REAUTH REQ after Ks	V	Pass	
▶ Iter 01:	V	Pass	E
• 🗄 1A-11: Irregular Procedure: Invalid H'	V	Pass	
b	V	Pass	
Iter 02: H' Timeout with previously paired Recv Id	V	Pass	
▶ 😝 Iter 03: H' Timeout with previously unpaired Recv Id	×	Pass	
Interpretation of the second secon	× _	Fail	
▶	× .	Fail	
• 🖪 1A-13: Irregular Procedure: Locality Failure	× .	Pass	
▷ Urer 01: Locality Failure	× _	Pass	_
▷ Urr 02: Locality Timeout	V	Pass	-
۲. III			•
Testion			
Line Message			~
• 0051 Executing the test.			
0052 Processing test results			
• 0053 Test 12-13 ther 01 -> Pass			
$\begin{array}{ccc} \bullet 0.054 \end{array} \qquad $			
• More Executing the test			
• 0055 Executing the test.			
rooss processing test results.			
test IA-13 iter 02 -> Pass			=
rests completed			-
Close Window Continue Testing			

When you close the test execution window, the Compliance Test Viewer window will appear showing the results of the test. Please refer to the following section for details on viewing the compliance test results.

3.9 Viewing Details of 1A Source Compliance Test Results

When you have completed the test series you will have an opportunity to view the detailed data for a particular failure or a test that passed. Use the following procedures to view the details of a failure.

To view the details of a failure:

1. Expose the detailed results of a failure and highlight a results record. Refer to the screen example below.

Compliance Test Results Viewer		
HDMI HDCP 2.2 TX (1.0) Compliance Test Res	sults	
Results Name: HDCP_22_Test3 Manufacturer: Acme Date Tested: June 11, 2014 4:06 PM Model Name: XYZ Overall Status: CTS 1.0 - Fail Port Tested: 1		HTML Report
Test Results		
Fest Name / Details	0	Status
> 🗏 1A-01: Regular Procedure: With previously connected	Rec	Fail
IA-02: Regular Procedure: With newly connected Recei	ver	Fail
Description: Procedure: Receiver disconnect after	AKE	Pass
1A-04: Regular Procedure: Receiver disconnect after	Km	Pass
IA-06: Regular Procedure: Receiver disconnect after	Ks	Pass
IA-07: Regular Procedure: Receiver sends REAUTH REQ	aft	Pass
IA-11: Irregular Procedure: Invalid H'		Pass
🖻 🗐 1A-12: Irregular Procedure: Pairing Failure		Fail
IA-13: Irregular Procedure: Locality Failure		Pass
1A-01: Regular Procedure: With previously connected Receiver (With stored Km)		
Instrument: MV980_DP [192.168.254.153]	-	Continue Test Execution
		💥 Close

Compliance Test Results Viewer		
HDMI HDCP 2.2 TX (1.0) Compliance Test Results		
Results Name: HDCP 22 Test3 Manufacturer: Acme		
Date Tested: June 11 2014 4:06 PM Model Name: XYZ		
Overall Status: CTS 1.0 - Fail Port Tested: 1		
Text Devile		
Test Results	<u> </u>	Shahara A
P Test Name / Details	Q	Status
▲ Uter 01:		Fail
• HPD Deaaserted regular		· · · · · · · · · · · · · · · · · · ·
• MSG:HPD_DIS ts:0x1192ff8 ns		
UNAUTH::enter		
HPD Asserted regular		
• RX:UNAUTH		
HDMI/VIDEO Present		
MSG:VALID_VER ts:0x0 ns		=
MSG:HPD_EN ts:0x330 ns		
AKE_INIT ts:0xba926e03 ns		
RCVD:AKE_INIT ts:0 us		
Test Cond. NoStrdKm		
MSG RCVD:AKE_Send_Cert ts:0xbaa0eb1a ns		
Snd Stored_KM ts:0xbd294d63 ns		
MSG SND:AKE_Send_Cert ts:101844 us		
MSG RCVD:AKE_Stored_Km ts:108711 us		
Stored KM received		
Timer RETRY Expired		
AKE INIT ts:0xff657e7c ns		
MSG RCVD:AKE INIT ts:2889526 us		
RCVD:AKE INIT ts:2889526 us		
MSG RCVD:AKE Send Cert ts:0xff7585ac ns		
Snd Stored KM ts:0x1fdab2f ns		
MSG SND:AKE Send Cert ts:2991626 us		
MSG RCVD:AKE Stored Km ts:2998453 us		
MSG RCVD:AKE Send H Prime ts:0x21085fa ns		-
Instrument: MV980_DP [192.168.254.153]		 Continue Test Execution
		💥 Close

Compliance Test Results Viewer			
HDMI HDCP 2.2 TX (1.0) Compliance Test Results			
Results Name: HDCP 22 Test3	Manufacturer: Acme		HTML Report
Date Tested: June 11, 2014 4:06 PM	Model Name: XV7		
Overall Status: CTS 1.0 - Fail	Port Tested: 1		
Back Marca / Data / Ja	l est Results	<u> </u>	Shahaa A
First Name / Details		Q	Status
⊿ 🔰 Iter 01:			Pass
HPD Deaaserted regular			
• MSG:HPD_DIS_ts:0x113dcdd_ns			
TX:UNAUTH::enter			
• HPD Asserted regular			
RX:UNAUTH			
HDMI/VIDEO Present			
MSG:VALID_VER ts:0x0 ns			
MSG:HPD_EN ts:0x338 ns			
AKE_INIT ts:0x6d4a5755 ns			
<pre>@ RCVD:AKE_INIT ts:0 us</pre>			
<pre>**Test Cond.** hpd</pre>			
HPD Deaaserted irregular			
MSG:HPD_DIS ts:0x1b15 ns			
HPD Asserted irregular			
MSG:HPD_EN ts:0x331 ns			
• AKE_INIT ts:0x72266814 ns			
RCVD:AKE_INIT ts:204539 us			
<pre>• **Test Cond.** ake_init</pre>			
Encryption Disabled			
MSG RCVD:AKE_Send_Cert ts:0x7234f	d25 ns		
Snd Stored_KM ts:0x74bc94f1 ns			
MSG SND:AKE_Send_Cert ts:306424 u	IS		
MSG RCVD:AKE_Stored_Km ts:313138	us		
MSG SND:AKE_Send_H_Prime ts:32486	4 us		
MSG RCVD:AKE Send H Prime ts:0x74	d53e86 ns		-
Iter 01:			
Instrument MI/020 DD (102.169.254.152)			
Instrument: [MN980_DP [192.108.204.103]			Continue Test Execution
			X Close

3.10 Selecting the 1B series tests

Use the following procedures to select the 1B series tests to run. There are multiple tabs which correspond to each section in the CTS.

To select the tests to run:

- 1. Select the **Test Selection** panel as shown below.
- 2. If you have an existing Test Selection option file saved you can recall that for use in your testing. Simply click on the **Open** activation button.

10 HDMI HDCP 2.2 TX CT 1.0	- • •
CDF Entry V Test Selection > Test Options / Preview	
🔄 Open 🔚 Save 🔨 Select All Tests 🔲 Deselect All Tests	
TX with Receiver TX with Repeater	
Select All on Page	
R 01: Denular Descedure: With Denester	
Verify the Source DUT works with a repeater attached under normal circumstances.	
18-02: Irregular Procedure: Timeout of Peceiver ID list	
Verify the Source DUT considers it a failure of authentication if the downstream repeater does not	
respond with RepeaterAuth_Send_ReceiverID_List prior to expiration of watchdog timer.	
1B-03: Irregular Procedure: Verify V'	
Verify the Source DUT considers it a failure of authentication if the repeater provides a value for V' that does not match V.	
IB-04: Irregular Procedure: MAX_DEVS_EXCEEDED Verify the Source DUT considers it a failure of authentication if the repeater sets the	
MAX_DEVS_EXCEEDED bit in the RepeaterAuth_Send_ReceiverID_List message.	
1B-05: Irregular Procedure: MAX_CASCADE_EXCEEDED	
Verify the Source DUT considers it a failure of authentication if the repeater sets the	
MAA_CASCADE_EACEEDED bit in the RepeaterAuth_Send_ReceivenD_List message.	
IB-06: Irregular Procedure: Incorrect seq_num_V	
Verify the Source DUT considers it a failure of authentication if the repeater provides a non-zero value in seq_num_V in the first RepeaterAuth_Send_ReceiverID_List message after AKE_Init.	
IB-07: Regular Procedure: Re-authentication on HDCP_HPD Verify the Source DUT initiates re-authentication when a HDCP_HPD is received from the downstream repeater.	
IB-08: Regular Procedure: Re-authentication on REAUTH_REQ Verify the Source DUT initiates re-authentication when a REAUTH REO is received from the downstream repeater.	
IB-09: Irregular Procedure: Rollover of seq_num_V Verify the Source DUT initiates re-authentication when a rollover of seq_num_V is detected from the downstream repeater.	
IB-10: Irregular Procedure: Failure of Content Stream Management Verify the Source DUT re-attempts Content Stream Management following a failure of Content Stream Management	
the source bothe attempts content stream management following a nature of content stream management.	
	💢 Close

A dialog box will appear as follows. Simply select the file and click on the **OK** activation button.

Rev. A

HDMI HDCP 2.2 TX Compliance Test		
Open Test Selection File		
Select an Test Selection file to open.		
HDCP_22_Test1.xml		
Cancel Ok		

3. Complete the items in the **1B Tests** tab of the **Test Selection** panel shown below.

For convenience you can **Select All Tests** or **Deselect All Tests** for both tabs or for group selection over each page **Select All on Page** or **Clear All on Page** tests using the activation buttons provided.

🖄 HDMI HDCP 2.2 TX CT 1.0	, • 💌
CDF Entry V Test Selection Test Options / Preview	
🔄 Open 🔛 Save 🛛 Select All Tests 🔲 Deselect All Tests	
TX with Receiver 🕨 TX with Repeater	
Select All on Page Clear All on Page	
IB-01: Regular Procedure: With Repeater Verify the Source DUT works with a repeater attached under normal circumstances.	Î
IB-02: Irregular Procedure: Timeout of Receiver ID list Verify the Source DUT considers it a failure of authentication if the downstream repeater does not respond with RepeaterAuth_Send_ReceiverID_List prior to expiration of watchdog timer.	
IB-03: Irregular Procedure: Verify V' Verify the Source DUT considers it a failure of authentication if the repeater provides a value for V' that does not match V.	E
✓ 1B-04: Irregular Procedure: MAX_DEVS_EXCEEDED Verify the Source DUT considers it a failure of authentication if the repeater sets the MAX_DEVS_EXCEEDED bit in the RepeaterAuth_Send_ReceiverID_List message.	
IB-05: Irregular Procedure: MAX_CASCADE_EXCEEDED Verify the Source DUT considers it a failure of authentication if the repeater sets the MAX_CASCADE_EXCEEDED bit in the RepeaterAuth_Send_ReceiverID_List message.	
IB-06: Irregular Procedure: Incorrect seq_num_V Verify the Source DUT considers it a failure of authentication if the repeater provides a non-zero value in seq_num_V in the first RepeaterAuth_Send_ReceiverID_List message after AKE_Init.	
IB-07: Regular Procedure: Re-authentication on HDCP_HPD Verify the Source DUT initiates re-authentication when a HDCP_HPD is received from the downstream repeater.	Ţ
٠ [١١]	•
	Close

🖄 HDMI HDCP 2.2 TX CT 1.0	
🔯 CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
Copen Save Select All Tests Deselect All Tests	
TX with Receiver TX with Repeater	
🔀 Select All on Page 🔲 Clear All on Page	
Verify the Source DUT considers it a failure of authentication if the repeater sets the MAX_DEVS_EXCEEDED bit in the RepeaterAuth_Send_ReceiverID_List message.	^
IB-05: Irregular Procedure: MAX_CASCADE_EXCEEDED Verify the Source DUT considers it a failure of authentication if the repeater sets the MAX_CASCADE_EXCEEDED bit in the RepeaterAuth_Send_ReceiverID_List message.	
IB-06: Irregular Procedure: Incorrect seq_num_V Verify the Source DUT considers it a failure of authentication if the repeater provides a non-zero value in seq_num_V in the first RepeaterAuth_Send_ReceiverID_List message after AKE_Init.	
IB-07: Regular Procedure: Re-authentication on HDCP_HPD Verify the Source DUT initiates re-authentication when a HDCP_HPD is received from the downstream repeater.	
IB-08: Regular Procedure: Re-authentication on REAUTH_REQ Verify the Source DUT initiates re-authentication when a REAUTH_REQ is received from the downstream repeater.	E
IB-09: Irregular Procedure: Rollover of seq_num_V Verify the Source DUT initiates re-authentication when a rollover of seq_num_V is detected from the downstream repeater.	
IB-10: Irregular Procedure: Failure of Content Stream Management Verify the Source DUT re-attempts Content Stream Management following a failure of Content Stream Management.	-
(II	
x c	lose

4. You can save the Test Selection options using the **Save** activation button.

10 HDMI HDCP 2.2 TX CT 1.0	
CDF Entry V Test Selection > Test Options / Preview	
Image: Comparison of the second se	
Select All on Page 🔲 Clear All on Page	
✓ 1B-01: Regular Procedure: With Repeater Verify the Source DUT works with a repeater attached under normal circumstances.	

A dialog box will appear as follows. Simply assign a name and click on the **OK** activation button. Click **Cancel** to exit.

Rev. A5

HDMI HDCP 2.2 TX CT: Save Test Selections		
Test Selection File		
Enter a file name for the Test Selection.		
HDCP_22_Test_1B_2.xml		
 ➢ HDCP_22_Test1.xml ➢ HDCP_22_Test2.xml ➢ HDCP_22_Test_1B.xml 		
Cancel 📀 Ok		

3.11 Executing the HDMI HDCP 2.2 1B Series Source Compliance Tests

Use the following procedures to initiate the execution of an HDMI HDCP 2.2 1B series Source Compliance test series.

To initiate a test series:

1. Select the **Test Options / Preview** panel as shown below.



2. (Optional) Review the list of tests for each category. If you wish to skip some of the tests. You can skip tests by clicking on the Check mark on the right side of the **Test Options / Preview** panel.

The screen shot below shows some of the tests that have been skipped (highlighted in yellow with a red X).

10 HDMI HDCP 2.2 TX CT 1.0	
🔯 CDF Entry 🗹 Test Selection 🕨 Test Options / Preview	
Test List	
All 🖌 🗶 Instrument: MV980_DP [192.168.254.153]	Execute Tests
Category / Test Name	V
TX with Repeater	
🕞 1B-01: Regular Procedure: With Repeater	V
IB-02: Irregular Procedure: Timeout of Receiver ID list	\checkmark
• Iter 01:	V
b 1B-03: Irregular Procedure: Verify V'	\checkmark
IB-04: Irregular Procedure: MAX DEVS EXCEEDED	\checkmark
🔺 📃 1B-05: Irregular Procedure: MAX CASCADE EXCEEDED	\checkmark
• Iter 01:	\checkmark
🛛 🖉 1B-07: Regular Procedure: Re-authentication on HDCP HPD 🛛 🚬	×
💥 Iter 01:	×
🛛 🗏 1B-08: Regular Procedure: Re-authentication on REAUTH REQ	\checkmark
🔺 📃 1B-09: Irregular Procedure: Rollover of seq num V	×
💥 Iter 01:	×
1B-01: Regular Procedure: With Repeater	
	X Close

3. Connect to the 980 Test Instrument if you have not already done so. Use the **Instrument** selection pull-down as indicated below.

🙄 HDMI HDCP 2.2 TX CT 1.0	- • ×
CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
Teşt List	
All MV980_DP [192.168.254.153]	Execute Tests
Category / Test Name	×
TX with Repeater	
> 🖪 1B-01: Regular Procedure: With Repeater	\checkmark
🔺 🗏 1B-02: Irregular Procedure: Timeout of Receiver ID list	\checkmark
• Iter 01:	\checkmark

Click on the **Execute Tests** activation button to initiate the test suite. You will be prompted for a name for the tests. This dialog box is shown below.

A dialog box prompting you to name the test results files appears as shown below:

HDMI HDCP 2.2 TX CT Results	
Test Results Name	
Execute HDMI HDCP 2.2 TX Compliance Tests on Instrument: MV980_DP @ 192.168.254.153	
Enter a name for the Test Results.	
HDCP_22_Test10	
HDCP_22_Test2 ^ HDCP_22_Test3	
Cancel Ok	

Select a name and click on the **OK** activation button. The tests begin.

 $\overline{}$

Rev. A5

HDMI HDCP 2.2 TX Compliance Test (1.0): "HDCP_22_Test10"		
Test List		
All V Reset Status		
Category / Test Name	1	Status
TX with Repeater		
IB-01: Regular Procedure: With Repeater	\checkmark	In Progress
Lter 01:	\checkmark	In Progress
> 🔄 1 2: Irregular Procedure: Timeout of Receiver ID list	\checkmark	Not Tested
IB- Irregular Procedure: Verify V'	\checkmark	Not Tested
1B-04: Irregular Procedure: MAX DEVS EXCEEDED	\checkmark	Not Tested
▶ 📑 1B-05: Irregular Procedure: MAX CASCADE EXCEEDED	\checkmark	Not Tested
▲ 🔄 1B-07: Regular Procedure: Re-authentication on HDCP HPD	×	Incomplete
💥 Iter 01:	×	User Skipped
▶ 📑 1B-08: Regular Procedure: Re-authentication on REAUTH RE	s 🗸	Not Tested
▲ ■ 1B-09: Irregular Procedure: Rollover of seq num V	×	Incomplete
💥 Iter 01:	×	User Skipped
Test Log		
Line Message		^
• 0002 Initialization.		
• 0003 Assembling the test list.		
• 0004 Transferring the CDF to the Test Instrument.		-
• 0005 Test 1B-01-01		
• 0006 Set Configuration to: SOURCE		
* 0007 Executing the test.		-
Cancel the Compliance Test Pause Test Execution		

During the tests a **Source Test Configuration** dialog box will appear which requires that you to verify that the source device under test is connected properly. The following screen shot depicts this. Press **Continue** when you have the source device connected properly. You can cancel the test using the **Cancel Compliance** Test button.

HDMI HDCP 2.2 TX Comp	pliance Test (1.0): "HDCP_22_Test4"	
	Test List	
	Vej reset status	Status
A MY with	TX Test Setup	Status
⊿ 📑 1B-01	Tart 12 01 Itar 01	Progress
🔶 Iter	Verify the Source DUT works with a repeater attached under normal circumstances.	Progress
⊳ 🗏 1B-02		t Tested
▶ 1B-03	Connect the test instrument (980) to the downstream HDCP 2.2 protected	t Tested
▶ ■ 1B-04	interface port of the DUT as shown in the diagram below.	t Tested
▶ 1B-05		t Tested
▶ ■ 1B-07		t Tested
▶ ■ 1B-00		t Tested
▲ ■ 1B-10		t Tested
• Tter	(Source) (Pseudo-Sink)	t Tested
•		4
Line	Cancel Compliance Test	A
• 0003		
• 0004	📀 Continue	
• 0005		=
0006	Set Configuration to: SOURCE	-
•	11	•
	Cancel the Compliance Test Pause Test Execution	

If you do not have the source device under test in the proper mode, an error dialog box will appear.

During the test, the test results are shown as they occur in the **Test Options / Preview** panel. There is a green progress arrow \Rightarrow which points to the test that is currently being run. Refer to the screen shot below.

	Test List		
📝 All 📈	🗶 🤄 Reset Status		
Categor	y / Test Name	1	Status
🕨 🕨 🔨	ith Repeater		
⊿ 📑 1B-	01: Regular Procedure: With Repeater	\checkmark	Fail
Þ 😑 I	ter 01:	\checkmark	Fail
⊿ 📑 1B-	02: Irregular Procedure: Timeout of Receiver ID list	\checkmark	Pass
Þ 😑 I	ter 01:	\checkmark	Pass
4 📑 1B-	03: Irregular Procedure: Verify V'	\checkmark	Pass
Þ 🔵 I.	ter 01:	\checkmark	Pass
ң 📑 1В-	04: Irregular Procedure: MAX DEVS EXCEEDED	\checkmark	In Progress
🔶 I	ter 01:	\checkmark	In Progress
🍐 📑 1B-	05: Irregular Procedure: MAX CASCADE EXCEEDED	\checkmark	Not Tested
a 📑 1B-	07: Regular Procedure: Re-authentication on HDCP HPD	×	Incomplete
💥 I	ter 01:	×	User Skipped
Þ 📑 1B-	08: Regular Procedure: Re-authentication on REAUTH RE	QV	Not Tested
🔺 📑 1B-	09: Irregular Procedure: Rollover of seq num V	×	Incomplete
💥 I	ter 01:	×	User Skipped
	Test Log		
.ine	Message		
0013	Test 1B-02 Iter 01 -> Pass		
0014	Test 1B-03-01		
0015	Executing the test.		
0016	Processing test results.		
0017	Test 1B-03 Iter 01 -> Pass		
0018	Test 1B-04-01		
	Executing the test		
 nn14 	Executing the test.		

The lower panel **Test Log** shows the testing activity as it occurs. You can cancel the compliance test or pause at any time. If you pause the test you can resume later at any time even if you exit the 980 Manager application. Refer to the following screen examples.

Rev. A5

HDMI HDCP 2.2 TX Co	mpliance Test (1.0): "HDCP_22_Test10"		
	Test List		
AII 🗸 🕷	Reset Status		
Category /	/ Test Name	1	Status
🔺 🕨 TX wit	h Repeater		
🛛 🖌 📑 1B-01	: Regular Procedure: With Repeater	\checkmark	Fail
🛛 🕞 Iter	r 01:	\checkmark	Fail
🔺 📑 1B-02	?: Irregular Procedure: Timeout of Receiver ID list	\checkmark	Pass
🛛 🕞 Iter	r 01:	\checkmark	Pass
⊿ 📑 1B-03	3: Irregular Procedure: Verify V'	\checkmark	Pass
🛛 🕞 Iter	r 01:	\checkmark	Pass
⊿ 📑 1B-04	: Irregular Procedure: MAX DEVS EXCEEDED	\checkmark	Pass
🛛 🕞 Iter	r 01:	V	Pass
⊿ 📑 1B-05	: Irregular Procedure: MAX CASCADE EXCEEDED	V	In Progress
🔶 Iter	r 01:	V	In Progress
⊿ 📑 1B-07	: Regular Procedure: Re-authentication on HDCP HPD	×	Incomplete
🔀 Iter	r 01:	×	User Skipped
> 🗏 1B-08: Regular Procedure: Re-authentication on REAUTH REG			Not Tested
🔺 📃 1B-09: Irregular Procedure: Rollover of seq num V			Incomplete
🔀 Iter	r 01:	×	User Skipped
	Test Log		
Line	Message		•
• 0017	Test 1B-03 Iter 01 -> Pass		
• 0018	Test 1B-04-01		
• 0019	Executing the test.		
• 0020	Processing test results.		
• 0021	Test 1B-04 Iter 01 -> Pass		
• 0022	Test 1B-05-01		=
0023	Executing the test		
••• 0023		<u> </u>	Ť

	Test List		
🛃 🛛 📝	🗶 🔄 Reset Status		
Category	7 / Test Name	V	Status
🕨 TX wi	th Repeater		
⊿ 📑 1B-(01: Regular Procedure: With Repeater	\checkmark	Fail
þ 😑 It	er 01:	\checkmark	Fail
⊿ 📑 1B-(02: Irregular Procedure: Timeout of Receiver ID list	\checkmark	Pass
þ 🔵 It	er 01:	\checkmark	Pass
⊿ 📑 1B-(03: Irregular Procedure: Verify V'	\checkmark	Pass
🖻 📄 It	er 01:	\checkmark	Pass
⊿ 📑 1B-(04: Irregular Procedure: MAX DEVS EXCEEDED	\checkmark	Pass
> 📄 It	er 01:	\checkmark	Pass
⊿ 📑 1B-0	05: Irregular Procedure: MAX CASCADE EXCEEDED	\checkmark	Pass
> 📄 It	er 01:	\checkmark	Pass
⊿ 📑 1B-(07: Regular Procedure: Re-authentication on HDCP HPD	×	Incomplete
🛛 💥 It	er 01:	×	User Skipped
⊿ 📑 1B-0	08: Regular Procedure: Re-authentication on REAUTH RE	Q 🗸 🗸	In Progress
🖗 It	er 01:	V	In Progress
⊿ 📑 1B-(09: Irregular Procedure: Rollover of seq num V	×	Incomplete
🔀 It	er 01:	×	User Skipped
	Test Log		
ine	Message		4
0021	Test 1B-04 Iter 01 -> Pass		
0022	Test 1B-05-01		
0023	Executing the test.		
0024	Processing test results.		
0025	Test $1B-05$ Iter $01 \rightarrow Pass$		
0026	Test 1B-08-01		
0027	Executing the test.		

When the tests are completed the Test Log will indicate Test Completed as shown below.

When you close the test execution window, the Compliance Test Viewer window will appear showing the results of the test. Please refer to the following section for details on viewing the compliance test results.

HDMI HDCP 2.2 TX Compliance Test (1.0): "HDCP_22_Te	est10"		
	Test List		
📝 All 🔗 🔀 🔄 Reset Status			
Category / Test Name		1	Status
TX with Repeater			
🔺 🗏 1B-01: Regular Procedu	re: With Repeater	\checkmark	Fail
þ 😝 Iter 01:		\checkmark	Fail
🛛 🖌 🖪 1B-02: Irregular Proces	\checkmark	Pass	
þ 😝 Iter 01:		\checkmark	Pass
🛛 🖌 🖪 1B-03: Irregular Procee	dure: Verify V'	\checkmark	Pass
> 🝚 Iter 01:		\checkmark	Pass
🔺 📑 1B-04: Irregular Proces	dure: MAX DEVS EXCEEDED	\checkmark	Pass
þ 🝚 Iter 01:		\checkmark	Pass
🛛 🖌 🖪 1B-05: Irregular Procee	dure: MAX CASCADE EXCEEDED	\checkmark	Pass
▷		\checkmark	Pass
🛛 🖉 1B-07: Regular Procedu	re: Re-authentication on HDCP HPD	×	Incomplete
💥 Iter 01:		×	User Skipped
🛛 🖉 1B-08: Regular Procedu	re: Re-authentication on REAUTH R	EQ 🖌	Pass
þ 😝 Iter 01:	\checkmark	Pass	
🔺 📃 1B-09: Irregular Procedure: Rollover of seq num V			Incomplete
💥 Iter 01:			User Skipped
	Test I on		
Line Message	Test Log	_	A.
0024 Processing test	results.		
• 0025 Test 1B-05 Iter	01 -> Pass		
• 0026 Test 1B-08-0	01		
• 0027 Executing the	test.		
0028 Processing test	results.		
• 0029 Test 1B-08 Iter	01 -> Pass		=
• 0030 Tests completed			
	Close Window Continue Testing		

3.12 Viewing Details of Source Compliance Test Results

When you have completed the test series you will have an opportunity to view the detailed data for a particular failure or a test that passed. Use the following procedures to view the details of a failure.

To view the details of a failure:

1. Expose the detailed results of a failure and highlight a results record. Refer to the screen example below.

Compliance Test Results Viewer			
HDMI HDCP 2.2 TX	(1.0) Compliance Test Results		
Results Name: HDCP_22_Test10 Date Tested: June 26, 2014 3:48 PM Overall Status: CTS 1.0 - Incomplete	Manufacturer: Acme Model Name: XYZ Port Tested: 1		HTML Report
	Test Results		
Test Name / Details		Q	Status
🕞 1B-01: Regular Procedure: With Reg	peater		Fail
B 1B-02: Irregular Procedure: Timeo	ut of Receiver ID list		Pass
IB-03: Irregular Procedure: Verif	y V'		Pass
B 1B-04: Irregular Procedure: MAX D	EVS EXCEEDED		Pass
🕨 🗏 1B-05: Irregular Procedure: MAX C	ASCADE EXCEEDED		Pass
🕨 🗏 1B-07: Regular Procedure: Re-auth	entication on HDCP HPD		Incomplete
🕨 🗏 1B-08: Regular Procedure: Re-auth	entication on REAUTH REQ		Pass
IB-09: Irregular Procedure: Rollo	ver of seq num V		Incomplete
1B-01: Regular Procedure: With Repeater			
Instrument: MV980_DP [192.168.254.153]			Continue Test Execution
			💥 Close

Compliance Test Results Viewer			- • ×
HDMI HDCP 2.2 T	X (1.0) Compliance Test Resu	lts	
Results Name: HDCP_22_Test10 Date Tested: June 26, 2014 3:48 PM Overall Status: CTS 1.0 - Incomplete	Manufacturer: Acme Model Name: XYZ Port Tested: 1		HTML Report
	Test Results		
Fest Name / Details		Q	Status
🔺 📃 1B-01: Regular Procedure: With R	epeater		Fail
⊿ 😝 Iter 01:			Fail
HPD Deaaserted regular			
HPD Asserted regular			
RX:UNAUTH			
HDMI/VIDEO Present			
MSG:VERSION ts:0x0 us			
MSG:Encryption disabled			
RCVD:AKE_INIT ts:0x200bde29 us			=
Test Cond. auth			
MSG SND:AKE_Send_Cert ts:0x200d6ff6	us		
MSG RCVD:AKE_Stored_Km ts:0x200d8a1	4 us		
MSG SND:AKE_Send_H_Prime ts:0x200da	952 us		
MSG RCVD:LC_Init ts:0x200db1e1 us			
MSG SND:LC_Send_L_Prime ts:0x200dd1	1f us		
MSG RCVD:SKE_Send_Eks ts:0x200de4f6	us		
MSG SND:RepAuth_Snd_RcvID_List ts:0:	x200e715c us		
RX MSG RCVD:RepAuth_Snd_Ack ts:0x200	0e7f85 us		
RX:MSG RCVD:RepAuth_Strm_Mgmt ts:0x:	200ed55c us		
RX:AUTHENTICATED			
MSG:RepAuth_Strm_Rdy ts:0x200ef852 m	us		
Timer Expired to receive ENC_EN			De se
▲ 🛃 1B-02: Irregular Procedure: Time	out of Receiver ID list		Pass
1B-01: Regular Procedure: With Repeater			
Instrument: MV980_DP [192.168.254.153]			Continue Test Execution
			🔀 Close

Compliance Test Results Viewer			
HDMI HDCP 2.2	TX (1.0) Compliance Test R	esults	
Results Name: HDCP 22 Test10	Manufacturer: Acme		HTML Report
Date Tested: June 26, 2014 3:48 PM	Model Name: XV7		
Overall Status: CTS 1.0 - Incomplete	Port Tested: 1		
overall status, ers to incomplete			
	I est Results	~	
Test Name / Details		Q	Status
⊿ 😸 Iter 01:			Pass
HPD Deaaserted regular			
HPD Asserted regular			
RX:UNAUTH			
HDMI/VIDEO Present			
• MSG:VERSION ts:0x0 us			
• MSG:Encryption disabled			
RCVD:AKE_INIT ts:0x113f900 us			
Test Cond. torcvidlist			
MSG SND:AKE_Send_Cert ts:0x11589cd	us		E
MSG RCVD:AKE_Stored_Km ts:0x115a40a	a us		
MSG SND:AKE_Send_H_Prime ts:0x115c3	3ae us		
MSG RCVD:LC_Init ts:0x115cc33 us			
MSG SND:LC_Send_L_Prime ts:0x115eb0	66 us		
MSG RCVD:SKE_Send_Eks ts:0x115ff29	us		
MSG:VERSION ts:0x115ff29 us			
MSG RCVD:AKE_INIT ts:0x15a9585 us			
\varTheta Warn:AKE_INIT sooner than 3s.INFO:H	RX:UNAUTH		
RCVD:AKE_INIT ts:0x15a9585 us			
MSG SND:AKE_Send_Cert ts:0x15c2470	us		
MSG RCVD:AKE_Stored_Km ts:0x15c3e8	fus		
MSG SND:AKE_Send_H_Prime ts:0x15c5c	dae us		
MSG RCVD:LC_Init ts:0x15c6629 us			
MSG SND:LC_Send_L_Prime ts:0x15c857	70 us		
MSG RCVD:SKE_Send_Eks ts:0x15c9933	us		
MSG SND:RepAuth_Snd_RevID_List ts:0	0x15d25ae us		-
1B-01: Regular Procedure: With Repeater			
Instrument: MV980_DP [192.168.254.153]		•	► Continue Test Execution
			💢 Close

3.13 Canceling and Resuming the HDMI HDCP 2.2 Source Compliance

You can complete or resume a test series that was canceled earlier. The test results are saved in a directory that is accessible through the 980 GUI Manager interface. Use the following procedures in <u>Canceling and Resuming the</u> <u>HDMI HDCP 2.2 Compliance</u> to cancel and resume a canceled HDCP 2.2 Compliance test.

3.14 Viewing the HDMI HDCP 2.2 Source Compliance Test Results from the Navigation View

You can access the results of any test at any time through the **Navigation** view. Use the procedures in <u>Viewing the</u> <u>HDMI HDCP 2.2 Compliance Test Results from the Navigation View</u>.

3.15 Viewing the HDMI HDCP 2.2 Source Compliance HTML test report

After you have completed the tests, you can view an HTML report. Use the procedures in <u>Viewing the HDMI HDCP</u> <u>2.2 Compliance HTML test report</u> to view the HDCP 2.2 Compliance test HTML report.

4 HDMI HDCP 2.2 Sink Compliance Tests

This chapter describes how to use the *optional* HDMI HDCP 2.2 sink compliance test feature of the 980 HDMI Protocol Analyzer module. Please note you will have to purchase the HDCP 2.2 Compliance Test for Sinks license in order to run these tests.

The 980 supports the following test sections in the HDMI HDCP 2.2 Compliance Test specification:

- Receiver Upstream w/Transmitter
 - 2C-01: Regular Procedure With Transmitter.
 - 2C-02: Irregular Procedure New Authentication after AKE init.
 - 2C-03: Irregular Procedure New Authentication during Locality Check.
 - 2C-04: Irregular Procedure New Authentication after SKE Send EKs.
 - 2C-05: Irregular Procedure New Authentication during Link Synchronization.

4.1 Workflow for running the HDMI HDCP 2.2 Sink Compliance Tests

The following is the high level workflow for running the HDMI HDCP 2.2 Sink Compliance Tests. This workflow assumes that you have powered up the 980 and established an Ethernet session with the 980 as described in <u>Connection for 980 GUI Manager and 980</u>.

The following is the high level workflow for running the HDMI HDCP 2.2 Sink Compliance Tests.

- 1. Connect the sink device under test to the 980 HDMI Protocol Analyzer Rx port via HDMI.
- Complete a (or load an existing) Capabilities Declaration Form (CDF) for the device under test using the CDF Entry panel.
- 3. Select the tests that you wish to run from the Test Selection panel.
- 4. Initiate the tests through the **Test Options / Review** panel.
- 5. View the detailed data for test failures if failures occur.
- 6. View the results in the **Test Results** panel under the **Navigator** panel.

4.2 Making the HDMI connections

This procedure describes how to establish an HDMI connection between the HDMI sink device under test and the 980. This procedure assumes that you have assembled the 980 and sink device under test and applied power to all these devices. Refer to the procedures and diagram below.



HDMI connection for source compliance test – 980B



HDMI connection for source compliance test – 980R

1. Connect your HDMI source device under test to the HDMI Rx connector (the top most HDMI connector shown in the figure below) on the 980 HDMI Protocol Analyzer module. Use a high speed HDMI cable.

4.3 Running a Playback file

Use the following procedures to set the 980 HDMI Protocol Analyzer to playback a file out the module's HDMI output port.

To playback a captured file to an HDMI display:

Note: Detailed procedures for capturing a file and playing the captured file back are provided in the 980 HDMI Protocol Analyzer module User Guide available on the Quantum Data website. The instructions below assume that you have a captured file already available for playback.

1. Access the Playback panel. You access the Generator Playback function through the main screen **Generator** icon as indicated below:



The Generator panel is shown below:



2. Connect to the 980 HDMI Protocol Analyzer using the **Connect** icon and button as indicated above. The 980 will read its directories and present the list of captured files in the window under the **Playback** tab as shown below. If there are no files the area will be blank.

Note: You may have to refresh the view using the global refresh button on the upper right or the local refresh button on the lower right.

Generator	
CARD:Quantum Data, Inc. HDMI 1.4 protocol analyzer PORT:HDMI-T41	🔊 Disconnect
/qd/tamp_pb/tamp480p60c24.pb	
Folder	😂 Refresh
framp1080p60c24 framp1080p60c36 framp1080p60c48 framp480p60c24	HDMI Generator
framp720p60c24 ramp1080p60c24 ramp1080p60c36 ramp1080p60c48	Card 2
ramp480p60c24 ramp720p60c24	HDMI
	Card 4
🕞 Select Path: /User 🛛 🖉 🖓 💥 😪	
Play Stop 🔳 Capture 🗲 Transfer	A V
	💢 Close

 Select the file you wish to playback and click on the **Play** button as indicated above. Monitor your sink device for the proper response.

4. Stop the playback at anytime by pressing the **Stop** button.

To playback enable HDCP on the playback file:

1. From the Playback panel, select the Tools tab as shown below.

Rev. A5

- 2. Select HDCP 2.2 Test activation button on the left panel (indicated on the screen example above).
- 3. Select the Enable radio button as shown below.



4. Click on the Refresh button to view the HDCP 2.2 status. Refer to the screen example below.



4.4 Completing the HDCP 2.2 Sink Test CDF

Use the following procedures to complete the CDF for the HDMI sink compliance tests.

To complete the CDF:

1. From the **Compliance Tests** page of the **Apps** panel, enable viewing of the **HDMI HDCP Sink Compliance Test (Receiver)**.

Rev. A5

💮 Apps								
		C qua	ntum <mark>data</mark>					
	Compliance Tests							
	\bigcirc			\bigcirc				
	HDMI 1.4b EDID	HDMI 1.4	b Source	HDMI 2.0 Source				
<	HDMI 1.4b Sink CTS 1.4b	HDMI 2 CTS	2.0 Sink 5 2.0	HDMI HDCP 1.4 Transmitter CTS 1.2	>			
	HDMI HDCP 2.2 Transmitter CTS 1.0	HDMI HDCP CTS	2.2 Receiver 5 1.0	HDMI HDCP 2.2 Repeater CTS 1.0				
	MHL Source	MHL	Sink	MHL Dongle				
	Card Control	Page	2 of 4	Other				
	Card Control	Compliance lests	Editors	Other				

2. Select the **CDF Entry** panel as shown below.
980 User Guide – HDMI HDCP 2.2 Compliance

🖄 HDMI HDCI	2.2 Receiver CT 1.0
🔯 CDF Entry	election Test Options / Preview
📴 Open	New Save CDF File: <not saved=""></not>
 General 	
Manufacturer	What is the product manufacturer's name?
Model	What is the model name/number of the product?
Port_Tested	What port is being tested? 1
	K Close

3. To create a new CDF, click on the **New** activation button as can be seen in the screen example above.

You will be prompted with a confirmation that you want to start a new CDF and reset the values. Click **OK** to proceed.

New CDF	×
Start a new CDF? All CDF values will be reset to default	s.
	OK Cancel

4. To open an existing CDF, click on the **Open** activation button.

You will be prompted with a dialog box that enables you to open a CDF. Select a CDF and then **OK** to proceed.

Local File	S	
Sink		
🗹 Ok	🙆 Cancel	
	Local File Sink	Sink

5. Complete the items in the **Products** tab of the CDF Entry panel shown below.

🖄 HDMI HDC	P 2.2 TX CT 1.0
🕲 CDF Entry	/ V Test Selection > Test Options / Preview
🔄 Open	New CDF File: /CDF/XYZ_22_Source
General	
Ma acturer	What is the product manufacturer's name?
	Acme
Model	What is the model name/number of the product?
	What port is being tested?
Port_Tested	1
	X Close

6. Save the CDF. A confirmation box with a default name will appear as shown below. Edit the name if necessary and click OK.

🐞 Save (CDF
	Local Files
🕞 CD	F
(🙋 Nev	v 🔵 🏂 Rename 🛛 🗶 Delete
Path: /0	CDF
Nomo	
wante:	.rz_22_sink
	🗸 Ok 🙆 Cancel

CDF name in use is shown on panel.

🕲 HDMI HDCF	P 2.2 Receiver CT 1.0
🔯 CDF Entry	V Test Selection > Test Options / Preview
🔄 Open	New Save CDF File: /CDF/XYZ_22_Sink
 General 	
Manufacturer	What is the product manufacturer's name? Acme
Model	What is the model name/number of the product? XYZ
Port_Tested	What port is being tested?
	X Close

4.5 Selecting the 2C series tests

Use the following procedures to select the tests to run. There are multiple tabs which correspond to each section in the CTS.

To select the tests to run:

- 1. Select the **Test Selection** panel as shown below.
- 2. If you have an existing Test Selection option file saved you can recall that for use in your testing. Simply click on the **Open** activation button.

HDMI HDCP 2.2 Receiver CT 1.0
CDF Entry V Test Selection > Test Options / Preview
Open Select All Tests Upstream with Transmitte
Select All on Page Clear All on Page
2C-01: Regular Procedure - With transmitter Verify the Receiver DUT works with an attached source under nominal circumstances.
2C-02: Irregular Procedure - New Authentication after AKE_Init Verify the Receiver DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the transmission of AKE_Init in the unauthenticated state.
2C-03: Irregular Procedure - New Authentication during Locality Check Verify the Receiver DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the reception of LC_Init.
2C-04: Irregular Procedure - New Authentication after SKE_Send_Eks Verify the Receiver DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the reception of SKE_Send_Eks
2C-05: Irregular Procedure - New Authentication during Link Synchronization Verify the Receiver DUT restarts authentication when a new AKE_Init and r_tx is transmitted during Link Synchronization.
Close Close

A dialog box will appear as follows. Simply select the file and click on the **OK** activation button.

HD	MI HDCP 2.2 Receiver Compliance Test	
	Open Test Selection File	
	Select an Test Selection file to open.	
	Test_Sels_HDCP_22_Sink.xml	
	Cancel Ok	

3. Complete the items in the **2C Tests** of the **Test Selection** panel shown below.

For convenience you can **Select All Tests** or **Deselect All Tests** for both tabs or for group selection over each page **Select All on Page** or **Clear All on Page** tests using the activation buttons provided.

The following screens examples show the tests selected.

9 се

😢 HDMI HDCP 2.2 Receiver CT 1.0
CDF Entry V Test Selection > Test Options / Preview
C Open Save Select All Tests Deselect All Tests
Upstream with Transmitter
Select All on Page Clear All on Page
✓ 2C-01: Regular Procedure - With transmitter Verify the Receiver DUT works with an attached source under nominal circumstances.
2C-02: Irregular Procedure - New Authentication after AKE_Init Verify the Receiver DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the transmission of AKE_Init in the unauthenticated state.
2C-03: Irregular Procedure - New Authentication during Locality Check Verify the Receiver DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the reception of LC_Init.
2C-04: Irregular Procedure - New Authentication after SKE_Send_Eks Verify the Receiver DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the reception of SKE_Send_Eks
2C-05: Irregular Procedure - New Authentication during Link Synchronization Verify the Receiver DUT restarts authentication when a new AKE_Init and r_tx is transmitted during Link Synchronization.
X Close

4. You can save the Test Selection options using the **Save** activation button.

The HDMI HDCP 2.2 Receiver CT 1.0	ı x
CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
Image: Open Image: Save Image: Select All Tests Image: Upstream with Trans Image: Select All Tests	
Select All on Page Clear All on Page	
2C-01: Regular Procedure - With transmitter Verify the Receiver DUT works with an attached source under nominal circumstances.	

A dialog box will appear as follows. Simply assign a name and click on the OK activation button. Click Cancel to exit.

Rev. A5

н	DMI HDCP 2.2 Receiver CT: Save Test Selections	
	Test Selection File	
	Enter a file name for the Test Selection.	
	Test_Sels_HDCP_22_Sink.xml	
	Cancel Ok	

4.6 Executing the HDMI HDCP 2.2 2C Series Sink Compliance Tests

Use the following procedures to initiate the execution of an HDMI HDCP 2.2 2C series Sink Compliance test series.

To initiate a test series:

1. Select the **Test Options / Preview** panel as shown below.

C HDMI HDCP 2.2 Receiver CT 1.0	
CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
Test List	
All 🗸 X Instrument: My_980 [192.168.254.161]	 Execute Test
Category / Test Name	V
Upstream with Transmitter	
🖌 🖉 2C-01: Regular Procedure - With transmitter	\checkmark
• Iter 01: With previously not connected receiver	×
• Iter 02: With previously connected receiver	V
▶ 🛃 2C-02: Irregular Procedure - New Authentication after AKE Init	
2C-U3: Irregular Procedure - New Authentication during Locality	
> 20-04: Irregular Procedure - New Authentication after SKE Send	ch 🗸
P ≥ 20-05. If regular procedure - New Authentication during Link Syn	GI. 🗸
	💢 Close

2. (Optional) Review the list of tests for each category. If you wish to skip some of the tests. You can skip tests by clicking on the Check mark on the right side of the **Test Options / Preview** panel.

The screen shot below shows some of the tests that have been skipped (highlighted in yellow with a red X).

980 User Guide – HDMI HDCP 2.2 Compliance

C HDMI HDCP 2.2 Receiver CT 1.0	
🕲 CDF Entry 🗹 Test Selection 🕨 Test Options / Preview	
Test List	
All V X Instrument: My_980 [192.168.254.161]	Execute Tests
Category / Test Name	×
Upstream with Transmitter	
🔺 📑 2C-01: Regular Procedure - With transmitter	×
• Iter 01: With previously not connected receiver	V
• Iter 02: With previously connected receiver	
🔺 🗏 2C-02: Irregular Procedure - New Authentication after AKE Init	×
💥 Iter 01:	×
🛛 📕 2C-03: Irregular Procedure - New Authentication during Loca ty	¢∕
• Iter 01:	\checkmark
🛛 📕 2C-04: Irregular Procedure - New Authentication after SKE Send	k 🗙
💥 Iter 01:	×
2C-05: Irregular Procedure - New Authentication during Link Sync	h ♥
2C-02: Irregular Procedure - New Authentication after AKE_Init	
	X Close

3. Select the 980 Test Instrument from the pull-down menu of the HDCP **Test Options / Preview** tab shown below.

C HDMI HDCP 2.2 Receiver CT 1.0	
CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
🖌 Test List	
All 🖌 X Instrument: My_980 [192.168.254.161]	Execute Tests
Category / Test Name	V
✓ ▶ Upstream with Transmitter	
🔺 📃 2C-01: Regular Procedure - With transmitter	\checkmark
• Iter 01: With previously not connected receiver	\checkmark

Click on the **Execute Tests** activation button to initiate the test suite. You will be prompted for a name for the tests. This dialog box is shown below.

Rev. A5

ŀ	IDMI HDCP 2.2 Receiver CT Results				
	Test Results Name				
	Execute HDMI HDCP 2.2 Receiver Compliance Tests on Instrument: SS_980 @ 192.168.254.153				
	Enter a name for the Test Results.				
	HDCP_22_Sink_Comp_1				
	Cancel Ok				

During the tests a **Sink Test Configuration** dialog box will appear which requires that you to verify that the sink device under test is connected properly. The following screen shot depicts this. Press **Continue** when you have the sink device connected properly. You can cancel the test using the **Cancel Compliance** Test button.

HDMI HDCP 2.2 Receiver Complian	nce Test (1.0): "HDCP_22_Sink_Comp_1"	
	Tect List	
All 🗸 🗶 🥱 F	Reset Status	
Category / Tes		Status
A Linstream	Test Setup	
▲ 2C-01: R	Tert 2C-01 Iter-01	In Progress
🔶 Iter 01:	Verify the Receiver DUT works with an attached source under nominal circumstances.	In Progress
• Iter 02:		Not Tested
▶ 🗏 2C-02: I:	Connect the test instruments (980) downstream interface port to the upstream	Not Tested
▶ 2C-03: I	HDCP 2.2 protected interface port of the DUT as shown in the diagram below.	Not Tested
▶ 2C-04: I		Not Tested
▶ 2C-05: I:		Not Tested
	(Pseudo-Source) (Sink)	
Line 1	Cancel Compliance Test	^
• 0003		
• 0004	📀 Continue	E
• 0005		
5 0006 S	et Configuration to: SINK	*
	Gancel the Compliance Test	

4. Click **Continue** after verifying that the connections have been made.

During the test, you will be prompted with a dialog box asked to observe a test image on the sink device under test. If the pattern is visible then click **Pass** on the dialog box. Otherwise click **Fail**. Refer to the screen shot below.



The previous sequence of actions will repeat for the first test (2C-01).

There is a green progress arrow \clubsuit which points to the test that is currently being run.

Rev. A5

	Test List	
🛃 🚺 📝	Reset Status	
Category	/ Test Name 🗸	Status
🕨 🕨 Upstre	am with Transmitter	
⊿ 📑 2C-0	1: Regular Procedure - With transmitter 🛛 🗸 🗸	In Progress
🔥 🔵 Ite	r 01: With previously not connected receiver	Pass
🔰 ⊳ Ite	r 02: With previously connected receiver	In Progress
▷ 1 = 2C-0:	2: Irregular Procedure - New Authentication after AKE Init $orall$	Not Tested
⊳ 📑 2C−03	3: Irregular Procedure - New Authentication during Localit $artimes$ \sim	Not Tested
⊳ 📑 2C−04	4: Irregular Procedure - New Authentication after SKE Senc 🗸	Not Tested
⊳ 📑 2C−0	5: Irregular Procedure - New Authentication during Link Sy💙	Not Tested
	Test Log	
ine	Message	
0007	Executing the test.	
0008	Processing test results.	
0009	Test 2C-01 Iter 01 -> Pass	
0010	Test 2C-01-02	
0011	Executing the test.	
0012	Processing test results.	

The lower panel **Test Log** shows the testing activity as it occurs. You can cancel the compliance test or pause at any time. If you pause the test you can resume later at any time even if you exit the 980 Manager application. Refer to the following screen examples.

This process will repeat itself for the remaining tests. The test window will inform you of the status. Refer to the screen example below.

980 User Guide – HDMI HDCP 2.2 Compliance

	Test List		
🛃 AII 📈 🗙	🕼 🥎 Reset Status		
Category	/ Test Name	V	Status
🕨 🕨 Upstre	am with Transmitter		
⊿ 📑 2C-01	l: Regular Procedure - With transmitter	\checkmark	Pass
🛛 🕞 Iter	r 01: With previously not connected receiver	\checkmark	Pass
🛛 🕞 Iter	r 02: With previously connected receiver	\checkmark	Pass
⊿ 📑 2C−02	2: Irregular Procedure - New Authentication after AKE Init	\checkmark	Pass
🛛 🕞 Iter	r 01:	\checkmark	Pass
⊿ 📃 2C-03	3: Irregular Procedure - New Authentication during Localit	×	Pass
🔉 🌔 Iter	r 01:	\checkmark	Pass
⊿ 📑 2C-04	1: Irregular Procedure - New Authentication after SKE Send	\checkmark	Pass
🔋 📄 Iter	r 01:	\checkmark	Pass
⊿ 📑 2C-05	5: Irregular Procedure - New Authentication during Link Sy	×	In Progress
📫 Iter	r 01:		In Progress
	Test Log		
ine	Test Log Message		
ine 0026	TestLog Message Test 2C-04-01		
ine 0026 0027	TestLog Message Test 2C-04-01 Executing the test.		
ine 0026 0027 0028	TestLog Message Test 2C-04-01 Executing the test. Processing test results.		
ine 0026 0027 0028 0029	TestLog Message Test 2C-04-01 Executing the test. Processing test results. Test 2C-04 Iter 01 -> Pass		
ine 0026 0027 0028 0029 0030	TestLog Message Test 2C-04-01 Executing the test. Processing test results. Test 2C-04 Iter 01 -> Pass Test 2C-05-01		
ine 0026 0027 0028 0029 0030	TestLog Message Test 2C-04-01 Executing the test. Processing test results. Test 2C-04 Iter 01 -> Pass Test 2C-05-01 Executing the test.		

When the tests are complete the test window will indicate Test Complete and show the results of each Test ID. Refer to the screen example below.

Test List		
All 📝 🕱 Reset Status		
Category / Test Name	×	Status
Upstream with Transmitter		
📙 2C-01: Regular Procedure - With transmitter	×	Pass
🗏 2C-02: Irregular Procedure - New Authentication after AKE Init	\checkmark	Pass
📙 2C-03: Irregular Procedure - New Authentication during Locality Che	eck 🗸 🖌	Pass
🗏 2C-04: Irregular Procedure - New Authentication after SKE Send Eks	\checkmark	Pass
🗏 2C-05: Irregular Procedure - New Authentication during Link Synchro	onization 🖌 🛛 🗧	Fail
Test Log		
Message		
29 Test 2C-04 Iter 01 -> Pass		
30 Test 2C-05-01		
31 Executing the test.		
Processing test results.		
Test 2C-05 Iter 01 -> Fail		

When you close the test execution window, the Compliance Test Viewer window will appear showing the results of the test. Please refer to the following section for details on viewing the compliance test results.

4.7 Viewing Details of 2C Sink Compliance Test Results

When you have completed the test series you will have an opportunity to view the detailed data for a particular failure or a test that passed. Use the following procedures to view the details of a failure.

To view the details of a failure:

1. Expose the detailed results of a failure and highlight a results record. Refer to the screen examples below.

Rev. A5

980 User Guide – HDMI HDCP 2.2 Compliance

Rev. A5

Compliance Test Results Viewer	_				
HDMI HDCP 2.2 Receiver (1.0) Compliance Test Results					
Results Name: HDCP_22_Sink_Comp_1 Manufacturer: Acme		HTML Report			
Date Tested: October 3, 2014 9:50 AM Model Name: XVZ					
Overall Status: CTS 1.0 - Fail Port Tested: 1					
Test Results					
Test Name / Details	0	Status			
🕨 🗏 2C-01: Regular Procedure - With transmitter		Pass			
> 🗏 2C-02: Irregular Procedure - New Authentication after AKE Init		Pass			
> 🗏 2C-03: Irregular Procedure - New Authentication during Locality Check		Pass			
> 🗏 2C-04: Irregular Procedure - New Authentication after SKE Send Eks		Pass			
> 🗏 2C-05: Irregular Procedure - New Authentication during Link Synchronizati	on	Fail			
2C-01: Regular Procedure - With transmitter					
Instrument: [SS_980 [192.168.254.153]		 Continue Test Execution 			
		🔀 Close			

Date Tested: October 3, 2014 9:50 AM Overall Status: CTS1.0-Fail Test Name / Details 2C-01: Regular Procedure - With transmi: 2C-02: Irregular Procedure - New Authen	Model Name: XYZ Port Tested: 1 Test Results		
Overall Status: CTS1.0-Fail Test Name / Details 2C-01: Regular Procedure - With transmi 2C-02: Irregular Procedure - New Authen	Port Tested: 1 Test Results	_	
 Test Name / Details 2C-01: Regular Procedure - With transmit 2C-02: Irregular Procedure - New Authen 	Test Results		
 Test Name / Details 2C-01: Regular Procedure - With transmit 2C-02: Irregular Procedure - New Authen 			
Description: Procedure - With transmit Description: Procedure - New Authentic Procedure - Ne		6	Status
2C-02: Irregular Procedure - New Authen	tter	~	Pass
· · · · · · · · · · · · · · · · · · ·	tication after AKE Init	_	Pass
🔺 🗏 2C-03: Irregular Procedure - New Authen	tication during Locality Check		Pass
A 🔛 Iter 01:	· · · · · · · · · · · · · · · · · · ·		Pass
ERROR: ioctl QDVIOC TX DDC READ failed. Error	r:'-1'		
G ERROR: I2C 74:70 READ error='-1'			
MSG:HPD DIS ts:0x1115f36 us			
MSG:VALID_VER ts:0x0 us			
MSG:HPD_EN_ts:0x330 us			
TX:UNAUTH::enter			l i i i i i i i i i i i i i i i i i i i
AKE INIT ts:0xf5338 us			
MSG RCVD:AKE_Send_Cert ts:0xf5613 us			
Snd No_Stored_KM ts:0x113fa9 us			
MSG RCVD:AKE_Send_H_Prime ts:0x171f29 us			
MSG RCVD:AKE_Send_pairing_info ts:0x1742fb us	s		
Snd LC_Init ts:0x175e0d us			
MSG RCVD:LC_Send_L_Prime ts:0x1767b7 us			
Snd SKE_Send_EKS ts:0x179943 us			
TX:AUTH::enter			
D 2C-04: Irregular Procedure - New Authen	tication after SKE Send Eks		Pass
χ 🗏 2C-05: Irregular Procedure - New Authen	tication during Link Synchronization		Fail
⊿ 😝 Iter 01:			Fail
ERROR: ioctl QDVIOC_TX_DDC_READ failed. Error	r:'-1'		,
ERROR: I2C 74:70 READ error='-1'			
MSG:HPD_DIS ts:0xc7bdb8 us			
MSG:VALID_VER ts:0x0 us			
MSG:HPD_EN ts:0x32a us			
😝 TX:UNAUTH::enter			
AKE_INIT ts:0xeb8df59c us			
2C-01: Regular Procedure - With transmitter			
Instrument: SS_980 [192.168.254.153]		•	Continue Test

4.8 Canceling and Resuming the HDMI HDCP 2.2 Sink Compliance

You can complete or resume a test series that was canceled earlier. The test results are saved in a directory that is accessible through the 980 GUI Manager interface. Use the following procedures in <u>Canceling and Resuming the</u> <u>HDMI HDCP 2.2 Compliance</u> to cancel and resume a canceled HDCP 2.2 Compliance test.

4.9 Viewing the HDMI HDCP 2.2 Sink Compliance Test Results from the Navigation View

You can access the results of any test at any time through the **Navigation** view. Use the procedures in <u>Viewing the</u> <u>HDMI HDCP 2.2 Compliance Test Results from the Navigation View</u>.

4.10 Viewing the HDMI HDCP 2.2 Sink Compliance HTML test report

After you have completed the tests, you can view an HTML report. Use the procedures in <u>Viewing the HDMI HDCP</u> <u>2.2 Compliance HTML test report</u> to view the HDCP 2.2 Compliance test HTML report.

5 HDMI HDCP 2.2 Repeater Compliance Tests

This chapter describes how to use the HDMI HDCP 2.2 repeater compliance test option of the 980 HDMI Protocol Analyzer module. Please note you will have to purchase the HDMI HDCP 2.2 Compliance Test for Repeaters license in order to run these tests.

The 980 HDMI Protocol Analyzer module supports the following test sections in the HDMI HDCP 2.2 Compliance Test specification for repeaters:

- Repeater Downstream w/Receiver
 - 3A-01: Regular Procedure: With newly connected Receiver (With stored Km).
 - 3A-02: Irregular Procedure: With newly connected Receiver (Without stored Km).
 - 3A-03: Regular Procedure: Rx certificate not received.
 - 3A-04: Irregular Procedure: Verify Receiver Certificate.
 - 3A-05: Irregular Procedure: Invalid H'.
 - 3A-06: Irregular Procedure: Pairing Failure.
 - 3A-07: Irregular Procedure: Locality Failure.
- Repeater Downstream w/Receiver
 - 3B-01: Regular Procedure: With Repeater.
 - 3B-02: Irregular Procedure: Timeout of Receiver ID list.
 - 3B-03: Irregular Procedure: Verify V'.
 - 3B-04: Irregular Procedure: MAX_DEVS_EXCEEDED.
 - 3B-05: Irregular Procedure: MAX_CASCADE_EXCEEDED.
 - 3B-06: Irregular Procedure: Rollover of seq_num_V.
 - 3B-07: Irregular Procedure: Failure of Content Stream Management.
- Repeater Upstream w/Transmitter
 - 3C-01: Regular Procedure: Transmitter DUT Receiver.
 - 3C-02: Regular Procedure: ReceiverID_List Propagation when an Active Receiver is Disconnected.
 - 3C-03: Regular Procedure: ReceiverID_List Propagation when an Active Receiver is Connected.
 - 3C-04: Irregular Procedure: New Authentication after AKE_Init.
 - 3C-05: Irregular Procedure: New Authentication during Locality Check.
 - 3C-06: Irregular Procedure: New Authentication after SKE_Send_Eks.
 - 3C-07: Irregular Procedure: New Authentication during Link Synchronization.
 - 3C-08: Irregular Procedure: Rx Certificate Invalid.
 - 3C-09: Irregular Procedure: Invalid H'.
 - 3C-10: Irregular Procedure: Locality Failure.
 - Repeater Upstream w/Transmitter and Repeater
 - 3C-11: Regular Procedure: Transmitter DUT Repeater (With stored Km).
 - 3C-12: Regular Procedure: Receiver disconnected after AKE.
 - 3C-13: Regular Procedure: Receiver disconnect after Km.
 - 3C-14: Irregular Procedure: Receiver disconnect after locality check.
 - 3C-15: Irregular Procedure: Receiver disconnect after Ks.
 - 3C-16: Irregular Procedure: Timeout of Receiver ID list.
 - 3C-17: Irregular Procedure: Verify V'.
 - 3C-18: Irregular Procedure: DEVICE_COUNT.
 - 3C-19: Irregular Procedure: DEPTH.
 - 3C-20: Irregular Procedure: MAX_DEVS_EXCEEDED.
 - 3C-21: Irregular Procedure: MAX_CASCADE_EXCEEDED.
 - 3C-22: Irregular Procedure: Repeater with zero downstream device.
 - 3C-23: Irregular Procedure: Propagation of HDCP 2.0 REPEATER_DOWNSTREAM flag.
 - 3C-24: Irregular Procedure: Propagation of HDCP1 DEVICE_DOWNSTREAM flag.

• 3C-25: Irregular Procedure: Content Stream Management.

5.1 Workflow for running the HDMI HDCP 2.2 Repeater Compliance Tests

The following is the high level workflow for running the HDMI HDCP 2.2 Repeater Compliance Tests. This workflow assumes that you have powered up the 980 and established an Ethernet session with the 980 as described in Connection for 980 GUI Manager and 980.

- 1. Connect the repeater device under test to the 980 HDMI Protocol Analyzer module's Tx and Rx ports via HDMI.
- 2. Configure the monitor mode on the HDMI Protocol Analyzer module Rx port properly to HDMI and Sink Emulation.
- 3. Initiate the playing back of an HDMI stream on the HDMI Protocol Analyzer module Tx port.
- 4. Enable HDCP 2.2 in the 980 HDMI Protocol Analyzer module Rx port.
- 5. Activate HDCP 2.2 in the 980 HDMI Protocol Analyzer module's Tx port.
- 6. Complete (or load an existing) Capabilities Declaration Form (CDF) for the device under test using the **CDF Entry** panel.
- 7. Select the tests that you wish to run from the Section 3A Test Selection panel.
- 8. Initiate the tests through the **Test Options / Review** panel.
- 9. View the results in the Test Results panel under the Navigator panel.
- 10. Repeat for the remaining repeater test sections (3B, 3C)

5.2 Making the HDMI connections

This procedure describes how to establish an HDMI connection between the HDMI repeater device under test and the 980. This procedure assumes that you have assembled the 980 and repeater device under test and applied power to all these devices. Refer to the procedures and diagram below.



HDMI connection for repeater compliance test - 980B



HDMI connection for repeater compliance test - 980R

1. Connect your HDMI repeater device under test to the HDMI Rx connector (the top most HDMI connector shown in the figure above) on the 980 HDMI Protocol Analyzer module. Use a high speed HDMI cable.

5.3 Setting the Link mode and the HDMI mode on the Protocol Analyzer Rx Port

Use the following procedures to set the 980 HDMI Protocol Analyzer Rx port to the HDMI mode and set the Link Mode to Sink Emulation. These procedures assume that you are using the external 980 GUI. Exceptions will indicate different screens for the embedded GUI.

To set the 980 Protocol Analyzer mode to HDMI and the Link Mode to Sink Emulation:

1. From the Card Control window of the 980 GUI Manager, select Receiver.



The Rx Control and Configuration dialog box appears (below).

2. From the **Rx Control and Configuration** dialog box, select the **Mode** tab and then select HDMI as the Monitor Mode and select Sink Emulation as the Link Mode.



3. If you are using the embedded GUI, Select the **Mode** flyout menu on the lower right of the Real Time window as shown below. Then select the **HDMI Monitor** radio button and the **Sink Emulation** radio button. Refer to the screen example below.



The Link Mode menu will show HDMI as the Link Mode.

5.4 Setting the +5V levels

The 980 enables you to view the +5V levels from the source device under test and to set the current load on the +5V lead.

1. Select the RX 5 Volts... item from the Instrument pull-down menu on the built-in front panel as shown below.

RX Control and Configuration				
MV980_DP (192.168.254.153) HDMI Protocol Analyzer RX - Card 4 HDMI-R40				
Mode	HP	5-Volts	HDCP	HDCP 2.2
Measured: 0	.00 V			
Load:	6.75	mA (6.06 - 148.00)	
<u> </u>				
· · · · · · · · · ·				
	A)	pply 🔵 🎅 Ref	resh	
			1	K Close

The RX 5V Status/Configuration dialog box is displayed as shown below.

- Select the Threshold Level using the upper slidebar (0.0 to 5.3V). Be sure to select the Apply button. Then hit Refresh to view the new value. You may wish to lower the threshold to enable testing of a source whose 5V level is too low. If you specify a threshold higher than the voltage detected there will be no effect on the ability to test.
- 3. Select the current Load using the lower slidebar provided. Increasing the current load will cause the detected voltage to fall. Be sure to select the **Apply** button. Then hit **Refresh** to view the new Measured value.

5.5 Running an HDMI Playback File on the Protocol Analyzer Tx Port

Use the following procedures to set the 980 HDMI Protocol Analyzer to playback a file out the module's HDMI Tx port. Note that you need to run a playback file in order to provide an HDMI output stream over which the HDCP 2.2 authentication occurs.

To playback a captured file to an HDMI display:

Note: Detailed procedures for capturing a file and playing the captured file back are provided in the 980 HDMI Protocol Analyzer module User Guide available on the Quantum Data website. The instructions below assume that you have a captured file already available for playback.

1. Access the **Playback** panel. You access the Generator Playback function through the main screen **Generator** icon as indicated below:



The Generator panel is shown below:



2. Connect to the 980 HDMI Protocol Analyzer using the **Connect** icon and button as indicated above. The 980 will read its directories and present the list of captured files in the window under the **Playback** tab as shown below. If there are no files the area will be blank.

Note: You may have to refresh the view using the global refresh button on the upper right or the local refresh button on the lower right.

980 User Guide – HDMI HDCP 2.2 Compliance Rev. A5 х Generator CARD:Quantum Data, Inc. HDMI 1.4 protocol analyzer PORT:HDMI-T41 Jisconnect /qd/ramp_pb/ramp480p60c24.pb 👫 Playback 🗞 Tools 🕄 Refresh 🝺 Folder 🔲 🔲 Lists 6 framp1080p60c24 framp1080p60c36 framp1080p60c48 framp480p60c24 HDMI 6 Generator framp720p60c24 ramp1080p60c24 ramp1080p60c36 ramp1080p60c48 Card 2 HDMI ramp480p60c24 ramp720p60c24 Playback Card 4 • 🛃 🔓 🕺 🛃 Discrete Select Path: /User ⊳ Play 🖕 Stop 🔵 💼 Capture 🔵 🤇 ち Transfer ۸ 💢 Close

- 3. Select the file you wish to playback and click on the **Play** button as indicated above.
- 4. Stop the playback at anytime by pressing the **Stop** button.
- Return to the 980 HDMI Protocol Analyzer's Real Time interface for the Rx port and verify that the video from the playback file appears and is the correct resolution. Note in the example below the playback file is SMPTEBar test pattern. Your playback stream may be different.

980 User Guide – HDMI HDCP 2.2 Compliance Rev. A5

PORT UDWI DEG. CARD Quentum Date Tree			
HDMI Monitor Sink Emulation -RX -TX	Ri:0		😷 Home
CEA VIC=16: 1920x1080p @ 60 Hz 16:9 1	920 x 1080 Progressive (24 bpp), RGB N	ot Encrypted HDHI	
			ack 🖉
			🔁 Nav.
			🥃 Stop
			⊖ AVI-IF
			⊖ VS-IF
			GCP
			😝 User
			ACA
			✓ Mode
			▼ Tools 5 ,08,07

5.6 Enabling HDCP 2.2 on the Protocol Analyzer module Rx port

The 980 Protocol Analyzer module Rx port has to be configured to respond to HDCP 2.2 authentication from a source or repeater output. Use the following procedure to enable HDPC 2.2 authentication in the 980 Protocol Analyzer module. You can enable HDCP 2.2 on the 980 HDMI Protocol Analyzer module's Rx port either through the embedded 980 GUI or the external 980 GUI. The following procedures assume you are using the external GUI but exceptions are provided instructing you how to enable HDCP 2.2 through the embedded GUI.

1. From the **Card Control** window, select **Receiver**. Refer to the screen example below.



The Rx Control and Configuration dialog box appears as shown below.



If you are working from the embedded 980 GUI, the Real Time screen will appear and you will have to select the **Tools** button on the lower right. Refer to the following screen examples for the workflow using the embedded 980 GUI.



2. From the embedded GUI Real Time window, select the **Rx Control and Configuration** item as shown above.

The Rx Control and Configuration dialog box appears as shown below.

RX Control and Configuration				
HP	5-Volts	HDCP	HDCP 2.2	
	Duration 100	ms (100 - 4000)		
	🛛 🛛 🖉 Generat	e Hot-Plug		
			💢 Close	

3. Select the **HDCP 2.2** tab indicated in the screen example above.

Refer to the following screen example.

RX Control and	RX Control and Configuration				
NK_980 (192.168.254.174)					
HDMI Protocol Analyzer RX - Card 4					
Mode	HP 5-	Volts HL	HDCP 2.2		
	HDCP 2	.2 Test			
		Disabled			
	HDCF	P Status			
		lofroch			
		terresin			
	RTX	:NA			
	TXCAPS	:NA			
	AKE_INIT	:NOT_RCVD			
	RX CERT	:NOT RCVD			
	STORED KM	:NOT RCVD			
	NO STORED KM	:NOT RCVD			
	HPRIME	:NOT RCVD			
	PAIRING	:NOT RCVD			
	LC INIT	:NOT RCVD			
	LPRIME	:NOT RCVD			
	SKE	:NOT RCVD			
	AUTHENTICATED :NO				
	REPAUTH RCVIDLST: MSG NOT SND				
	RCVIDLST ACK	:NOT RCVD			
	STRM MGMT	:NOT RCVD			
	STRM_RDY	:MSG_NOT_SND			
			K Close		

4. Enable HDCP 2.2 by clicking on the **Enabled** radio button as shown below.

RX Control and Configuration NK_980 (192.168.254.174) HDMI Protocol Analyzer RX - Card 4 HDMI-R40					
Mode	HP 5-\	/olts HDCP	HDCP 2.2		
	HDCP 2	.2 Test			
Enabled Disabled					
	HDCF	9 Status			
Refresh					
	RTX	:NA			
	TXCAPS	:NA			
	AKE_INIT	:NOT_RCVD			
	RX_CERT	:NOT_RCVD			
	STORED_RM	:NOT_RCVD			
	NO_STORED_KM	:NOT_RCVD			
	HPRIME	:NOT_RCVD			
	PAIRING	:NOT_RCVD			
	LC_INIT	:NOT_RCVD			
	LPRIME	:NOT_RCVD			
	SKE	:NOT_RCVD			
	AUTHENTICATED : NO				
REPAUTH_RCVIDLST:MSG_NOT_SND					
	STDM MOMT	NOT_RCVD			
	STRM_MONT	MSG NOT SND			
			X Close		

5.7 Enabling HDCP 2.2 on the Protocol Analyzer Tx Port

Use the following procedures to enable HDCP 2.2 on the 980 HDMI Protocol Analyzer module's HDMI output (Tx) port.

To enable HDCP 2.2 on the playback file:

1. Select the **Tools** tab on the 980 HDMI Protocol Analyzer's Tx Generator window as shown below.

I Generator					
CARD:Quantum Dat	a, Inc. HDMI 1.4 protocol ana:	lyzer		PORT:HDMI-T41	🖉 Disconnect
/da/tamp_bb/tamp400p00	Playback		😤 Tools		
EDID Decode HDCP 2.2 Test Editors	ς _α Ριαγβαϊκ				Refresh HDMI Generator Card 2 HDMI Playback Card 4
					A V
					X Close

- 2. Select HDCP 2.2 Test activation button on the left panel (indicated on the screen example above).
- 3. Select the **Enable** radio button as shown below.

980 User Guide – HDMI HDCP 2.2 Compliance Rev. A5 х I Generator CARD:Quantum Data, Inc. HDMI 1.4 protocol analyzer PORT:HDMI-T41 Jisconnect /qd/ramp_pb/ramp480p60c24.pb 🗞 Playback 👫 Tools 🕄 Refresh EDID Decode HDCP 2.2 Test O Enabled Disabled HDCP 2.2 Test HDMI Generator **HDCP Status** Editors Card 2 🌊 Refresh HDMI Playback Card 4

- 4. Click on the **Refresh** button to view the HDCP 2.2 status. Refer to the screen example above.
- 5. Return to the 980 HDMI Protocol Analyzer module's Rx window and select the **HP** tab and generate a hot plug. Refer to the screen example below.



6. Select the **HDCP 2.2** tab on the on the Protocol Analyzer's Rx port and click on **Refresh** to view the status of the HDCP 2.2 authentication. Refer to the screen example below.

٨

v

Close



7. Return to the **HDCP 2.2** tab on the Protocol Analyzer's Tx port and click on **Refresh** to view the status of the HDCP 2.2 authentication on the Tx port. Refer to the screen example below.

980 User Guide – HDMI HDCP 2.2 Compliance



HDCP 2.2 is now active.

5.8 Completing the HDCP 2.2 Repeater Capabilities Declaration Form (CDF)

Use the following procedures to complete the CDF for the HDMI repeater compliance tests.

To complete the CDF:

1. From the **Compliance Tests** page of the **App**s panel, enable viewing of the **HDMI HDCP 2.2 Repeater Compliance Test**.

Rev. A5

💮 Apps							
		C qua	ntum <mark>data</mark>				
	Compliance Tests						
	\bigcirc			\bigcirc			
	HDMI 1.4b EDID CTS 1.4b	HDMI 1.4 CTS	b Source	HDMI 2.0 Source CTS 2.0			
	\checkmark			\bigcirc			
1	HDMI 1.4b Sink CTS 1.4b	HDMI 2 CTS	2.0 Sink 5 2.0	HDMI HDCP 1.4 Transmit CTS 1.2	ter		
	\bigcirc			(
	HDMI HDCP 2.2 Transmitter	HDMI HDCP	2.2 Receiver	HDMI HDCP 2.2 Repeate CTS 1.0	er		
			1.0				
	\bigcirc			\checkmark			
	MHI Source	MHI	Sink	MHI Donale			
	Page 2 of 4						
	Card Control	Compliance Tests	Editors	Other			

2. Select the CDF Entry panel as shown below.
| 🕲 HDMI HDCP 2.2 Repeate | r CT 1.0 |
|--------------------------|--|
| CDF Entry | election 🕨 Test Options / Preview |
| 🔄 Open 😡 New | Save CDF File: < not saved> |
| General | |
| Manufacturer | What is the product manufacturer's name? |
| Model | What is the model name/number of the product? |
| Port_Tested | What port is being tested?
1 |
| Repeater_MultipleOutputs | Does the DUT support transmission of HDCP-protected content to more than one downstream device at the same time? |
| | © Yes ⊚ No |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | X Close |

Note: If there is a second output on the repeater DUT set the Repeater_MultipleOutput radio button to Yes.

3. To create a new CDF, click on the **New** activation button as can be seen in the screen example above.

You will be prompted with a confirmation that you want to start a new CDF and reset the values. Click **OK** to proceed.



4. To open an existing CDF, click on the **Open** activation button.

You will be prompted with a dialog box that enables you to open a CDF. Select a CDF and then **OK** to proceed.

隧 Open CDF	
Local F	iles
⊿ 🗁 CDF	
🛛 🔯 XYZ_22_Source	
🗹 Ok	🙆 Cancel

5. Complete the items in the **Products** tab of the CDF Entry panel shown below.

C HDMI HDCP 2.2 Repeater	CT 1.0
🕲 CDF Entry 🖌 Test Sel	lection 🕨 Test Options / Preview
📴 Open 🔂 New	Save CDF File: <not saved=""></not>
General	
Manufacturer	What is the product manufacturer's name? Acme
Model	What is the model name/number of the product? XYZ
Port_Tested	What port is being tested? 1
Repeater_MultipleOutputs	Does the DUT support transmission of HDCP-protected content to more than one downstream device at the same time? Yes No
	X Close

6. Save the CDF. A confirmation box with a default name will appear as shown below. Edit the name if necessary and click OK.

隧 Save	🛍 Save CDF		
	Local Files		
CDF			
New Ag Rename			
Path: /CDF			
Name:	XYZ_22_Repeater		
	V Ok 🔇 Cancel		

CDF name in use is shown on panel.

🕲 HDMI HDCP 2.2 Repeate	er CT 1.0
🖄 CDF Entry 🖌 Test S	election 🕨 Test Options / Preview
🔄 Open 🔂 New	Save CDF File: /CDF/XYZ_22_Repeater
General	
Manufacturer	What is the product manufacturer's name? Acme
Model	What is the model name/number of the product? XYZ
Port_Tested	What port is being tested? 1
Repeater_MultipleOutputs	Does the DUT support transmission of HDCP-protected content to more than one downstream device at the same time?
	Ø Yes ◎ No
	X Close

5.9 Selecting the 3A series tests

Use the following procedures to select the tests to run. There are multiple tabs which correspond to each section in the CTS.

To select the tests to run:

- 1. Select the **Test Selection** panel as shown below.
- 2. If you have an existing Test Selection file saved you can recall that for use in your testing. Simply click on the **Open** activation button.

C HDMI HDCP 2.2 Repeater CT 1.0	• X
CDF Entry 🗸 Test Selection ons / Preview	
C Open Save Select All Tests Deselect All Tests	
Downstream with Receiver ream with Repeater	
Select All on Page	
3A-01: Regular Procedure - With previously connected Receiver (With stored Km) Verify the Repeater's implementation of the HDCP protocol when an HDCP Receiver (that was previously connected) is attached.	Î
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3A-02: Regular Procedure - With newly connected Receiver (Without stored Km) Verify the Repeater's implementation of the HDCP protocol whan an HDCP Receiver (not previously connected) is attached.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3A-03: Irregular Procedure - Rx certificate not received Verify the Repeater DUT considers it a failure of authentication when the certificate is not received from the Rx during AKE. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3A-04: Irregular Procedure - Verify Receiver Certificate Verify the Repeater DUT considers it a failure of authentication when verification of Receiver certificate fails.	E
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3A-05: Irregular Procedure - Invalid H' Verify the Repeater DUT considers it a failure of authentication if the Receiver provides a value for H' that does not match H, or does not respond with H' in the allotted time.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3A-06: Irregular Procedure - Pairing Failure Verify the Repeater DUT considers it a failure of authentication if the Receiver does not send AKE_Send_Pairing_Info.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3A-07: Irregular Procedure - Locality Failure Verify the Repeater DUT considers it a failure of authentication if the Receiver provides a value for L' that does not match L, or does not respond with L' in the allotted time.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	-

A dialog box will appear as follows. Simply select the file and click on the **Ok** activation button.

н	HDMI HDCP 2.2 Repeater CT: Save Test Selections		
	Test Selection File		
	Enter a file name for the Test Selection.		
	HDCP_22_RPT_Test_Selecttxml		
		ľ	
	Cancel Ok		

You can then open the Test Selection file using the **Open** activation button.

The HDMI HDCP 2.2 Repeater CT 1.0
CDF Entry V Test Selection > Test Options / Preview
Centre Open Select All Tests
Downstream with Receiver Downstream with Repeater Upstream with Transmitter Repeater with TX and Repeater
Select All on Page

Rev.	Α5
	1.0

HDMI HDCP 2.2 TX Compliance Test		
Open Test Selection File		
Select an Test Selection file to open.		
HDCP_22_Test1.xml		
Cancel Ok		

3. Complete the items in the **3A Tests** tab of the **Test Selection** panel shown below.

For convenience you can **Select All Tests** or **Deselect All Tests** for both tabs or for group selection over each page **Select All on Page** or **Clear All on Page** tests using the activation buttons provided.

The following screens examples show the tests selected.

😢 HDMI HDCP 2.2 Repeater CT 1.0	×		
CDF Entry ♥ Test Selection ► Test Options / Preview			
🖾 Open 🔛 Save 🛛 Select All Tests 🔲 Deselect All Tests			
Downstream with Receiver Downstream with Repeater Upstream with Transmitter Repeater with TX and Repeater			
Select All on Page Clear All on Page			
✓ 3A-01: Regular Procedure - With previously connected Receiver (With stored Km) Verify the Repeater's implementation of the HDCP protocol when an HDCP Receiver (that was previously connected) is attached.	Â		
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)			
✓ 3A-02: Regular Procedure - With newly connected Receiver (Without stored Km) Verify the Repeater's implementation of the HDCP protocol whan an HDCP Receiver (not previously connected) is attached.			
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)			
3A-03: Irregular Procedure - Rx certificate not received Verify the Repeater DUT considers it a failure of authentication when the certificate is not received from the Rx during AKE. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)			
	Е		
3A-04: Irregular Procedure - Verify Receiver Certificate Verify the Repeater DUT considers it a failure of authentication when verification of Receiver certificate fails.			
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)			
3A-05: Irregular Procedure - Invalid H' Verify the Repeater DUT considers it a failure of authentication if the Receiver provides a value for H' that does not match H, or does not respond with H' in the allotted time. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)			
3A-06: Irregular Procedure - Pairing Failure Verify the Repeater DUT considers it a failure of authentication if the Receiver does not send AKE_Send_Pairing_Info.			
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)			
3A-07: Irregular Procedure - Locality Failure Verify the Repeater DUT considers it a failure of authentication if the Receiver provides a value for L' that does not match L, or does not respond with L' in the allotted time.	-		
¥ Close	e		

4. You can save the Test Selection options using the **Save** activation button (below).

W HDMI HDCP 2.2 Repeater CT 1.0	• ×	
CDF Entry 🗸 Test Selection 🕨 Test Options / Preview		
Copen 🔄 Save Select All Tests 🔲 Deselect All Tests		
Downstream with Lee Downstream with Repeater Upstream with Transmitter Repeater with TX and Repeater		
Select All on Page Clear All on Page		
✓ 3A-01: Regular Procedure - With previously connected Receiver (With stored Km) Verify the Repeater's implementation of the HDCP protocol when an HDCP Receiver (that was previously connected) is attached.		
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)		

A dialog box will appear as follows. Simply assign a name and click on the **OK** activation button. Click **Cancel** to exit.

Rev. A5

HDMI HDCP 2.2 Repeater CT: Save Test Selections		
Test Selection File		
Enter a file name for the Test Selection.		
HDCP_22_RPT_Test_Select_24xml		
HDCP_22_RPT_Test_Select.xml		
Cancel Ok		

5.10 Executing the HDMI HDCP 2.2 3A Series Repeater Compliance Tests

Use the following procedures to initiate the execution of an HDMI HDCP 2.2 3A series Repeater Compliance test series. You must have completed the CDF and the Test Selection form prior to executing the tests.

Note: You can monitor the HDCP 2.2 transactions using the Auxiliary Channel Analyzer (ACA) utility. Please refer to the main 980 HDMI Protocol Analyzer module User Guide for instructions on using the ACA.

To initiate a test series:

1. Select the **Test Options / Preview** panel as shown below.

Test List Image: Section of the product of the	▼ ► Execute
 Instrument: My_980 [192.168.254.153] Category / Test Name Downstream with Receiver 3A-01: Regular Procedure - With previously connected Receiver (With stored Km) 3A-02: Regular Procedure - With newly connected Receiver (Without stored Km) 3A-03: Irregular Procedure - Rx certificate not received 	Execute
 Category / Test Name Downstream with Receiver 3A-01: Regular Procedure - With previously connected Receiver (With stored Km) 3A-02: Regular Procedure - With newly connected Receiver (Without stored Km) 3A-03: Irregular Procedure - Rx certificate not received 	 Execute
 Category / Test Name Downstream with Receiver 3A-01: Regular Procedure - With previously connected Receiver (With stored Km) 3A-02: Regular Procedure - With newly connected Receiver (Without stored Km) 3A-03: Irregular Procedure - Rx certificate not received 	×
 Downstream with Receiver 3A-01: Regular Procedure - With previously connected Receiver (With stored Km) 3A-02: Regular Procedure - With newly connected Receiver (Without stored Km) 3A-03: Irregular Procedure - Rx certificate not received 	V
 A-01: Regular Procedure - With previously connected Receiver (With stored Km) A-02: Regular Procedure - With newly connected Receiver (Without stored Km) A-03: Irregular Procedure - Rx certificate not received 	\checkmark
 D 3A-02: Regular Procedure - With newly connected Receiver (Without stored Km) D 3A-03: Irregular Procedure - Rx certificate not received 	
📐 🖢 🖪 3A-03: Irregular Procedure - Rx certificate not received	\checkmark
	\checkmark
🔁 🖪 3A-04: Irregular Procedure - Verify Receiver Certificate	V
🖌 🎝 3A-05: Irregular Procedure - Invalid H'	V
• Iter 01: Invalid H'	V
 Iter 02: H' Timeout with previously paired Recv Id 	V
• Iter 03: H' Timeout with previously unpaired Recv Id	V
> 📃 3A-06: Irregular Procedure - Pairing Failure	V
🖌 📑 3A-07: Irregular Procedure - Locality Failure	V
• Iter 01: Locality Failure	×
• Iter 02: Locality Timeout	V

2. (Optional) Review the list of tests for each category. If you wish to skip some of the tests. You can skip tests by clicking on the Check mark on the right side of the **Test Options / Preview** panel.

The screen shot below shows some of the tests that have been skipped (highlighted in yellow with a red X).

_ 🗆 📈 HDMI HDCP 2.2 Repeater CT 1.0 🔯 CDF Entry 🖌 Test Selection 🕨 Test Options / Preview 🛃 AII 🛛 🖌 Instrument: My_980 [192.168.254.153] ▼ ► Execute Tests Category / Test Na Downstream with Receiver B 3A-01: Regular Procedure - With previously connected Receiver (With stored Km) \checkmark > 🗏 3A-02: Regular Procedure - With newly connected Receiver (Without stored Km \checkmark V » JA-03: Irregular Procedure - Rx certificate not received A 🗏 3A-04: Irregular Procedure - Verify Receiver Certificate × X Iter 01: 3A-05: Irregular Procedure - Invalid H' \checkmark • Iter 01: Invalid H' \checkmark • Iter 02: H' Timeout with previously paired Recv Id Iter 03: H' Timeout with previously unpaired Recv Id \checkmark JA-06: Irregular Procedure - Pairing Failure × 🔺 🗏 3A-07: Irregular Procedure - Locality Failure 💢 Iter 01: Locality Failure X 💢 Iter 02: Locality Timeout 22 3A-01: Regular Procedure - With previously connected Receiver (With stored Km X Close

3. Select the 980 Test Instrument from the pull-down menu of the HDCP **Test Options / Preview** tab shown below.

10 HDMI HDCP 2.2 Repeater CT 1.0	
CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
Test List	
All V X Instrument: My_980 [192.168.254.153]	▶ Execute Tests
Category / Test Name	V

Click on the **Execute Tests** activation button to initiate the test suite. You will be prompted for a name for the tests. This dialog box is shown below. Click on the **Ok** activation button when ready to start the tests.

HDMI HDCP 2.2 Repeater CT R	esults		
	🗉 Test Results Nam	e	
Execute HDMI HDCP 2.2 Repeater Compliance Tests on Instrument: My_980 @ 192.168.254.153			
Enter a name for the Test Results.			
Acme_XYZ_HDCP_22_Repeater_3A_1			
	Cancel		

A test window will appear and then a **Repeater Test Configuration** dialog box which depicts the proper test setup (example below). Press **Continue** when you have the repeater device connected properly. You can cancel the test using the **Cancel Compliance** Test button.



If you do not have the repeater device under test in the proper mode, an error dialog box will appear.

During the test, the test results are shown as they occur in the **Test Options / Preview** panel. The lower panel **Test Log** shows the testing activity as it occurs. There is a green progress arrow \Rightarrow which points to the test that is currently being run.

You can cancel the compliance test or pause at any time. If you pause the test you can resume later at any time even if you exit the 980 Manager application. Refer to the following screen examples.

TestList Image: All Im	Status Pass Pass
<pre>All All All All All All All All All All</pre>	Status Pass Pass
<pre>> Category / Test Name</pre>	Status Pass Pass
Downstream with Receiver 3A-01: Regular Procedure - With previously connected Receiver (Wi Iter 01: 3A-02: Regular Procedure - With newly connected Receiver (Without Iter 01: 3A-03: Irregular Procedure - Rx certificate not received Iter 01: 3A-04: Irregular Procedure - Verify Receiver Certificate	Pass Pass
 A-01: Regular Procedure - With previously connected Receiver (Wi Iter 01: 3A-02: Regular Procedure - With newly connected Receiver (Without Iter 01: 3A-03: Irregular Procedure - Rx certificate not received Iter 01: 3A-04: Irregular Procedure - Verify Receiver Certificate 	Pass Pass
<pre>> Iter 01:</pre>	Pass
 ▲ 3A-02: Regular Procedure - With newly connected Receiver (Without ♥ ▶ ▲ Iter 01: ♥ 3A-03: Irregular Procedure - Rx certificate not received ♥ ♥ Iter 01: ♥ 3A-04: Irregular Procedure - Verify Receiver Certificate 	
▶ ● Iter 01: ✓ ■ 3A-03: Irregular Procedure - Rx certificate not received ✓ ● Iter 01: ✓ ■ 3A-04: Irregular Procedure - Verify Receiver Certificate ✓	Pass
■ 3A-03: Irregular Procedure - Rx certificate not received ✓ ● Iter 01: ✓ ■ 3A-04: Irregular Procedure - Verify Receiver Certificate X	Pass
➡ Iter 01: ■ 3A-04: Irregular Procedure - Verify Receiver Certificate	In Progress
📕 🛛 🖪 3A-04: Irregular Procedure - Verify Receiver Certificate	In Progress
	Incomplete
💥 Iter 01: 💥	User Skipped
🖌 🗏 3A-05: Irregular Procedure - Invalid H' 🛛 🗸 🗸	Not Tested
• Iter 01: Invalid H'	Not Tested
• Iter 02: H' Timeout with previously paired Recv Id 🧹	Not Tested
Iter 03: H' Timeout with previously unpaired Recv Id	Not Tested
🕨 🗦 📴 3A-06: Irregular Procedure - Pairing Failure 🛛 🗸 🗸	Not Tested
🖌 🖢 3A-07: Irregular Procedure - Locality Failure 🛛 🗶 🖊	Incomplete
X Iter 01: Locality Failure X	User Skipped
💥 Iter 02: Locality Timeout 🙀	User Skipped
Test Log	
Line Message	
• 0010 Test. 3A-02-01	
• 0011 Executing the test.	
0012 Processing test results	
$\begin{array}{c} 10014 \\ - 7 \text{ For } 3 \lambda_{-} 03_{-} 01 \end{array}$	=
Precision of the test	
interview in the cost.	-
	4
Gancel the Compliance Test 🔢 👔 Pause Test Execution	

When the tests are completed, the lower panel **Test Log** will indicate Test Completed. The pass/fail results will be shown on the right. Refer to the screen example below.

HDMI HDCP 2.2 Repeater Compliance Test (1.0): "Acme_XYZ_HDCP_22_Repeater_3A_1"		
Test List		_
All V Reset Status		
Category / Test Name	V	Status
Downstream with Receiver		
🛛 🖌 🖪 3A-01: Regular Procedure - With previously connected Receiver (Wi	· 🖌	Pass
▶ 🕒 Iter 01:	\checkmark	Pass
▲ 📃 3A-02: Regular Procedure - With newly connected Receiver (Without	\checkmark	Pass
▶ 😝 Iter 01:	\checkmark	Pass
🔺 📃 3A-03: Irregular Procedure - Rx certificate not received	\checkmark	Pass
▶ 💮 Iter 01:	\checkmark	Pass
▲ 📑 3A-04: Irregular Procedure - Verify Receiver Certificate	\checkmark	Pass
▶ Iter 01:	\checkmark	Pass
▲ 📑 3A-05: Irregular Procedure - Invalid H'	\checkmark	Pass
▶	\checkmark	Pass
▷ ↓ Iter 02: H' Timeout with previously paired Recv Id	\checkmark	Pass
▶ JIter 03: H' Timeout with previously unpaired Recv Id		Pass
A 📑 3A-06: Irregular Procedure - Pairing Failure	\checkmark	Pass
▶ U Iter 01:		Pass
A 📑 3A-07: Irregular Procedure - Locality Failure		Fail
↓ Use Iter 01: Locality Failure		Fail
↓ Ure 12: Locality Timeout		Pass
3A-07: Irregular Procedure - Locality Failure		
Testion		
Line Message		A
• 0042 Processing test results.		
• 0043 Test 3A-07 Iter 01 -> Fail		
• 0044 Test 3A-07-02		
• 0045 Executing the test.		
• 0046 Processing test results.		
• 0047 Test $3A-07$ Iter $02 \rightarrow Pass$		
• 0048 Tests completed		E
Close Window Continue Testing		

You can view the details of any particular test by clicking on the test as shown in the sample screen shots below.

	Test List		
📝 All 🛛 🖌	🗱 🦘 Reset Status		
Category	/ Test Name	V	Status
⊿ 🗏 3A-0	7: Irregular Procedure - Locality Failure	V	Fail
🖌 😝 Ite	er 01: Locality Failure	Image: A state of the state	Fail
0 0	Clear Ready		
.]	HPD Deasserted regular		
•]	HPD Asserted regular		
•]	RX UNAUTH::enter		
•]	RX UNAUTH:NO VIDEO Present		
	TX UNAUTH:MSG:VALID VER ts:0x0 us		
	TX UNAUTH:MSG:HPD_EN ts:0x33a us		
	TX UNAUTH:AKE_INIT ts:0xd9d us		
	TX UNAUTH:MSG RCVD:AKE_Send_Cert ts:0x16dc us		
•	TX UNAUTH:RxCaps 1		
0	TX AKE:Snd Stored_KM ts:0xdc578d34 us		
<u>→</u> • ·	TX AKE:MSG:HPD_DIS ts:0x1a114 us		
⊖ ·	TX:UNAUTH::enter		
	TX UNAUTH:MSG:HPD_EN ts:0x3ae us		
	TX UNAUTH:AKE_INIT ts:0xe64 us		
	TX UNAUTH:MSG RCVD:AKE_Send_Cert ts:0x177a us		
	TX UNAUTH:RxCaps 0		
	TX AKE:Snd Stored_KM ts:0x1b8fb us		
•	TX AKE:MSG RCVD:AKE_Send_H_prime ts:0x1d7b3 us		
•	TX LC:Snd LC_Init ts:0x1fe51 us		
•	TX LC:MSG RCVD:LC_Send_L_prime ts:0x209ba us		
•	TX SKE:Snd SKE_Send_EKS ts:0x23b43 us		
•]	RX UNAUTH:MSG RD:VERSION ts:0x0 us		
•]	RX UNAUTH:MSG:Encryption disabled		
•]	RX UNAUTH:RCVD:AKE_Init ts:0x895433 us		
-07: Irregular Pr	DY HIMAHTHI ++ Test Cond ++ invalid		
, or inegalar r			
	Test Log		
ine	Message		
0040	Test 3A-07-01		
0041	Executing the test.		
0042	Processing test results.		
0043	Test 3A-07 Iter 01 -> Fail		
0044	Test 3A-07-02		

HDMI HDCP 2.2 Repeater Compliance Test (1.0): "Acme_XYZ_HDCP_22_Repeater_3A_1"		
Test List		
All V Reset Status		
Category / Test Name	V	Status
Downstream with Receiver		
▲ 🔄 3A-01: Regular Procedure - With previously connected Receiver	(W 🗸	Pass
▲ 🝚 Iter 01:	V	Pass
• Clear Ready		
HPD Deasserted regular		
TX AUTH:MSG:HPD_DIS ts:0x1380294f us		=
TX:UNAUTH::enter		
 TX UNAUTH:MSG:HPD_DIS ts:0x0 us 		
HPD Asserted regular		
• RX UNAUTH::enter		
 RX UNAUTH:HDMI/VIDEO Present 		
 TX UNAUTH:MSG:VALID_VER ts:0x0 us 		
 TX UNAUTH:MSG:HPD_EN ts:0x339 us 		
• TX UNAUTH:AKE_INIT ts:0xdd5 us		
 TX UNAUTH:MSG RCVD:AKE_Send_Cert ts:0x16e4 us 		
• TX UNAUTH:RxCaps 1		
• TX AKE:Snd Stored_KM ts:0x1b454 us		
 TX AKE:MSG RCVD:AKE_Send_H_prime ts:0x1d3ae us 		
 TX LC:Snd LC_Init ts:0x1fa67 us 		
 TX LC:MSG RCVD:LC_Send_L prime ts:0x20599 us 		
• TX SKE:Snd SKE_Send_EKS ts:0x23722 us		
RX UNAUTH:MSG RD:ENC_DIS ts:0x84436128 us		
RX UNAUTH:MSG RD:VERSION ts:0x0 us		
RX UNAUTH:MSG:Encryption disabled		
RX UNAUTH:RCVD:AKE Init ts:0x393ec us		
RX UNAUTH:**Test Cond.** auth		
RX AKE:MSG SND:AKE Send Cert ts:0x49171 us		
DV ADR.MCC DOMIN.ADR Stored by terny5770s ne		-
Test Log		
Line Message		×
• 0040 Test 3A-07-01		
• 0041 Executing the test.		
• 0042 Processing test results.		
• 0043 Test 3A-07 Iter 01 -> Fail		
• 0044 Test 3A-07-02		*
Close Window Continue Testing		

You can close the test window when you are finished examining the results. Note that you can view the details from the Compliance Test Viewer which is available any time after the tests. When you close the test execution window, the Compliance Test Viewer window will appear showing the results of the test. Please refer to the following section for details on viewing the compliance test results.

5.11 Viewing Details of 3A Repeater Compliance Test Results

When you have completed the test series you will have an opportunity to view the detailed data for a particular failure or a test that passed. Use the following procedures to view the details of a failure.

To view the details of a failure:

1. Expose the detailed results of a failure and highlight a results record. Refer to the screen example below.

- O **X** Compliance Test Results Viewer . HDMI HDCP 2.2 Repeater (1.0) Compliance Test Results HTML Report Results Name: Acme_XYZ_HDCP_22_Repeater_3A_1 Manufacturer: Acme Date Tested: March 17, 2015 4:41 PM Model Name: XYZ Overall Status: CTS 1.0 - Fail Port Tested: 1 Test Results Test Name / Details O Status > 🖪 3A-01: Regular Procedure - With previously connected Receiver (Wi Pass 3A-02: Regular Procedure - With newly connected Receiver (Without 3A-03: Irregular Procedure - Rx certificate not received 3A-04: Irregular Procedure - Verify Receiver Certificate Pass Pass Pass 3A-05: Irregular Procedure - Invalid H' 3A-06: Irregular Procedure - Pairing Failure 3A-07: Irregular Procedure - Locality Failure Pass Pass 3A-01: Regular Procedure - With previously connected Receiver (With stored Km) Instrument: My_980 [192.168.254.153] Continue Test Execution X Close

Rev. A5

Compliance Test Results Viewer			
HDMI HD	CP 2.2 TX (1.0) Compliance Test R	esults	
Results Name: HDCP_22_Test3	Manufacturer: Acme		HTML Report
Oursell Statum CTC 1.0. E-1	Best Teste di 1		
Overall Status: CIS 1.0 - Fall	Port Tested: 1		
	Test Results		
Test Name / Details			Status ^
⊿ 😝 Iter 01:			Pass
IPD Deaaserted regular			
MSG:HPD_DIS ts:0x113dcdd ns			
TX:UNAUTH::enter			
HPD Asserted regular			
RX:UNAUTH			
HDMI/VIDEO Present			
MSG:VALID_VER ts:0x0 ns			
MSG:HPD_EN ts:0x338 ns			_
AKE_INIT ts:0x6d4a5755 ns			=
RCVD:AKE_INIT ts:0 us			
<pre>**Test Cond.** hpd</pre>			
HPD Deaaserted irregular			
MSG:HPD DIS ts:0x1b15 ns			
HPD Asserted irregular			
MSG:HPD EN ts:0x331 ns			
• AKE INIT ts:0x72266814 ns			
RCVD:AKE INIT ts:204539 us			
<pre> **Test Cond.** ake init </pre>			
Encryption Disabled			
MSG RCVD:AKE Send Cert ts:0x7234f	d25 ns		
Snd Stored KM ts:0x74bc94f1 ns			
MSG SND:AKE Send Cert ts:306424 u	IS		
MSG RCVD:AKE Stored Km ts:313138	us		
MSG SND:AKE Send H Prime ts:32486	4 us		
MSG RCVD:AKE Send H Prime ts:0x74	d53e86 ns		.
Iter 01:			
Instrument: MV980_DP [192.168.254.153]			Continue Test Execution
			💥 Close

Rev. A5

X Compliance Test Results Viewer HDMI HDCP 2.2 Repeater (1.0) Compliance Test Resul Results Name: Acme_XYZ_HDCP_22_Repeater_3A_1 HTML Report Manufacturer: Acme Date Tested: March 17, 2015 4:41 PM Model Name: XYZ Overall Status: CTS 1.0 - Fail Port Tested: 1 Test Results Test Name / Details 0 Status 3A-01: Regular Procedure - With previously connected Receiver (W) Pass 4 🔵 Iter 01: Pass Clear Ready HPD Deasserted regular TX AUTH:MSG:HPD_DIS ts:0x1380294f us TX:UNAUTH::enter • TX UNAUTH:MSG:HPD DIS ts:0x0 us • HPD Asserted regular RX UNAUTH::enter RX UNAUTH: HDMI/VIDEO Present • TX UNAUTH:MSG:VALID VER ts:0x0 us • TX UNAUTH:MSG:HPD EN ts:0x339 us • TX UNAUTH:AKE_INIT ts:0xdd5 us • TX UNAUTH:MSG RCVD:AKE Send Cert ts:0x16e4 us TX UNAUTH: RxCaps 1 • TX AKE: Snd Stored_KM ts:0x1b454 us • TX AKE:MSG RCVD:AKE Send H prime ts:0x1d3ae us o TX LC:Snd LC_Init ts:0x1fa67 us • TX LC:MSG RCVD:LC_Send_L_prime ts:0x20599 us • TX SKE: Snd SKE Send EKS ts: 0x23722 us RX UNAUTH:MSG RD:ENC_DIS ts:0x84436128 us RX UNAUTH:MSG RD:VERSION ts:0x0 us RX UNAUTH:MSG:Encryption disabled RX UNAUTH:RCVD:AKE_Init ts:0x393ec us RX UNAUTH:**Test Cond.** auth RX AKE:MSG SND:AKE_Send_Cert ts:0x49171 us RX AKE:MSG RCVD:AKE Stored km ts:0x5779a us @ RX LC:MSG SND:AKE_Send_H_prime ts:0x58ef6 us RX LC:MSG RCVD:LC_Init ts:0x5a17b us RX SKE::enter RX SKE:MSG SND:LC_Send_L_prime ts:0x5b8e2 us RX SKE:MSG RCVD:SKE Send Eks ts:0x5cc1f us 3A-07: Irregular Procedure - Locality Failure Instrument: My_980 [192.168.254.153] Continue Test Execution X Close

5.12 Viewing the HDMI HDCP 2.2 Repeater Compliance HTML test report

After you have completed the tests, you can view an HTML report. Use the procedures in <u>Viewing the HDMI HDCP</u> <u>2.2 Compliance HTML test report</u> to view the HDCP 2.2 Compliance test HTML report.

5.13 Selecting the 3B series tests

Use the following procedures to select the 3B series tests to run.

To select the tests to run:

- 1. Select the **Test Selection** panel as shown below.
- 2. If you have an existing Test Selection option file saved you can recall that for use in your testing. Simply click on the **Open** activation button.

BINI HDCP 2.2 Repeater CT 1.0	
🔯 CDF Entry 🗹 Test Selection 🧹 pns / Preview	
🔄 Open 🔛 Save 🛛 Select All Tests 🔲 Deselect All Tests	
Downstream with Repeater Upstream with Transmitter Repeater with TX and Repeater	
Select All on Page	
3B-01: Regular Procedure - With Repeater Verify the Repeater DUT works with a repeater strached under pominal circumstances	
(Required License: HUMLHUCP 2.2 Compliance Test for Repeaters)	
3B-02: Irregular Procedure - Timeout of Receiver ID list	
Verify the Repeater DUT considers it a failure of authentication if the downstream repeater does not respond with RepeaterAuth_Send_ReceiverID_List prior to expiration of watchdog timer.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3B-03: Irregular Procedure - Verify V' Verify the Repeater DUT considers it a failure of authentication if the repeater provides a value	
for V' that does not match V.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
Verify the Repeater DUT considers it a failure of authentication if the repeater sets the	E
MAX_DEVS_EXCEEDED bit in the RepeaterAuth_Send_ReceiverID_List message.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3B-05: Irregular Procedure - MAX CASCADE EXCEEDED	
Verify the Repeater DUT considers it a failure of authentication if the repeater sets the	
WAA_CASCADE_EACEEDED bit in the RepeaterAdun_Send_ReceivenD_List message.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3B-06: Irregular Procedure - Rollover of seq_num_V	
Verify the Repeater DUT initiates re-authentication when a rollover of seq_num_V is detected from the downstream repeater.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3B-07: Irregular Procedure - Failure of Content Stream Management Variable Provide DUT to the other Stream Management following a failure of	
Content Stream Management.	
	se

A dialog box will appear as follows. Simply select the file and click on the **OK** activation button.

HDMI HDCP 2.2 Repeater CT: Save Test Selections		
Test Selection File		
Enter a file name for the Test Selection.		
HDCP_22_RPT_Test_Select_3xml		
HDCP_22_RPT_Test_Select.xml HDCP_22_RPT_Test_Select_2.xml		
Cancel Ok		

3. Complete the items in the **3B Tests** tab of the **Test Selection** panel shown below.

For convenience you can **Select All Tests** or **Deselect All Tests** for both tabs or for group selection over each page **Select All on Page** or **Clear All on Page** tests using the activation buttons provided.



4. You can save the Test Selection options using the Save activation button.

🕲 НОМІ Н	ICP 2.2 Repeater CT 1.0	x
🔯 CDF E	try 🗸 Test Selection 🕨 Test Options / Preview	
🔄 Oper	Save Select All Tests Deselect All Tests	
Dowr	stream with Receiver 🕨 Downstream with Repeater 🕨 Upstream with Transmitter 🅨 Repeater with TX and Repeater	
	Select All on Page 📃 Clear All on Page	

A dialog box will appear as follows. Simply assign a name and click on the **OK** activation button. Click **Cancel** to exit.

HDMI HDCP 2.2 Repeater CT: Save Test Selections			
Test Selection File			
Enter a file name for the Test Selection.			
HDCP_22_RPT_Test_Select_3.xml			
The name already exists.			
HDCP_22_RPT_Test_Select.xml			
HDCP_22_RPT_Test_Select_2.xml			
HDCP_22_RPT_Test_Select_3.xml			
Cancel 📀 Ok			

5.14 Executing the HDMI HDCP 2.2 3B Series Repeater Compliance Tests

Use the following procedures to initiate the execution of an HDMI HDCP 2.2 3B series Repeater Compliance test series.

To initiate a test series:

1. Select the **Test Options / Preview** panel as shown below.

Test List	
All 🔗 🔛 Instrument: My_980 [192.168.254.153]	▼ ► Execute
Category / Test Name	
Downstream with Repeater	
> 🗏 3B-01: Regular Procedure - With Repeater	\checkmark
> 🗏 3B-02: Irregular Procedure - Timeout of Receiver ID list	×
🕨 🗏 3B-03: Irregular Procedure - Verify V'	V
B 3B-04: Irregular Procedure - MAX DEVS EXCEEDED	Image: A start of the start
> 🗄 3B-05: Irregular Procedure - MAX CASCADE EXCEEDED	\checkmark
> 🗏 3B-06: Irregular Procedure - Rollover of seq num V	×
🔺 🗏 3B-07: Irregular Procedure - Failure of Content Stream Management	\checkmark
• Iter 01: Invalid M'	\checkmark
Iter 02: Timeout of RepeaterAuth_Stream_Ready message	V

2. (Optional) Review the list of tests for each category. If you wish to skip some of the tests. You can skip tests by clicking on the Check mark on the right side of the **Test Options / Preview** panel.

The screen shot below shows some of the tests that have been skipped (highlighted in yellow with a red X).

🖄 HDMI HDCP 2.2 Repeater CT 1.0	- C X
😢 CDF Entry 🗹 Test Selection 🕨 Test Options / Preview	
Test List	
All V X Instrument: My_980 [192.168.254.153]	Execute Tests
Category / Test Name	V
Downstream with Repeater	
> 🗏 3B-01: Regular Procedure - With Repeater	\checkmark
🕨 🗏 3B-02: Irregular Procedure - Timeout of Receiver ID list	\checkmark
B 3B-03: Irregular Procedure - Verify V'	\checkmark
B 3B-04: Irregular Procedure - MAX DEVS EXCEEDED	\checkmark
🔺 📃 3B-05: Irregular Procedure - MAX CASCADE EXCEEDED	×
💥 Iter 01:	×
> 🗏 3B-06: Irregular Procedure - Rollover of seq num V	\checkmark
🔺 📃 3B-07: Irregular Procedure - Failure of Content Stream Management	\checkmark
💥 Iter 01: Invalid M'	×
 Iter 02: Timeout of RepeaterAuth_Stream_Ready message 	\checkmark
·	
3B-01: Regular Procedure - With Repeater	
	X Close

3. Connect to the 980 Test Instrument if you have not already done so. Use the **Instrument** selection pull-down as indicated below.

C HDMI HDCP 2.2 Repeater CT 1.0	
CDF Entry 🗹 Test Selection 🕨 Test Options / Preview	
Test List	
All 🖌 X Instrument: My_980 [192.168.254.153]	Execute Tests
Category / Test Name	V

Click on the **Execute Tests** activation button to initiate the test suite. You will be prompted for a name for the tests. This dialog box is shown below.

A dialog box prompting you to name the test results files appears as shown below:

HDMI HDCP 2.2 Repeater CT Results				
Test Results Name				
Execute HDMI HDCP 2.2 Repeater Compliance Tests on Instrument: My_980 @ 192.168.254.153				
Enter a name for the Test Results.				
Acme_XYZ_HDCP_22_Repeater_38_1				
Acme_XYZ_HDCP_22_Repeater_3A_1				
Cancel Ok				

Select a name and click on the **OK** activation button. The tests begin.

During the tests a **Repeater Test Setup** dialog box will appear which requires that you to verify that the repeater device under test is connected properly. The following screen shot depicts this. Press **Continue** when you have the repeater device connected properly. You can cancel the test using the **Cancel Compliance** Test button.



If you do not have the repeater device under test in the proper mode, an error dialog box will appear.

During the test, the test results are shown as they occur in the **Test Options / Preview** panel. There is a green progress arrow $\stackrel{\frown}{\Longrightarrow}$ which points to the test that is currently being run. Refer to the screen shot below.

	Test List		
Category /	Test Name	V	Status
	too muth Perester	v	boubub
3B-01	: Regular Procedure - With Repeater	V .	In Progress
lter	01:	V	In Progress
▶ 🗐 3B-02	: Irregular Procedure - Timeout of Receiver ID list	V	Not Tested
▷ 3B-03	: Irregular Procedure - Verify V'	V	Not Tested
⊳ 📑 3B-04	: Irregular Procedure - MAX DEVS EXCEEDED	V	Not Tested
⊳ 📑 3B-05	: Irregular Procedure - MAX CASCADE EXCEEDED	V	Not Tested
⊳ 📑 3B-06	: Irregular Procedure - Rollover of seq num V	V	Not Tested
a 📑 3B-07	: Irregular Procedure - Failure of Content Stream Management	\checkmark	Not Tested
Iter	01: Invalid M'	\checkmark	Not Tested
Iter	02: Timeout of RepeaterAuth_Stream_Ready message	\checkmark	Not Tested
	Test Log		
Line	Message		
• 0001	Compliance Test Started.		
• 0002	Initialization.		
• 0003	Assembling the test list.		
• 0004	Transferring the CDF to the Test Instrument.		
• 0005	Test 3B-01-01		
• 000 <i>6</i>	Set Configuration to: REPEATER		
0007	Executing the test.		

The lower panel **Test Log** shows the testing activity as it occurs. You can cancel the compliance test or pause at any time. If you pause the test you can resume later at any time even if you exit the 980 Manager application. Refer to the following screen examples.

HDMI HDCP 2.2 Repeater C	ompliance Test (1.0): "Acme_XYZ_HDCP_22_Repeater_38_1"	-	
	Test list		
All 🗸 🗙	Reset Status		
Category / Te	est Name	1	Status
Downstream	am with Repeater		
⊿ 📑 3B-01: 1	Regular Procedure - With Repeater	\checkmark	Pass
> 🔵 Iter 01	1:	\checkmark	Pass
⊿ 📃 3B-02:	Irregular Procedure - Timeout of Receiver ID list	\checkmark	Pass
> 🔵 Iter 01	1:	\checkmark	Pass
⊿ 📑 3B-03:	DCP 22 Repeater Compliance Test (1.0): 'Acme_XYZ_HDCP 22 Repeater_38_1' Test List Test List Category / Test Name Downstream with Repeater Downstream and the repeater Downstream with Repeater Downstream Procedure - Timeout of Receiver ID list Downstream Procedure - Verify V' Downstream Procedure - MAX DEVS EXCEEDED Downstregular Procedure - MAX CASCADE EXCEEDED Downstregular Procedure - Rollover of seq num V Downstregular Procedure - Failure of Content Stream Manage Iter 01: Invalid M' Iter 02: Timeout of RepeaterAuth_Stream_Ready message Ressage Ressage Downstregular Procedure - Pass Test 3B-03-01 Executing the test. Ressage Cancel the Compliance Test Pause Test Execution		Pass
> 🔵 Iter 01	1:	\checkmark	Pass
⊿ 📑 3B-04:	Irregular Procedure - MAX DEVS EXCEEDED	\checkmark	In Progress
🔶 Iter 01	1:	\checkmark	In Progress
⊳ 📑 3B-05:	Irregular Procedure - MAX CASCADE EXCEEDED	\checkmark	Not Tested
⊳ 📑 3B-06:	Irregular Procedure - Rollover of seq num V	\checkmark	Not Tested
⊿ 📑 3B-07:	Irregular Procedure - Failure of Content Stream Management	\checkmark	Not Tested
Iter 01	l: Invalid M'	\checkmark	Not Tested
 Iter 02 	2: Timeout of RepeaterAuth_Stream_Ready message	\checkmark	Not Tested
	Testics		
	l est Log		
Line	Message		^
• 0013	Test 3B-02 Iter 01 -> Pass		
• 0014	Test 3B-03-01		
• 0015	Executing the test.		
• 0016	Processing test results.		
• 0017	Test 3B-03 Iter 01 -> Pass		
• 0018	Test 3B-04-01		=
\$ 0019	Executing the test.		
			~
•			4
	Cancel the Compliance Test		
		-	

When the tests are completed the Test Log will indicate Test Completed as shown below.

HDMI HDCP 2.2 Repeater	Compliance Test (1.0): "Acme_XYZ_HDCP_22_Repeater_3B_1"		
	Tart List		
All 🗸 🗙	Reset Status		
Test List Test List Test List Test Name Downstream with Repeater BB-01: Regular Procedure - With Repeater BB-02: Irregular Procedure - Timeout of Receiver ID li Iter 01: BB-03: Irregular Procedure - Verify V' Iter 01: BB-04: Irregular Procedure - MAX DEVS EXCEEDED Iter 01: BB-06: Irregular Procedure - MAX CASCADE EXCEEDED Iter 01: BB-06: Irregular Procedure - Rollover of seq num V Iter 01: BB-07: Irregular Procedure - Failure of Content Str Iter 01: Iter 02: Timeout of RepeaterAuth_Stream_Ready message Iter 02: Timeout of RepeaterAuth_Stream_Ready message Test 3B-07: Irest 3B-07-01 Processing test results. Test 3B-07: Irest 3B-07-1 Processing test results. Processing test Processing test results.		V	Status
▲ ► Downstre	am with Repeater		
⊿ 📑 3B-01:	Regular Procedure - With Repeater	V	Pass
🛛 🕞 📔 🛛 🖓	11:	V	Pass
⊿ 📃 3B-02:	Irregular Procedure - Timeout of Receiver ID list	\checkmark	Pass
🛛 🕞 📔 🛛 🖓	11:	V	Pass
⊿ 📃 3B-03:	Irregular Procedure - Verify V'	\checkmark	Pass
🛛 🖓 🕒 🛛 🖓 🖓	01:	\checkmark	Pass
⊿ 📃 3B-04:	Irregular Procedure - MAX DEVS EXCEEDED	\checkmark	Pass
🛛 🕞 📔 🛛 🖓	11:	V	Pass
⊿ 📑 3B-05:	Irregular Procedure - MAX CASCADE EXCEEDED	V	Pass
🛛 🖓 🕒 🛛 🖓 🖓	01:	\checkmark	Pass
⊿ 📃 3B-06:	Irregular Procedure - Rollover of seq num V	\checkmark	Pass
🛛 🖓 🕒 🛛 🖓 🖓	01:	\checkmark	Pass
⊿ 📃 3B-07:	Irregular Procedure - Failure of Content Stream Management	\checkmark	Pass
🛛 🖓 🕒 🛛 🖓 🖓	01: Invalid M'	\checkmark	Pass
🛛 🖓 🕒 🛛 🖓 🖓	02: Timeout of RepeaterAuth_Stream_Ready message	\checkmark	Pass
	Testien		
	lest Log		
Line	Message		
• 0030	Test 3B-07-01		
• 0031	Executing the test.		
• 0032	Processing test results.		
• 0033	Test 3B-07 Iter 01 -> Pass		
• 0034	Test 3B-07-02		
• 0035	Executing the test.		
• 0036	Processing test results.		
• 0037	Test 3B-07 Iter 02 > Pass		=
• 0038	Tests completed		
	Close Window Continue Testing		
L			

When you close the test execution window, the Compliance Test Viewer window will appear showing the results of the test. Please refer to the following section for details on viewing the compliance test results.

5.15 Viewing Details of Repeater 3B Compliance Test Results

When you have completed the test series you will have an opportunity to view the detailed data for a particular failure or a test that passed. Use the following procedures to view the details of a failure.

To view the details of a failure:

1. Expose the detailed results of a failure and highlight a results record. Refer to the screen examples below.

Compliance Test Results Viewer		
HDMI HDCP 2.2 Repeater (1.0) Compliance Test Results	3	
Results Name: Acme_XYZ_HDCP_22_Repeater_3B_1 Manufacturer: Acme Date Tested: March 17, 2015 5:14 PM Model Name: XYZ Overall Status: CTS1.0 - Pass Port Tested: 1		HTML Report
Test Results		
Test Name / Details	0	Status
🕟 🗏 3B-01: Regular Procedure - With Repeater		Pass
> 📴 3B-02: Irregular Procedure - Timeout of Receiver ID list		Pass
> Irregular Procedure - Verify V'		Pass
> 3B-04: Irregular Procedure - MAX DEVS EXCEEDED		Pass
> 3B-05: Irregular Procedure - MAX CASCADE EXCEEDED		Pass
> 3B-06: Irregular Procedure - Rollover of seq num V		Pass
> 🖪 3B-07: Irregular Procedure - Failure of Content Stream Management		Pass
38-01 · Regular Procedure - With Repeater		
Instrument: My_980 [192.168.254.153]		 Continue Test Execution
		💢 Close

E Compliance Test Results Viewer	B 0			
HDMI HDCP 2.2 Repeat	ter (1.0) Compliance Test	Results		
Results Name: Acme_XYZ_HDCP_22_Repeater_3B_1	Manufacturer: Acme		HTML Repo	ort
Date Tested: March 17, 2015 5:14 PM	Model Name: XYZ			
Overall Status: CTS 1.0 - Pass	Port Tested: 1			
	Test Results			
Test Name / Details		0	Status	^
4 🝚 Iter 01:			Pass	
Clear Ready				
HPD Deasserted regular				
• TX AUTH:MSG:HPD_DIS ts:0x6694d064 us				
TX:UNAUTH::enter				
TX UNAUTH:MSG:HPD_DIS ts:0x0 us				
HPD Asserted regular				Ξ
RX UNAUTH::enter				
RX UNAUTH: HDMI/VIDEO Present				
• TX UNAUTH:MSG:VALID_VER ts:0x0 us				
• TX UNAUTH:MSG:HPD_EN ts:0x338 us				
• TX UNAUTH:AKE INIT ts:0xdb3 us				
• TX UNAUTH:MSG RCVD:AKE_Send_Cert ts:0x16ce us				
• TX UNAUTH:RxCaps 1				
• TX AKE:Snd Stored_KM ts:0x1b887 us				
• TX AKE:MSG RCVD:AKE_Send_H_prime ts:0x1d749 us				
• TX LC:Snd LC Init ts:0x20224 us				
• TX LC:MSG RCVD:LC_Send_L prime ts:0x20d51 us				
• TX SKE:Snd SKE_Send_EKS ts:0x23f17 us				
RX UNAUTH:MSG RD:ENC DIS ts:0xfc66bc0a us				
RX UNAUTH:MSG RD:VERSION ts:0x0 us				
RX UNAUTH:MSG:Encryption disabled				
RX UNAUTH:RCVD:AKE_Init ts:0x3f666 us				
RX UNAUTH:**Test Cond.** auth				
RX AKE:MSG SND:AKE_Send_Cert ts:0x4f3eb us				
RX AKE:MSG RCVD:AKE_Stored_km ts:0x5dale us				
RX LC:MSG SND:AKE_Send_H_prime ts:0x5f185 us				
RX LC:MSG RCVD:LC_Init ts:0x6040a us				
a DV CTR				_
3B-01: Regular Procedure - With Repeater				
Instrument: My_980 [192.168.254.153]			Continue Test Execution	n
			💥 Close	

5.16 Viewing the HDMI HDCP 2.2 Repeater Compliance HTML test report

After you have completed the tests, you can view an HTML report. Use the procedures in <u>Viewing the HDMI HDCP</u> <u>2.2 Compliance HTML test report</u> to view the HDCP 2.2 Compliance test HTML report.

5.17 Selecting the 3C series tests

Use the following procedures to select the 3C series tests to run. There are multiple tabs which correspond to each section in the CTS.

To select the tests to run:

- 1. Select the **Test Selection** panel as shown below.
- 2. If you have an existing Test Selection option file saved you can recall that for use in your testing. Simply click on the **Open** activation button.

C HDMI HDCP 2.2 Repeater CT 1.0	
CDF Entry V Test Selection Test Options / Preview	
Copen Save Select All Tests Deselect All Tests	
Downstream with Receive Downstream with Repeater Upstream with Transmitter Repeater with TX and Repeater	
Select All on Page Clear All on Page	
3C-01: Regular Procedure - Transmitter - DUT- Receiver Verify the Repeater DUT's implementation of the HDCP protocol when an HDCP Transmitter is connected to the upstream Repeater port and HDCP Receiver is connected to the downstream Repeater port. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3C-02: Regular Procedure - ReceiverID_List Propagation when an Active Receiver is Disconnected Downstream Verify the Repeater DUT sends an updated ReceiverID_List message when an active downstream Receiver is disconnected when HDCP Content is flowing. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3C-03: Regular Procedure - ReceiverID_List Propagation when an Active Receiver is Connected Downstream Verify the Repeater DUT sends an updated ReceiverID_List message when a new active downstream Receiver is connected and HDCP Content is flowing. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3C-04: Irregular Procedure - New Authentication after AKE_Init Verify the Repeater DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the transmission of AKE_Init in the unauthenticated state. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	E
3C-05: Irregular Procedure - New Authentication during Locality Check Verify the Repeater DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the reception of LC_Init. (Required Licence: HDMI HDCP.2.2 Compliance Test for Repeaters)	
(Required License, How), Hoch 2/2 Compliance rescribin Repeaters)	
3C-06: Irregular Procedure - New Authentication after SKE_Send_Eks Verify the Repeater DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the reception of SKE_Send_Eks.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3C-07: Irregular Procedure - New Authentication during Link Synchronization Verify the Repeater DUT restarts authentication when a new AKE_Init and r_tx is transmitted during Link Synchronization.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3C-08: Irregular Procedure - Rx Certificate Invalid Verify the Repeater DUT considers it a failure of authentication and does not send RepeaterAuth_Send_Receiver/D_List message when the certificate received from the Receiver is invalid.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
	X Close

A dialog box will appear as follows. Simply select the file and click on the **OK** activation button.

HDMI HDCP 2.2 Repeater CT: Save Test Selections	
Test Selection File	
Enter a file name for the Test Selection.	
HDCP_22_RPT_Test_Select_3 xml	
HDCP_22_RPT_Test_Select.xml HDCP_22_RPT_Test_Select_2.xml	
Cancel Ok	

3. Complete the items in the **3C Tests** tab of the **Test Selection** panel shown below.

For convenience you can **Select All Tests** or **Deselect All Tests** for both tabs or for group selection over each page **Select All on Page** or **Clear All on Page** tests using the activation buttons provided.

HDMI HDCP 2.2 Repeater CT 1.0	- 0 X
😢 CDF Entry 🖌 Test Selection 🕨 Test Options / Preview	
🖾 Open 🔚 Save 🛛 Select All Tests 🔲 Deselect All Tests	
Downstream with Receiver Downstream w Upstream with Transmitter Repeater with TX and Repeater	
Select All on Page Clear All on Page	
3C-01: Regular Procedure - Transmitter - DUT- Receiver Verify the Repeater DUT's implementation of the HDCP protocol when an HDCP Transmitter is connected to the upstream Repeater port and HDCP Receiver is connected to the downstream Repeater port. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
 3C-02: Regular Procedure - ReceiverID_List Propagation when an Active Receiver is Disconnected Downstream Verify the Repeater DUT sends an updated ReceiverID_List message when an active downstream Receiver is disconnected when HDCP Content is flowing. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters) 	
 3C-03: Regular Procedure - ReceiverID_List Propagation when an Active Receiver is Connected Downstream Verify the Repeater DUT sends an updated ReceiverID_List message when a new active downstream Receiver is connected and HDCP Content is flowing. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters) 	
 3C-04: Irregular Procedure - New Authentication after AKE_Init Verify the Repeater DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the transmission of AKE_Init in the unauthenticated state. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters) 	E
 3C-05: Irregular Procedure - New Authentication during Locality Check Verify the Repeater DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the reception of LC_Init. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters) 	
3C-06: Irregular Procedure - New Authentication after SKE_Send_Eks Verify the Repeater DUT restarts authentication when a new AKE_Init and r_tx is transmitted right after the reception of SKE_Send_Eks. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3C-07: Irregular Procedure - New Authentication during Link Synchronization Verify the Repeater DUT restarts authentication when a new AKE_Init and r_tx is transmitted during Link Synchronization. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3C-08: Irregular Procedure - Rx Certificate Invalid Verify the Repeater DUT considers it a failure of authentication and does not send RepeaterAuth_Send_ReceiverID_List message when the certificate received from the Receiver is invalid. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
	¥ Close

Select the second set of 3C tests on the Repeater with Tx and Repeater tab.

S HDMI HDCP 2.2 Repeater CT 1.0	
🖄 CDF Entry 🗸 Test Selection 🕨 Test Options / Preview	
Copen Save Select All Tests Deselect All Tests	
Downstream with Receiver Downstream with Repeater Dupstream with Transmitter Repeater with TX and Repeater	
Select All on Page	
 3C-11: Regular Procedure - Transmitter - DUT - Repeater (With stored Km) Verify the Repeater DUT's implementation of the HDCP protocol when an HDCP Transmitter is connected to the upstream Repeater port and an HDCP Repeater is connected to the downstream Repeater port. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters) 	
3C-12: Regular Procedure - Receiver disconnect after AKE_Init Verify the Repeater DUT propagates Receiver Disconnect and Receiver Connect Indication on Repeater disconnect and connect, respectively.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
3C-13: Regular Procedure - Receiver disconnect after Km Verify the Repeater DUT restarts authentication after the Repeater is disconnected and reconnected following the exchange of Km.	E
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
 3C-14: Regular Procedure - Receiver disconnect after locality check Verify the Repeater DUT restarts authentication after the Repeater is disconnected and reconnected after locality check is initiated. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters) 	
3C-15: Regular Procedure - Receiver disconnect after Ks Verify the Repeater DUT restarts authentication after the Repeater is disconnected and reconnected following the exchange of Ks.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
 3C-16: Irregular Procedure - Timeout of Receiver ID list Verify the Repeater DUT considers it a failure of authentication and does not send RepeaterAuth_Send_ReceiverID_List message when the downstream repeater fails to provide RepeaterAuth_Send_ReceiverID_List message prior to expiration of the watchdog timer. (Required License: HDMI HDCP 2.2 Compliance Test for Repeaters) 	
✓ 3C-17: Irregular Procedure - Verify V' Verify the Repeater DUT considers it a failure of authentication and does not send RepeaterAuth_Send_ReceiverID_List message when the downstream repeater provides a value for V' that does not match V.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	
✓ 3C-18: Irregular Procedure - DEVICE_COUNT Verify the Repeater DUT asserts MAX_DEVS_EXCEEDED bit in RepeaterAuth_Send_ReceiverID_List message if the computed DEVICE_COUNT exceeds 31.	
(Required License: HDMI HDCP 2.2 Compliance Test for Repeaters)	-
i de la companya de l	Close

4. You can save the Test Selection options using the **Save** activation button.

	HDMI HDCP 2.2 Repeater CT 1.0
	🔯 CDF Entry 🗸 Test Selection 🕨 Test Options / Preview
	C Open Save Select All Tests Deselect All Tests
	Downstream with Receiver Downstream with Repeat Upstream with Transmitter P Repeater with TX and Repeater
1	Select All on Page Clear All on Page

A dialog box will appear as follows. Simply assign a name and click on the **Ok** activation button. Click **Cancel** to exit.

HDMI HDCP 2.2 Repeater CT: Save Test Selections		
Test Selection File		
Enter a file name for the Test Selection.		
HDCP_22_RPT_Test_Select_3.xml		
The name already exists.		
HDCP_22_RPT_Test_Select.xml		
HDCP_22_RPT_Test_Select_2.xml		
HDCP_22_RPT_Test_Select_3.xml		
Cancel 📀 Ok		

5.18 Executing the HDMI HDCP 2.2 3C Series Repeater Compliance Tests

Use the following procedures to initiate the execution of an HDMI HDCP 2.2 3C series Repeater Compliance test series.

To initiate a test series:

1. Select the **Test Options / Preview** panel as shown below.

W HDMI HDCP 2.2 Repeater CT 1.0	
CDF Entry V Test Selection > Test Options / Preview	
Test List	
All V K Instrument My980 [192.168.254.153]	Execute Tests
Category / Test Name	× ^
Upstream with Transmitter	
3C-01: Regular Procedure - Transmitter - DUT- Receiver	V
JC-02: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Disconnected Downstream	×
¥ Iter 01:	×
🖌 📙 3C-03: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Connected Downstream	×
¥ Iter 01:	×
> 🗏 3C-04: Irregular Procedure - New Authentication after AKE Init	V
> 🗏 3C-05: Irregular Procedure - New Authentication during Locality Check	V
b 20-06: Irregular Procedure - New Authentication after SKE Send Eks	V
b 20-07: Irregular Procedure - New Authentication during Link Synchronization	V
B 3C-08: Irregular Procedure - Rx Certificate Invalid	V
4 🗏 3C-09: Irregular Procedure - Invalid H'	V
• Iter 01: Invalid H'	V
• Iter 02: Timeout H'	V
4 🗏 3C-10: Irregular Procedure - Locality Failure	V
• Iter 01: Invalid L'	× =
• Iter 02: Timeout L'	V
Repeater with TX and Repeater	
> 🗏 3C-11: Regular Procedure - Transmitter - DUT - Repeater (With stored Km)	V
> 🗏 3C-12: Regular Procedure - Receiver disconnect after AKE Init	V
> 🗏 3C-13: Regular Procedure - Receiver disconnect after Km	V
> 🗏 3C-14: Regular Procedure - Receiver disconnect after locality check	V
b 🖪 3C-15: Regular Procedure - Receiver disconnect after Ks	V
🕨 📗 3C-16: Irregular Procedure - Timeout of Receiver ID list	V
b 3C-17: Irregular Procedure - Verify V'	V
b 🔄 3C-18: Irregular Procedure - DEVICE COUNT	V
b 🗄 3C-19: Irregular Procedure - DEPTH	V
b 🗄 3C-20: Irregular Procedure - MAX DEVS EXCEEDED	V
b 🗄 3C-21: Irregular Procedure - MAX CASCADE EXCEEDED	V
> 🔄 3C-22: Regular Procedure - Repeater with zero downstream device	V
🛛 📙 3C-23: Regular Procedure - Propagation of HDCP 2 0 REPEATER DOWNSTREAM flag	V
> 📃 3C-24: Regular Procedure - Propagation of HDCP1 DEVICE DOWNSTREAM flag	V
🖌 📃 3C-25: Regular Procedure - Content Stream Management	V
• Iter 01: Valid M'	V
a Ther D2: Thualid M'	<u> </u>
2.C. 015 Parallels Recordure - Transmitter - DLT- Receiver	
Device and the second	
	🔀 Close

2. (Optional) Review the list of tests for each category. If you wish to skip some of the tests. You can skip tests by clicking on the Check mark on the right side of the **Test Options / Preview** panel.

The screen shot below shows some of the tests that have been skipped (highlighted in yellow with a red X).
BINI HDCP 2.2 Repeater CT 1.0	
CDE Fortry of Test Selection > Test Options / Preview	
Tastlist	
	Execute Tests
Category / Test Name	
Upstream with Transmitter Description	
Leg St11: Regular Procedure - transmitter - DUT- Receiver	
• Iter 10, Not Frev Connected - Stim Mgmt Serial	
V Ter 03, Not Prev Connected - Strin Symt Barallel	
Viter D4: Prev Connected - Strm Mont Parallel	×
3C-02: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Disconnected Downstream	×
¥ Iter 01:	×
A SC-03: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Connected Downstream	×
X Iter 01:	×
> 🗏 3C-04: Irregular Procedure - New Authentication after AKE Init	V
> 🖪 3C-05: Irregular Procedure - New Authentication during Locality Check	V
> 🗏 3C-06: Irregular Procedure - New Authentication after SKE Send Eks	V
> 📙 3C-07: Irregular Procedure - New Authentication during Link Synchronization	\checkmark
> 🧾 3C-08: Irregular Procedure - Rx Certificate Invalid	\checkmark
> 🖪 3C-09: Irregular Procedure - Invalid H'	V
> 🔄 3C-10: Irregular Procedure - Locality Failure	V
A P Repeater with TX and Repeater	
> 32-11: Regular Procedure - Transmitter - DUT - Repeater (With stored Km)	×
> 32-12: Regular Procedure - Receiver disconnect after AKE Init	×
3C-13: Regular Procedure - Receiver disconnect after Km	
30-14: Regular Procedure - Receiver disconnect after locality check	
▷ 30-15: Regular Procedure - Receiver disconnect after Ks	
E 30-16: Irregular Procedure - Timeout of Receiver ID 11st	
b) 3C-11: Integular Procedure - Verily V.	
V 30-20. Tregular Procedure - MAY DEVS EXCEEDED	
Soc-21: Integrater Procedure - MAX CASCARDERED	
3C-22: Regular Procedure - Repeater with zero downstream device	×
3C-23: Regular Procedure - Propagation of HDCP 2 0 REPEATER DOWNSTREAM flag	V
> 3C-24: Regular Procedure - Propagation of HDCP1 DEVICE DOWNSTREAM flag	V
> 3 3C-25: Regular Procedure - Content Stream Management	V
Ter M: Drev Connected - Strm Mamt Darallel	
	🔀 Close

3. Connect to the 980 Test Instrument if you have not already done so. Use the **Instrument** selection pull-down as indicated below.

C HDMI HDCP 2.2 Repeater CT 1.0	
CDF Entry V Test Selection F Test Options / Preview	
Test List	
All 🖌 X Instrument: My_980 [192.168.254.153]	▼ ► Execute Tests
Category / Test Name	×

Click on the **Execute Tests** activation button to initiate the test suite. You will be prompted for a name for the tests. This dialog box is shown below.

A dialog box prompting you to name the test results files appears as shown below:

Н	DMI HDCP 2.2 Repeater CT Results
	Test Results Name
	Execute HDMI HDCP 2.2 Repeater Compliance Tests on Instrument: My_980 @ 192.168.254.153
	Enter a name for the Test Results.
	Acme_XYZ_HDCP_22_Repeater_3Cl1
	Acme_XYZ_HDCP_22_Repeater_3A_1 Acme_XYZ_HDCP_22_Repeater_3B_1

Select a name and click on the **Ok** activation button. A test window appears showing the progress of the test with a log window on the lower half. Refer to the screen example below.

HDMI HDCP 2.2 Repeater Compliance Test (1.0): "Acme_XYZ_HDCP_22_Repeater_3C_2"			
Test List			
All S Reset Status			
Category / Test Name	V	Status	^
Upstream with Transmitter			
3C-01: Regular Procedure - Transmitter - DUT- Receiver	1	Incomplete	
▶ 😝 Iter 01: Not Prev Connected - Strm Mgmt Serial	\checkmark	Pass	
↓ Go Iter 02: Prev Connected - Strm Mgmt Serial	\checkmark	Pass	
💥 Iter 03: Not Prev Connected - Strm Mgmt Parallel	×	User Skipped	
💥 Iter 04: Prev Connected - Strm Mgmt Parallel	×	User Skipped	
🛛 🖉 BC-02: Regular Procedure - ReceiverID List Propagation when an Active Receiver is D	×	Incomplete	_
X Iter 01:	×	User Skipped	-
Image: Sc-03: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Compared and Science Scien	X	Incomplete	
X Iter 01:	×	User Skipped	
3C-04: Irregular Procedure - New Authentication after AKE Init	1	Pass	
▶	\checkmark	Pass	
▲ 🗏 3C-05: Irregular Procedure - New Authentication during Locality Check	1	In Progress	
➡ Iter 01;	V	In Progress	
3C-06: Irregular Procedure - New Authentication after SKE Send Eks	V	Not Tested	
3C-07: Irregular Procedure - New Authentication during Link Synchronization	V	Not Tested	
3C-08: Irregular Procedure - Rx Certificate Invalid	V	Not Tested	
3C-09: Irregular Procedure - Invalid H'	1	Not Tested	
• Iter 01: Invalid H'	V	Not Tested	
• Iter 02: Timeout H'	\checkmark	Not Tested	
A 🗏 3C-10: Irregular Procedure - Locality Failure	V	Not Tested	
• Iter 01: Invalid L'	V	Not Tested	
• Iter 02: Timeout L'	V	Not Tested	
A Preparter with TX and Repeater			
▶ 3C-11: Regular Procedure - Transmitter - DUT - Repeater (With stored Km)	V	Not Tested	-
	1.		
Test Log			
Line Message			^
• 0013 Test 3C-01 Iter 02 -> Pass			
• 0014 Test 3C-04-01			
• 0015 Executing the test.			
0016 Processing test results.			
• 0017 Test 3C-04 Iter 01 -> Pass			
• 0018 Test 3C-05-01			=
Note Producting the test			
in a second seco			-
Gancel the Compliance Test			
		-	

During the tests **Repeater Test Setup** dialog boxes will appear which require that you verify the repeater device under test is connected properly. The following screen shots depict these test setup instruction screens. Press **Continue** when you have the repeater device connected properly.











Rep	eater Test Setup
	Test 3C-11, Iter-01 Verify the Repeater DUT's implementation of the HDCP protocol when an HDCP Transmitter is connected to the upstream Repeater port and an HDCP Repeater is connected to the downstream Repeater port.
	Connect the test instruments downstream interface port Quantum Data, Inc. HDMI 1.4 protocol analyzer Card 4, Port 1 (TX) to the upstream HDCP 2.2 protected interface port of the DUT Connect an HDCP Repeater and HDCP Sink to the downstream HDCP protected interface port of the DUT. as shown in the diagram below.
	DUT (Pseudo-Source) DUT (Repeater) Repeater HDMI Sink
	* A Sink device that has already passed the Receiver Test. * A Repeater device that has already passed the Repeater Test.
	Cancel Compliance Test



Rev. A5

Repea	ter Test Setup
Ve	Test 3C-22, Iter-01 rify the Repeater DUT having no downstream devices either do the authentication with upstream as a Receiver or does not do the authentication.
	Connect the test instruments downstream interface port Quantum Data, Inc. HDMI 1.4 protocol analyzer Card 4, Port 1 (TX) to the upstream HDCP 2.2 protected interface port of the DUT Leave the DUT's downstream interface un-connected as shown in the diagram below.
	TE (pseudo-Source)
	Cancel Compliance Test

	980B Test Platform with HDMI Protocol Analyzer module
Н	DCP 2.2 Capable Repeater DUT

The test will continue and the results will be presented as shown in the screen example below.

During the test, the test results are shown as they occur in the **Test Options / Preview** panel. There is a green progress arrow $\stackrel{\frown}{\Longrightarrow}$ which points to the test that is currently being run. Refer to the screen shot below.

Rev. A5

HDMI HDCP 2.2 Repeater Compliance Test (1.0): "Acme_XYZ_HDCP_22_Repeater_3C_2"			
Test list			
All V X ORESET Status			
Category / Test Name	V	Status	
▲ ► Unstream with Transmitter			
G 3C-01: Regular Procedure - Transmitter - DUT- Receiver	V	Incomplete	
▶ 😝 Iter 01: Not Prev Connected - Strm Mgmt Serial	V .	Pass	
▶ 🖗 Iter 02: Prev Connected - Strm Mgmt Serial	V	Pass	
🞇 Iter 03: Not Prev Connected - Strm Mgmt Parallel	×	User Skipped	
🞇 Iter 04: Prev Connected - Strm Mgmt Parallel	×	User Skipped	
I 3C-02: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Di	×	Incomplete	E
💥 Iter 01:	×	User Skipped	
▲ 🗏 3C-03: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Co	×	Incomplete	
💥 Iter 01:	×	User Skipped	
SC-04: Irregular Procedure - New Authentication after AKE Init	V .	Pass	
▶ 📦 Iter 01:	V	Pass	
▲ 🔄 3C-05: Irregular Procedure - New Authentication during Locality Check	V .	Pass	
▶ 📦 Iter 01:	V	Pass	
🔺 🗏 3C-06: Irregular Procedure - New Authentication after SKE Send Eks	V	Pass	
▶ 📦 Iter 01:	V	Pass	
🔺 🗏 3C-07: Irregular Procedure - New Authentication during Link Synchronization	V	Pass	
▶ \varTheta Iter 01:	V	Pass	
🖌 🖪 3C-08: Irregular Procedure - Rx Certificate Invalid	V	In Progress	
📦 Iter 01:	V	In Progress	
▲ 🗏 3C-09: Irregular Procedure - Invalid H'	V	Not Tested	
• Iter 01: Invalid H'	V	Not Tested	
• Iter 02: Timeout H'	\checkmark	Not Tested	
🖌 🖪 3C-10: Irregular Procedure - Locality Failure	\checkmark	Not Tested	
• Iter 01: Invalid L'	\checkmark	Not Tested	-
Test Log			
Line Message			~
• 0025 Test 3C-06 Iter 01 -> Pass			
• 0026 Test. 3C-07-01			
• 0027 Executing the test.			
• 0028 Processing test results.			
• 0029 Test 3C-07 Iter 01 \rightarrow Pass			
(001) Executing the test			=
bactuting the test.			*
Cancel the Compliance Test			

Important Note: If you are testing a repeater device that has more than one output and if you have indicated that on the CDF for these tests, then the 3C-02 and 3C-03 tests will be run and require a different test setup. The test setups will be presented in the dialog boxes of the test. Refer to the example screen shots below. The first screen shows the test setup for the 3C-02 test and second screen shows the test setup for the 3C-03 test.

If you do not have the repeater device under test in the proper mode, an error dialog box will appear.

The lower panel **Test Log** (above) shows the testing activity as it occurs. You can cancel the compliance test or pause at any time. If you pause the test you can resume later at any time even if you exit the 980 Manager application.

June 10, 2015

y w Reset Status ategory / Test Name Upstream with Transmitter 3 3C-01: Regular Procedure - Transmitter - DUT- Receiver ⇒ Ofter 01: Not Prev Connected - Strm Momt Serial	V	
Ategory / Test Name Upstream with Transmitter 3 3C-01: Regular Procedure - Transmitter - DUT- Receiver • © Iter 01: Not Prev Connected - Strm Momt Serial	V	
Upstream with Transmitter ■ 3C-01: Regular Procedure - Transmitter - DUT- Receiver → ● ter 01: Not Prev Connected - Strm Momt Serial		Status
3C-01: Regular Procedure - Transmitter - DUT- Receiver Image: Proceedure - Strm Momt Serial		
Martin Martin Martin Strategie - Stra Mart Serial	V	Incomplete
	V	Pass
) General Iter 02: Prev Connected - Strm Mgmt Serial	V	Pass
💥 Iter 03: Not Prev Connected - Strm Mgmt Parallel	×	User Skipped
💥 Iter 04: Prev Connected - Strm Mgmt Parallel	×	User Skipped
🗏 3C-02: Regular Procedure - ReceiverID List Propagation when an Active Receiver is	Di 🗙	Incomplete
¥ Iter 01:	×	User Skipped
🗏 3C-03: Regular Procedure - ReceiverID List Propagation when an Active Receiver is	Co: 🗙	Incomplete
¥ Iter 01:	×	User Skipped
🗏 3C-04: Irregular Procedure - New Authentication after AKE Init	V	Pass
▷ 🕒 Iter 01:	V	Pass
🗏 3C-05: Irregular Procedure - New Authentication during Locality Check	V	Pass
▷ 🔂 Iter 01:	V	Pass
🗏 3C-06: Irregular Procedure - New Authentication after SKE Send Eks	V	Pass
> 😝 Iter 01:	\checkmark	Pass
🗏 3C-07: Irregular Procedure - New Authentication during Link Synchronization	\checkmark	Pass
▷ 😝 Iter 01:	\checkmark	Pass
🗏 3C-08: Irregular Procedure - Rx Certificate Invalid	V	In Progress
🕽 📦 Iter 01:	\checkmark	In Progress
🗏 3C-09: Irregular Procedure - Invalid H'	\checkmark	Not Tested
• Iter 01: Invalid H'	\checkmark	Not Tested
• Iter 02: Timeout H'	\checkmark	Not Tested
🗏 3C-10: Irregular Procedure - Locality Failure	\checkmark	Not Tested
• Iter 01: Invalid L'	\checkmark	Not Tested

When the tests are completed the **Test Log** will indicate Test Completed as shown below.

HDMI HDCP 22 Repeater Compliance Test (1.0): "Acme_XYZ_HDCP_22_Repeater_3C_2"			
Text lit			
All V & Reset Status			
	1	Status	
Category / test Name		Status	
		Pass	
Solution of the second se		Pass	
Petter U:		Pass	
A transmission of the second s		Pass	
→ Jer of.		Pass	
A Ter 11:		Page	
C-18: Trregular Procedure - DEVICE COINT		Pass	
No Ter 01:		Pass	
3C-19: Irregular Procedure - DEPTH		Pass	
No Ter 01:		Pass	
3C-20: Irregular Procedure - MAX DEVS EXCEEDED		Pass	
▶ ■ Iter 01:		Pass	
3C-21: Irregular Procedure - MAX CASCADE EXCEEDED	×	Pass	
▶ Lter 01:	× -	Pass	
3C-22: Regular Procedure - Repeater with zero downstream device	× –	Pass	
▶ Iter 01:	×	Pass	
3C-23: Regular Procedure - Propagation of HDCP 2 0 REPEATER DOWNSTREAM flag	V	Pass	
▶ 🔂 Iter 01:	V	Pass	
3C-24: Regular Procedure - Propagation of HDCP1 DEVICE DOWNSTREAM flag	\checkmark	Pass	
▶ 📦 Iter 01:	\checkmark	Pass	
🔺 🗏 3C-25: Regular Procedure - Content Stream Management	\checkmark	Pass	
b	\checkmark	Pass	
b → Iter 02: Invalid M'	\checkmark	Pass	
b 😝 Iter 03: Timeout	\checkmark	Pass	-
Test I on			
Line Message			*
• 0116 Processing test results.			
• 0117 Test 3C-25 Iter 02 -> Pass			
• 0118 Test 3C-25-03			
• 0119 Executing the test.			
• 0120 Processing test results.			
• 0121 Test 3C-25 Iter 03 -> Pass			
• 0122 Tests completed			
			*
Close Window Continue Testing			

When you close the test execution window, the Compliance Test Viewer window will appear showing the results of the test. Please refer to the following section for details on viewing the compliance test results.

5.19 Viewing Details of Repeater 3C Compliance Test Results

When you have completed the test series you will have an opportunity to view the detailed data for a particular failure or a test that passed. Use the following procedures to view the details of a failure.

To view the details of a failure:

1. Expose the detailed results of a failure and highlight a results record. Refer to the screen example below.

Compliance Test Results Viewer		
HDMI HDCP 2.2 Repeater (1.0) Compliance Test Results		
Results Name: Acme_XYZ_HDCP_22_Repeater_3C_2 Manufacturer: Acme		HTML Report
Date Tested: April 6, 2015 4:09 PM Model Name: XYZ		
Overall Status: CTS 1.0 - Incomplete Port Tested: 1		
Test Results		
Test Name / Details	0	Status
3C-01: Regular Procedure - Transmitter - DUT- Receiver		Incomplete
▶ 🗏 3C-02: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Disconnected Downstream		Incomplete
> 🗏 3C-03: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Connected Downstream		Incomplete
B 3C-04: Irregular Procedure - New Authentication after AKE Init		Pass
> 🗏 3C-05: Irregular Procedure - New Authentication during Locality Check		Pass
> 🗏 3C-06: Irregular Procedure - New Authentication after SKE Send Eks		Pass
> 🗏 3C-07: Irregular Procedure - New Authentication during Link Synchronization		Pass
> 🗏 3C-08: Irregular Procedure - Rx Certificate Invalid		Pass
> 🗏 3C-09: Irregular Procedure - Invalid H'		Pass
> 🗏 3C-10: Irregular Procedure - Locality Failure		Pass
> 🗏 3C-11: Regular Procedure - Transmitter - DUT - Repeater (With stored Km)		Pass
> 🗏 3C-12: Regular Procedure - Receiver disconnect after AKE Init		Pass
🔺 🗏 3C-13: Regular Procedure - Receiver disconnect after Km		Fail
b 🤒 Iter 01:		Fail
> 🗏 3C-14: Regular Procedure - Receiver disconnect after locality check		Pass
> 🗏 3C-15: Regular Procedure - Receiver disconnect after Ks		Pass
> 🗏 3C-16: Irregular Procedure - Timeout of Receiver ID list		Pass
> 🗏 3C-17: Irregular Procedure - Verify V'		Pass
> 🗏 3C-18: Irregular Procedure - DEVICE COUNT		Pass
> 🗏 3C-19: Irregular Procedure - DEPTH		Pass
> 🗏 3C-20: Irregular Procedure - MAX DEVS EXCEEDED		Pass
> 🗏 3C-21: Irregular Procedure - MAX CASCADE EXCEEDED		Pass
> 🗏 3C-22: Regular Procedure - Repeater with zero downstream device		Pass
> 🗏 3C-23: Regular Procedure - Propagation of HDCP 2 0 REPEATER DOWNSTREAM flag		Pass
> 🗏 3C-24: Regular Procedure - Propagation of HDCP1 DEVICE DOWNSTREAM flag		Pass
> 🗏 3C-25: Regular Procedure - Content Stream Management		Pass
3C-01: Regular Procedure - Transmitter - DUT- Receiver		
และแกแผนะ [เงม่ออก (ารราสตรรษสาวว)		Continue Test Execution
		🔀 Close

Rev. A5

Compliance Test Results Viewer	_	_ >
HDMI HDCP 2.2 Repeater (1.0) Compliance Test Results		
Results Name: Acme_XVZ_HDCP_22_Repeater_3C_2 Manufacturer: Acme		HTML Rep
Date Tested: April 6, 2015 4:09 PM Model Name: XYZ		
Overall Status: CTS 1.0 - Incomplete Port Tested: 1		
Test Results		
Test Name / Details	0	Status
A 3C-01: Remular Procedure - Transmitter - DUT- Receiver	~	Incomplete
► Store fills of Proventies and String String Store S		Pass
Tter D2: Prev Connected - Strm Mont Serial		Pass
¥ Iter 03: Not Prev Connected - Strm Momt Parallel		User Skipped
W Iter 04: Prev Connected - Strm Momt Parallel		User Skipped
▶ ■ 3C-02: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Disconnected Downstream		Incomplete
3C-03: Regular Procedure - ReceiverID List Propagation when an Active Receiver is Connected Downstream		Incomplete
▶ 3C-04: Irregular Procedure - New Authentication after AKE Init		Pass
32-05: Irregular Procedure - New Authentication during Locality Check		Pass
3 3C-06: Irregular Procedure - New Authentication after SKE Send Eks		Pass
3 3C-07: Irregular Procedure - New Authentication during Link Synchronization		Pass
3 3C-08: Irregular Procedure - Rx Certificate Invalid		Pass
3 3C-09: Irregular Procedure - Invalid H'		Pass
🗏 3C-10: Irregular Procedure - Locality Failure		Pass
🗏 3C-11: Regular Procedure - Transmitter - DUT - Repeater (With stored Km)		Pass
🛛 🗏 3C-12: Regular Procedure - Receiver disconnect after AKE Init		Pass
• 🖪 3C-13: Regular Procedure - Receiver disconnect after Km		Fail
4 🕒 Iter 01:		Fail
• RX AUTH::ENTER		
• Clear Ready		
• RX UNAUTH::enter		
RX UNAUTH:HDMI/VIDEO Present		
• TX AUTH:MSG:HPD_DIS ts:0xdad577 us		
• TX UNAUTH::enter		
• TX UNAUTH:AKE_INIT ts:0x5297c00a us		
• TX UNAUTH:MSG RD:HPD_DIS ts:0x0 us		
• TX UNAUTH:**Test Cond.** hpdreg		
XX UNAUTH: Timer expired to receive AKE_INIT		
🗄 3C-14: Regular Procedure - Receiver disconnect after locality check		Pass
🗏 3C-15: Regular Procedure - Receiver disconnect after Ks		Pass
🗏 3C-16: Irregular Procedure - Timeout of Receiver ID list		Pass
🗏 3C-17: Irregular Procedure - Verify V'		Pass
🗄 3C-18: Irregular Procedure - DEVICE COUNT		Pass
🗏 3C-19: Irregular Procedure - DEPTH		Pass
3C-20: Irregular Procedure - MAX DEVS EXCEEDED		Pass
3C-21: Irregular Procedure - MAX CASCADE EXCEEDED		Pass
3C-22: Regular Procedure - Repeater with zero downstream device		Pass
13-23: Regular Procedure - Propagation of HDCP 2 0 REPEATER DOWNSTREAM flag		Pass
5 35-24: Regular Procedure - Propagation of HDCP1 DEVICE DOWNSTREAM flag		Pass
III 3C-25: Regular Procedure - Content Stream Management		Pass
3C-01: Regular Procedure - Transmitter - DUT- Receiver		·
)[0 K T 15
Instrument: [NJA90 [137109/1391]		Continue Test Executi
		🔀 Close

5.20 Viewing the HDMI HDCP 2.2 Repeater Compliance HTML test report

After you have completed the tests, you can view an HTML report. Use the procedures in <u>Viewing the HDMI HDCP</u> <u>2.2 Compliance HTML test report</u> to view the HDCP 2.2 Compliance test HTML report.

6 Viewing the HDMI HDCP 2.2 Compliance Test Results from the Navigation View

You can access the results of any test at any time through the **Navigation** view.

The examples in this section are taken from the HDCP 2.2 Source Compliance test, Section 1A; however please note that the procedure is the same for all sections of the HDCP 2.2 compliance test for sources, sinks or repeaters.

To view the test results of any test:

1. Access the **Navigator** pane and then select the **Compliance** sub-tab. Refer to the screen shot below.



Locate the Results you wish to view and double click on the file to view the results of all tests. Note that you can also open a test results file for viewing by using the Open icon. Refer to the example below.
 The test results will appear in the main window as shown below.

980 User Guide – HDMI HDCP 2.2 Compliance

📃 Compliance Test Results Viewer		- • ×
HDMI HDCP 2.2 TX (1.0) Compliance Test Results		
Results Name: HDCP_22_Test3 Manufacturer: Acme Date Tested: June 11, 2014 4:06 PM Model Name: XYZ Overall Status: CTS 1.0 - Fail Port Tested: 1		HTML Report
Test Results		
Test Name / Details	Q	Status
[] 1A-01: Regular Procedure: With previously connected Receiver (With stored Km)		Fail
🛛 🛃 1A-02: Regular Procedure: With newly connected Receiver (Without stored Km)		Fail
1A-03: Regular Procedure: Receiver disconnect after AKE Init		Pass
1A-04: Regular Procedure: Receiver disconnect after Km		Pass
1A-06: Regular Procedure: Receiver disconnect after Ks		Pass
▶ ■ 1A-07: Regular Procedure: Receiver sends REAUTH REQ after Ks		Pass
▶ 3 IA-II: Irregular Procedure: Invalid H		Pass
File-12: Irregular Procedure: Pairing Failure		Pace
Failure	-	Pass
	<u> </u>	
Instrument: MV980_DP [192.168.254.153]	► Cont	inue Test Execution
		X Close

Rev. A5

7 Viewing the HDMI HDCP 2.2 Compliance HTML test report

After you have completed the tests, an HTML Report activation button will appear in the upper right of the screen which enables you to access the html report of the test results. Use the following procedures to view the html test report.

The examples in this section are taken from the HDCP 2.2 Source Compliance test, Section 1A; however please note that the procedure is the same for all sections of the HDCP 2.2 compliance test for sources, sinks or repeaters.

To view the html test report:

- 1. Select the **CT Results** panel as shown below.
- 2. Click on the HTML Report activation button.

A dialog box will appear asking if you want a summary of the test results or a version that includes the CDF. This dialog box is shown in the screen shot below.

Generate Report
🗟 HTML Report
HDCP_22_Test3
Select the desired report options.
Show Test Summary Only.
🔀 Cancel 🗸 OK

The html report is shown in the following screens.

TML Viev	wer						
		C:\Users\nkendal	\980_Capture_Files_4_8\hdmi_h	ndcp2_tx\results\HDCP_22_	_Test3\Report_Cdf.htm		
Report g	generated on: June 11, 2014 4:19	PM TX	Quantum HDCP 2.2 CTS Compliance	<u>n Data</u> on HDMI 1.0 e Test Re	port	<u>www.quantumdata.com</u>	
	Ro S Ove	esults Name: Date Tested: erall Status:	HDCP_22_Tes June 11, 2014 4:00 Fail	t3 6 PM	Manufa Model Port 1	cturer: Acme Name: XYZ Fested: 1	
-							
			Report Index	/ Summary			
-	<u>Test 1A-01</u>	Fail	<u>Test 1A-02</u>	Fail	<u>Test 1A-03</u>	Pass	
-	<u>Test 1A_11</u>	Pass	<u>Test 1A 12</u>	Fail	<u>Test 1A-07</u>	Pass	
F	<u>1051 IA-11</u>)F	<u>Test IA-12</u> Equipme	nt Info	<u>16st 1A-15</u>	1 455	
		С	apabilities Declara	ation Form (CE	DF)		
Tes Regu	t 1A-01 lar Procedure: With prev	viously connected Receiv	er (With stored Km)			Fail	
•1	iter 01: INFO:RCVD:AKE INFO:MSG RCVD:/ INFO:Snd No_Store INFO:MSG SND:AF INFO:MSG RCVD:/ INFO:Pairing:patro	INIT ts:15297284 us AKE_Send_Cert ts:0xlk d_KM ts:0xle6ae01d ns Æ_Send_Cert ts:153975 AKE_No_Stored_Km ts	759a75 ns 60 us 15422211 us		👍 Back 🌢 Eonuar	Fail	

L ESU Regula	1A-02 ar Procedure: With newly connected Receiver (Without stored Km)	Fail
• It	er 01:	Fail
	HPD Deaaserted regular	
	MSG:HPD_DIS ts:0x1192ff8 ns	
	TX:UNAUTH::enter	
	HPD Asserted regular	
- 21	KA:UNAUTH HDMIAIDEO Breent	
- 21	MSC.VALID VER 4:0:0 m	
- 2	MSG. URD. IN trib-220 pr	
- 2	AKE INIT terflyba026a03 ne	
- 21	PCVD: AVE_INIT te:0 ne	
- 2	**Test Cond ** NoStrdKm	
- 2	MSC ROUD-AKE Sand Cart trifybaafabla ng	
	Snd Stored KM ts:0xhd294d63 ns	
	MSG SND:AKE Send Cert ts:101844 us	
	MSG SCOD-4KF Stored Km ts:108711 us	
	Stored KM received	
	Timer RETRY Expired	
	AKE INIT ts:0xff657e7c ns	
	MSG RCVD:AKE INIT ts:2889526 us	
	RCVD:AKE INIT ts:2889526 us	
	MSG RCVD:AKE Send Cert ts:0xff7585ac ns	
	Snd Stored KM ts:0x1fdab2f ns	
	MSG SND:AKE Send Cert ts:2991626 us	
	MSG RCVD:AKE Stored Km ts:2998453 us	
	MSG RCVD:AKE Send H Prime ts:0x21085fa ns	
	MSG SND:AKE Send H Prime ts:3009246 us	
	Snd LC Init ts:0x24ccc36 ns	
	MSG RCVD:LC_Init ts:3011429 us	
	MSG SND:LC_Send_L_Prime ts:3019353 us	
	MSG RCVD:LC_Send_L_Prime ts:0x24e1c32 ns	
	Snd SKE_Send_EKS ts:0x2a32a2d ns	
	TX:AUTH::enter	
	MSG RCVD:SKE_Send_Eks ts:3025595 us	
	RX:AUTHENTICATED	

You can also view the test equipment information (980 HDMI Protocol Analyzer firmware configuration) below.

	Test Equipment Information
	Instrument
Name: IP Ac Net N Gatev Free Versi	<pre>MV980_DP Mress: 192.168.254.153 lask: 255.255.255.0 ray IF: 192.168.254.1 Space: 86.44 GB of 144.22 GB (59.9%) .on: Advanced Test platform Version: 4.11.29 HDMI Video Generator in slot 2: Gateware: [Version: 4.16.1 Build Number: 1 (01:30:2013 00) pcb: 297b C] Firmware: [Version: 4.16.1 Build Number: 10076 (asingh 06:05:2014 09:00:40 CDT)] HDMI 980 protocol Analyzer in slot 4 (DDR 4096MB]: Gateware: [Version: 4.11.29 Build Number: 10076 (asingh 06:05:2014 09:00:40 CDT)] HDMI 980 protocol Analyzer in slot 4 (DDR 4096MB]: Gateware: [Version: 4.11.29 Build Number: 10009 (ssingh 06:10:2014 12:49:58 CDT)] System Information: System SN : [47A7D6CF50A38577::N/A] HDMI FA SN : [9DE7D010000::N/A] Main Board : ["DP67DE"] CPUx2 : [6.42.7 "Intel(R) Core(TM) 13-2100 CFU § 3.10GHz"] DDR : [2 GB] HD : [WD1600BEVT-0] OS : [Linux xpscope-58 2.6.26-2-666 f1 SMP Wed Sep 21 04:35:47 UTC 2011 1686 GNU/Linux GUI manager : [Version 4.11.29 7919 201406051458] 1 : [lo intet 127.0.0.1/8 scope host lo] 2 : [[eth0 intet 192.168.254.153/24 brd 192.168.254.255 scope global eth0] PCIE3 : [2.5x8] HDMI SINK CT: [4.6.1] HDMI SINK CT: [4.6.1] HDMI SINK CT: [4.6.0] HDMI SINK CT: [4.8.0] HDMI SINK CT: [4.8.0] HHL SINK CT: [4.8.0] HHL SINK CT: [4.8.0] HHL SINK CT: [4.8.0] HHL SINK CT: [4.8.0] HHMI SINK CT: [4.8.0]</pre>
	11051
UI Na UI Ho Java Java OS: v OS An Local Free	<pre>me: Quantum Data 980 Manager - Version 4.11.29 me: platform:/base/plugins/com.quantumdata.i980.app2 Vendor: Null Runtime: 1.6.0_15-b03 Home: C:\Users\nkendall\Desktop\980_Release_4_11_29\980mgr\jre rin32 rch: x86 .e: en_US Space: 6.49 GB of 223.47 GB (2.9%)</pre>

8 Canceling and Resuming the HDMI HDCP 2.2 Compliance

You can complete or resume a test series that was canceled earlier. The test results are saved in a directory that is accessible through the 980 GUI Manager interface. Use the following procedures to cancel and resume a canceled test.

The examples in this section are taken from the HDCP 2.2 Source Compliance test, Section 1A; however please note that the procedure is the same for all sections of the HDCP 2.2 compliance test for sources, sinks or repeaters.

8.1 Canceling a Canceled HDCP 2.2 Test:

To cancel a suspended HDCP 2.2 compliance test, use the following procedures.

To cancel a test:

1. Click on the **Cancel Compliance Test** activation button either on the popup dialog box or the bottom of the test log panel. See the screen example below.

HDMI HDCP 2.2 TX Compliance Test (1.0): "HDCP_22_Test11"		
Tectlict		
All V Reset Status		
Category / Test Name	\checkmark	Status
▲ ► TX with Receiver		
▲ 1A-01: Regular Procedure: With previously connected Receiver (With store	V	Fail
▶ Iter 01:	1	Fail
▲ 🗏 1A-02: Regular Procedure: With newly connected Receiver (Without stored	V	Pass
▶ ● Iter 01:	V	Pass
▲ 🗏 1A-03: Regular Procedure: Receiver disconnect after AKE Init	1	In Progress
➡ Iter 01:	1	In Progress
> 🗏 1A-04: Regular Procedure: Receiver disconnect after Km	\checkmark	Not Tested
> 🗏 1A-05: Regular Procedure: Receiver disconnect after locality check	\checkmark	Not Tested
🛛 🕨 🗏 1A-06: Regular Procedure: Receiver disconnect after Ks	\checkmark	Not Tested
🛛 🕨 🗏 1A-07: Regular Procedure: Receiver sends REAUTH REQ after Ks	\checkmark	Not Tested
▶ 📑 1A-08: Irregular Procedure: Rx certificate not received.	\checkmark	Not Tested
🔋 🕨 📑 1A-09: Irregular Procedure: Verify Receiver Certificate	\checkmark	Not Tested
▶ 📃 1A-10: Irregular Procedure: SRM	\checkmark	Not Tested
📃 🕨 📃 1A-11: Irregular Procedure: Invalid H'	\checkmark	Not Tested
🔋 🕒 📑 1A-12: Irregular Procedure: Pairing Failure	\checkmark	Not Tested
▶ 📑 1A-13: Irregular Procedure: Locality Failure	\checkmark	Not Tested
Test Log		
Line Message		^
• 0006 Test Paused; Press Continue when ready		
• 0007Continuing.		
• 0008 Restarting Test Execution		
• 0009 Test 1A-03-01		
• 0010 Set Configuration to: SOURCE		=
20011 Executing the test.		
		~
<u><</u> "		4
Cancel the Compliance Test		

An indication that the test was canceled with be shown in the Test Log lower panel and the status (see below).

HDMI HDCP 2.2 TX Compliance Test (1.0): "HDCP_22_Test11"			
Tect list			
All V Reset Status			
Category / Test Name	\checkmark	Status	*
TX with Receiver			
IA-01: Regular Procedure: With previously connected Received	νV	Fail	
b	\checkmark	Fail	
🖌 🖪 1A-02: Regular Procedure: With newly connected Receiver (N 🖌	Pass	
Iter 01:	1	Pass	
🖌 📕 1A-03: Regular Procedure: Receiver disconnect after AKE I	rV	Canceled	
• Iter 01:	\checkmark	Canceled	
🔈 🕒 🖪 1A-04: Regular Procedure: Receiver disconnect after Km	1	Not Tested	=
🛛 🕞 🗦 🗛 👌 🖡 👌 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹	.iV	Not Tested	
🔈 🗏 🗏 1A-06: Regular Procedure: Receiver disconnect after Ks	\checkmark	Not Tested	
🛛 🕞 🗦 🕞 🗛 🗛 🖟 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹 🕹	· 🖌	Not Tested	
▷ ▶ 1A-08: Irregular Procedure: Rx certificate not received.	\checkmark	Not Tested	
🕨 🕒 🗦 🕨 🕨 🕨 🕨 🕨 🕨 🕨 🕨 🕨 🕨 🕨 🕨 🕨	\checkmark	Not Tested	
🔈 🕒 🖪 1A-10: Irregular Procedure: SRM	\checkmark	Not Tested	
🔺 📃 1A-11: Irregular Procedure: Invalid H'	\checkmark	Not Tested	
Iter 01: Invalid H'	\checkmark	Not Tested	
Iter 02: H' Timeout with previously paired Recv Id	\checkmark	Not Tested	
Iter 03: H' Timeout with previously unpaired Recv Id	\checkmark	Not Tested	
Description of the second s	\checkmark	Not Tested	-
Test Log			
Line Message			~
• 0013 Test 1A-02 Iter 01 -> Pass			
• 0014 Test 1A-03-01			
• 0015 Executing the test.			
• 0016 Cancel Requested			
• 0017 Test 1A-03 Iter 01 -> Canceled			-
• 0018 Test Canceled by User			-
			·
X Close Window Continue Testing			

8.2 Resuming a Canceled HDCP 2.2 Test:

To resume a canceled HDCP 2.2 compliance test, use the following procedures.

To resume a canceled test:

1. Navigate to the Navigator/Compliance panel and open the HDMI HDCP Source CT/Results directory as shown below.



Either right click, double click or use the **Open** icon to open the CT Results panel on the main window.
 The CT Results window appears as shown below.

980 User Guide – HDMI HDCP 2.2 Compliance

Compliance Test Results Viewer		
HDMI HDCP 2.2 TX (1.0) Compliance Test Results		
Results Name: HDCP_22_Test11 Manufacturer: Acme Date Tested: July 9, 2014 3:27 PM Model Name: XYZ Overall Status: CTS 1.0 - Canceled Port Tested: 1		HTML Report
Test Results		
Test Name / Details	Q	Status
🕞 🗏 1A-01: Regular Procedure: With previously connected Receiver (With stored F		Fail
E 1A-02: Regular Procedure: With newly connected Receiver (Without stored Km)		Pass
> 🗏 1A-03: Regular Procedure: Receiver disconnect after AKE Init		Pass
E 1A-04: Regular Procedure: Receiver disconnect after Km		Canceled
🕨 🗏 1A-05: Regular Procedure: Receiver disconnect after locality check		Not Tested
🕨 🗏 1A-06: Regular Procedure: Receiver disconnect after Ks		Not Tested
🕨 📃 1A-07: Regular Procedure: Receiver sends REAUTH REQ after Ks		Not Tested
1A-08: Irregular Procedure: Rx certificate not received.		Not Tested
1A-09: Irregular Procedure: Verify Receiver Certificate		Not Tested
▶ 1A-10: Irregular Procedure: SRM		Not Tested
IA-11: Irregular Procedure: Invalid H		Not Tested
▶ 3 1A-12: Irregular Procedure: Pairing Failure		Not Tested
IA-13: Irregular Procedure: Locality Failure		Not Tested
1A-01: Regular Procedure: With previously connected Receiver (With stored Km)		
Instrument: MV980_DP [192.168.254.153]	- 🕨 C	ontinue Test Execution
		💢 Close

3. Click on the **Continue Test Execution** button on the lower left (above) to resume the tests. An indication that the test has been resumed will appear in the lower Test Log panel (below).

June 10, 2015

Rev. A5

980 User Guide – HDMI HDCP 2.2 Compliance

Rev. A5

	Test List	
All 🖉 🗶 🤄 Reset Status		
Category / Test Name	×	Status
TX with Receiver		
🛛 🗏 1A-01: Regular Procedure: With previ	iously connected Receive 🗸	Fail
þ 😝 Iter 01:	\checkmark	Fail
IA-02: Regular Procedure: With newly	y connected Receiver (Wi🎸	Pass
IA-03: Regular Procedure: Receiver of the second	disconnect after AKE Ini 🗸 👘	Pass
IA-04: Regular Procedure: Receiver of the second	disconnect after Km 🛛 🗸 🗸	Canceled
IA-05: Regular Procedure: Receiver of the second	disconnect after localit🎸	Not Tested
1A-06: Regular Procedure: Receiver of the second	disconnect after Ks 🛛 🗸	Not Tested
IA-07: Regular Procedure: Receiver s	sends REAUTH REQ after K🗸	Not Tested
IA-08: Irregular Procedure: Rx cert:	ificate not received. 🛛 🗸	Not Tested
IA-09: Irregular Procedure: Verify I	Receiver Certificate 🛛 🗸	Not Tested
IA-10: Irregular Procedure: SRM	×	Not Tested
IA-11: Irregular Procedure: Invalid	н' 🗸	Not Tested
IA-12: Irregular Procedure: Pairing	Failure 🗸	Not Tested
IA-13: Irregular Procedure: Locality	y Failure 🗸 🗸	Not Tested
ne Message	Test Log	
0001 Restarting the Compliance Te	est.	
July 9, 2014 3:31 PM		
0003 Initialization.		
Assembling the test list.		
0005 Transferring the CDF to the Tes	st Instrument.	
0006 Test Paused; Press Continue when rea	ady	

9 Exporting Compliance Test Results Files to a PC

The 980 HDMI Protocol Analyzer offers portability of data. You can disseminate compliance tests to other locations for analysis by other colleagues.

If you ran the HDCP compliance tests from the embedded GUI you will have to transfer these compliance test files to your PC if you want to disseminate them to others. You can transfer the files from the 980 HDMI Protocol Analyzer module to your host PC in three ways: 1) Data Transfer GUI utility, 2) USB drive, 3) command line FTP. Only the export method involving Data Transfer Utility will be described in the following.

9.1 Transferring Compliance Test Files using the Data Transfer Utility

You can transfer files easily using the 980 GUI Manager's **Data Transfer** utility. If you have ran the compliance test through the embedded 980 GUI Manager then you will first have to transfer the compliance test results file from the 980 test instrument to you host PC. The procedure is the same whether you are transferring the results of the Transmitter test or the Receiver test. This procedure uses the HDCP 2.2 Receiver tests. Follow the procedures below.

To transfer Compliance Test files from the 980 Protocol Analyzer module to your PC using the Data Transfer utility:

1. Through the external 980 GUI Manager, access the Compliance tab on the Navigator. Refer to the screen shots below.



2. Access the **Data Transfer** utility by double clicking on the Transfer Data icon in one of the data sets in the Navigator window.



The **Data Transfer: Results** dialog box appears (below) enabling you to select the 980 HDMI Protocol Analyzer that you want to transfer data from. Select the desired 980 HDMI Protocol Analyzer and click OK. The **Data Transfer** panel will appear.

Data Transfer: Results
Select an Instrument to exchange data with.
Select an Instrument:
Wy_980 [192.168.254.153]
II_1980 [192.168.254.185]
WK_980 [192.168.254.174]
🕂 Add 🗸 Ok 🙆 Cancel

The **Data Transfer** panel appears in context with the files on the 980 (Instrument) under the **Instrument Files** available as shown below.



3. Highlight a directory on the Local Files side (host PC) and then initiate a Copy or Move.

The file appears on the PC host Local Files (below).







9.2 Exporting Compliance Test Files

Once you transfer the files to your PC (or if you have them on the PC from running the test through the external GUI Manager, you can disseminate the results to others. When you export a results file, the 980 provides a zipped self-contained file with all the results. The procedures for exporting files for distribution are provided below.

To export compliance test results files:

1. Through the external 980 GUI Manager, access the Compliance tab on the Navigator. Refer to the screen shots below.



2. Right click on the Results file that you want to export. Refer to the screen example below.



You will then be presented with an Windows Explorer window to save the zipped export in a directory of your choosing.

You can then distribute this zip file to other through email, file transfer or cloud storage utiliites.

END OF USER GUIDE