



UNIGRAF Product Catalog 2020



DisplayPort™ Test Tools

UCD-400 • DisplayPort™ 1.4a 8K & HBR3 Video Analyzer & Generator.....	5
UCD-411 • DisplayPort™ 1.4a 8K & HBR3 Video Generator.....	6
UCD-323 • 4K Test tool for Testing DP 1.2 and HDMI 2.0 Sinks and Sources	7
UCD-301 • 4K Test Tool for Testing DP 1.2 and HDMI 2.0 Sources	7
DPA-400 • DisplayPort™ 1.4 AUX Channel Monitor.....	8
DPR-100 • Full Featured DP 1.1 Compliant RefSink Sink.....	9
DPT-200 • Full Featured DP 1.1 Compliant RefSource Source.....	9

HDMI™ Test Tools

UCD-422 • HDMI 2.1 10K Video Generator & Analyzer	11
UCD-323 • 4K Test tool for Testing HDMI 2.0 and DP 1.2 Sinks and Sources	12
UCD-301 • 4K Test Tool for Testing HDMI 2.0 and DP 1.2 Sources	12
UFG-06 • Interoperability Test Tool for HDMI 1.4 Sources	13

USB-C™ Test Tools

UCD-424 • USB-C DP Alt Mode 8k Video Generator & Analyzer	15
UCD-340 • Integrated Analyzer and Test Equipment for DisplayPort™ over USB-C™	16
External Power Unit - Enables UCD-340 to test Vbus Voltages From 5V to 20V	16
UCD-240 • Automated USB-C DisplayPort™ Alt Mode Tester with Electrical Test	17

DisplayPort™ Compliance Test Tools

Link Layer Compliance Testing Tools

UCD-400 • DisplayPort™ 1.4 Link Layer CTS for testing Sink, Source, and Branch DUT	19
DPR-120 • VESA Certified Link Layer 1.2 CTS Tool for testing Source DUT	19

Authorized HDCP 2.3 Compliance Testing Tools

UCD-400 • HDCP 2.3 CTS for testing Transmitter, Receiver, and Repeater on DP.....	20
UCD-340 • HDCP 2.3. CTS Tool for testing Transmitter and Receiver on DisplayPort™ over USB-C™	20
UCD-323 • HDCP 2.3 Tool for testing Transmitter and Receiver on DisplayPort™	21
UCD-301 • HDCP 2.3 CTS Tool for testing Transmitter on DisplayPort™.....	21
HDCP 2.3 CTS Software - UCD-400 or UCD-300 Series Test Equipment as Hardware Platform	22

Authorized HDCP 1.3 Compliance Testing Tools

DPR-100 • HDCP 1.3 CTS Tool for testing Transmitter on DisplayPort™	23
DPT-200 • HDCP 1.3 CTS Tool for testing Receiver on DisplayPort™	23



Product Feature Matrix

	UCD-424	UCD-422	UCD-411	UCD-400	UCD-340	UCD-323	UCD-301	DPA-400	DPR-120	DPR-100	DPT-200	UFG-06
Video Testing												
DP 1.4 (HBR3)	•		•	•								
DP 1.4 (HBR2)					•	•	•	•				
DP 1.2									•			
DP 1.1										•	•	•
HDMI 2.1 (FRL/TMDS)		•										
HDMI 2.0						•	•					
HDMI 1.4												•
USB-C™ with DisplayPort™ Alt Mode	•				•							
External Power Unit 20V / 5A					•							
Dolby Vision™						•						
Analyzer	•	•		•	•	•	•		•	•		•
Pattern Generator	•	•	•	•	•	•					•	
Multi Stream	•		•	•					•			
DSC	•	•	•	•								
Enhanced Gaming Features (VRR, ALLM)		•				•						
TSI SDK	•	•	•	•	•	•	•					•
GUI Software												
Video and Audio - Capture and Preview	•	•		•	•	•	•					•
10K Capability		•										
8K Capability	•	•	•	•								
4K Capability	•	•	•	•	•	•	•		•			
HDCP 2.2/2.3	•	•	•	•	•	•	•	•	•	•		
HDCP 1.3/1.4	•	•	•	•	•	•	•	•	•	•	•	•
Link Status	•	•	•	•	•	•	•		•	•	•	
DPCD - Read and Write	•		•	•	•	•	•		•	•	•	
EDID - Read and Write	•	•	•	•	•	•	•		•	•	•	•
AUX Monitor								•				
AUX Analyzer	•	•	•	•	•	•	•					
Frame Level CRC Comparison	•	•		•	•	•	•					
Pixel to Pixel Comparison	•	•		•	•	•	•					•
Compliance Testing												
DP 1.4 Link Layer CTS	•		•	•								
DP 1.2 Link Layer CTS									•			
HDCP 1.3 CTS on DP										•	•	
HDCP 2.3 CTS on DP	•		•	•	•	•	•					
PHY CTS (AUX Controller)										•	•	



DisplayPort™ Test Tools

UCD-400

DisplayPort 1.4a • 8K & HBR3 Video Analyzer and Generator

UCD-400 is a test unit for verifying DisplayPort™ interfaces up to 8K@60Hz (with DSC), 8K@30Hz and 4K@120Hz video modes with HBR3 max bit rate capability. It is a flexible and robust tool either via a GUI on a laboratory desktop or via automated functionality tests. The associated software provides the user access to the vital parameters and controls needed when evaluating the various functions of the interface.

UCD-400 is a platform for DP 1.4a Link Layer Compliance Tests on Sinks, Sources and Branches*. It is a DCP LLC approved device for HDCP 2.2 & HDCP 2.3 Compliance Tests on Transmitters, Receivers & Repeaters*. The unit also supports FEC, DSC and LTTPR.

*Contact Unigraf for availability

For more information, please visit: [UCD-400 Web Page](#)

Download UCD-400 Data Sheet: [UCD-400 Data Sheet](#)

Highlights

- VESA Certified for DP 1.4a Link Layer CTS Tests
- DCP LCC Approved HDCP 2.2 & 2.3 CTS Tests
- 8K and 4K Reference DP Sink & Source
- DP 1.4a features:
 - » Up to HBR3 simultaneous input and output in one unit
 - » DSC, FEC and LTTPR support
 - » MST support (4 streams)
- Cable adapter for USB-C devices testing
- HDCP 1.3, HDCP 2.2 and HDCP 2.3 support



UCD-411

DisplayPort 1.4a • 8K & HBR3 Video Generator

UCD-411 is a video generator unit for testing DisplayPort™ sinks up to 8K@60Hz (with DSC), 8K@30Hz and 4K@120Hz video modes with HBR3 max bit rate capability. It is a flexible and robust tool either via a GUI on a laboratory desktop or via automated functionality tests. The associated software provides the user access to the vital parameters and controls needed when evaluating the various functions of the interface.

UCD-411 is a platform for DP 1.4a Link Layer Compliance Tests on Sinks and HDCP 2.2 & HDCP 2.3 Compliance Tests on Receivers. The unit also supports FEC, DSC and LTTTPR.

Highlights

- DP 1.4a Link Layer CTS for Sinks
- HDCP 2.2 & 2.3 CTS Tests for Receivers
- 8K and 4K Reference DP Source
- DP 1.4a features:
 - » HBR3 output
 - » DSC, FEC and LTTTPR support
 - » MST support (4 streams)
- Cable adapter for USB-C devices testing
- HDCP 1.3, HDCP 2.2 and HDCP 2.3 support



UCD-323

4K Video Generator & Analyzer for Testing HDMI 2.0 and DP 1.4a Sinks and Sources

UCD-323 is a UHD / 4K@60Hz compliant video capture unit and pattern generator for testing DisplayPort™ and HDMI™ Sinks and Sources. UCD-323 HDDP Dual enables testing all aspects of HDMI 2.0 and DP 1.4a with HBR2 max bit rate capability. UCD-323 is a DCP LLC approved device for testing HDCP 2.2 & HDCP 2.3 Compliance on DisplayPort™ Transmitters and Receivers. Run automated tests straight from the command line by using C++ Code. Automate everything from the complete set of Compliance Tests such as HDCP 2.3 CTS to simple video and audio tests in R&D debugging or production line environment. Unigraf also provides users with a library of scripts that can be used as an example for detailed tests.

For more information, please visit:

[UCD-323 Web Page](#)

Download UCD-323 Data Sheet:

[UCD-323 Data Sheet](#)



UCD-301

4K Video Analyzer for Testing HDMI 2.0 and DP 1.4a Sources

UCD-301 is a UHD / 4K@60Hz compliant video capture unit for testing DisplayPort™ and HDMI™ Sources. UCD-301 Digital enables testing all aspects of HDMI 2.0 and DP 1.4a with HBR2 max bit rate capability. UCD-301 is a DCP LLC approved device for testing HDCP 2.2 & HDCP 2.3 Compliance on DisplayPort™ Transmitters. UCD Console GUI is the preview and control PC software for UCD-323. Run automated tests straight from the command line by using C++ Code. Automate everything from the complete set of Compliance Tests such as HDCP 2.3 CTS to simple video and audio tests in R&D debugging or production line environment. Unigraf also provides users with a library of scripts that can be used as an example for detailed tests.

For more information, please visit:

[UCD-301 Web Page](#)

Download UCD-301 Data Sheet:

[UCD-301 Data Sheet](#)



DPA-400

DisplayPort™ 1.4 AUX Channel Monitor

DPA-400 with the AUX Channel Monitor GUI provide a compact, pocket sized tool for recording and analyzing DisplayPort AUX channel traffic. They enable the user to monitor, capture and document the DPCD reads and writes and the MST Sideband Channel Communication over a DP link. DPA-400 is compatible with all DP versions from DP 1.1 to 2.0 and HDCP 1.3 and 2.3 messaging. DPA-400 is also compatible with DisplayPort Alternate Mode in USB Type-C interface.

Unigraf AUX Channel Monitor is an almost mandatory tool for any engineer verifying or debugging Compliance Test or Interoperability Test results. Only by analyzing the details of the source – sink interaction the designer is able to fully confirm the behavior of both parties. When the content of each read and write are available in detail, there will be no room for guessing.

With the special, Unigraf provided cable you can attach DPA-400 directly between any two USB Type-C enabled devices and monitor DisplayPort Alt Mode related AUX Channel message transaction.

For more information on DPA-400, please visit:

[DPA-400 Web Page](#)

For more information on monitoring AUX Channel communication of DisplayPort™ interface, please visit:

www.unigraf.fi/test-tools/development-tools/dp-aux-channel-monitor



DPR-100

Fully Featured DP 1.1 Compliant Reference Sink

DPR-100 is a DisplayPort™ Reference Sink. It is an easy to use platform for Audio and HDCP compliance tests of DP Source devices. It serves also as AUX Controller for PHY CTS test automation when equipped with a dedicated firmware. DPR-100 is approved by DCP LLC as Authorized Test Equipment for HDCP 1.3 CTS. When paired with the DPT-200, the units can be used to run HDCP 1.3 Repeater tests.

For more information, please visit:

[DPR-100 Web Page](#)



DPT-200

Fully Featured DP 1.1 Compliant Reference Source

DPT-200 is a USB controlled device. It has a very compact size and light weight. The DPT-200 is a full featured and easy to use DisplayPort™ source for development, debug and compliance testing of DP connected monitors. DPT-200 is fully compatible with Unigraf DP RefSource CTS tools. DPT-200 is approved by DCP LLC as Authorized Test Equipment for HDCP 1.3 CTS. When paired with the DPR-100, the units can be used to run HDCP 1.3 Repeater tests.

For more information, please visit:

[DPT-200 Web Page](#)



HDMITM
HIGH-DEFINITION MULTIMEDIA INTERFACE

HDMI Test Tools

UCD-422

HDMI 2.1 10K Video Generator & Analyzer

UCD-422 is a Video Generator and Analyzer for testing HDMI™ 2.1 interface up to 10K@30Hz and 8K@60Hz video modes. The device offers support for FRL and TMDS. FEC, DSC* Sink & Source and eARC*. HDCP 2.2* and HDCP 2.3* are also supported. Enhanced gaming features such as Variable Refresh Rate (VRR) and Auto Low Latency Mode (ALLM) is available on Sinks & Sources.

UCD-422 is a flexible and robust tool either via an easy-to-use GUI on R&D debugging or via automated functional tests. UCD Console GUI provides the user access to the vital parameters and controls of the tests.

* Contact Unigraf for availability

Highlights

- HDMI 2.1 Test Equipment (FRL)
 - » 8K@60Hz support (12 Gbps/channel)
 - » 10K@30Hz support (12 Gbps/channel)
 - » 12 Gbps/channel
 - » Simultaneous Generator & Analyzer
- Enhanced Gaming Features: VRR, ALLM
- TMDS Support
- HDCP 2.2 & HDCP 2.3 support
- eARC support
- DSC Support



UCD-323

4K Video Generator & Analyzer for Testing HDMI 2.0 and DP 1.4a Sinks and Sources

UCD-323 is a UHD / 4K@60Hz compliant video capture unit and pattern generator for testing all aspects of DisplayPort™ 1.4a with HBR2 max bitrate capability and HDMI 2.0 Sinks and Sources. UCD-323 is an DCP LLC approved device for testing HDCP 2.2 & HDCP 2.3 Compliance on DisplayPort Transmitters and Receivers. UCD Console user interface for desktop use and TSI scripting and software API for test automation. TSI enables automating either basic video and audio tests or a complete set of Compliance Tests for R&D design validation or production line environment.

For more information,
please visit:

[UCD-323 Web Page](#)

Download UCD-323
Data Sheet:

[UCD-323 Data Sheet](#)



UCD-301

4K Video Analyzer for Testing HDMI 2.0 and DP 1.4a Sources

UCD-301 is a UHD / 4K@60Hz compliant video capture unit and pattern generator for testing all aspects of DisplayPort™ 1.4a with HBR2 max bitrate capability and HDMI™ 2.0 Sink and Sources. UCD-301 is an DCP LLC approved device for testing HDCP 2.2 & 2.3 Compliance on DisplayPort™ Transmitters and Receivers. UCD Console user interface for desktop use and TSI scripting and software API for test automation. TSI enables automating either basic video and audio tests or a complete set of Compliance Tests for R&D design validation or production line environment.

For more information,
please visit:

[UCD-301 Web Page](#)

Download UCD-301
Data Sheet:

[UCD-301 Data Sheet](#)



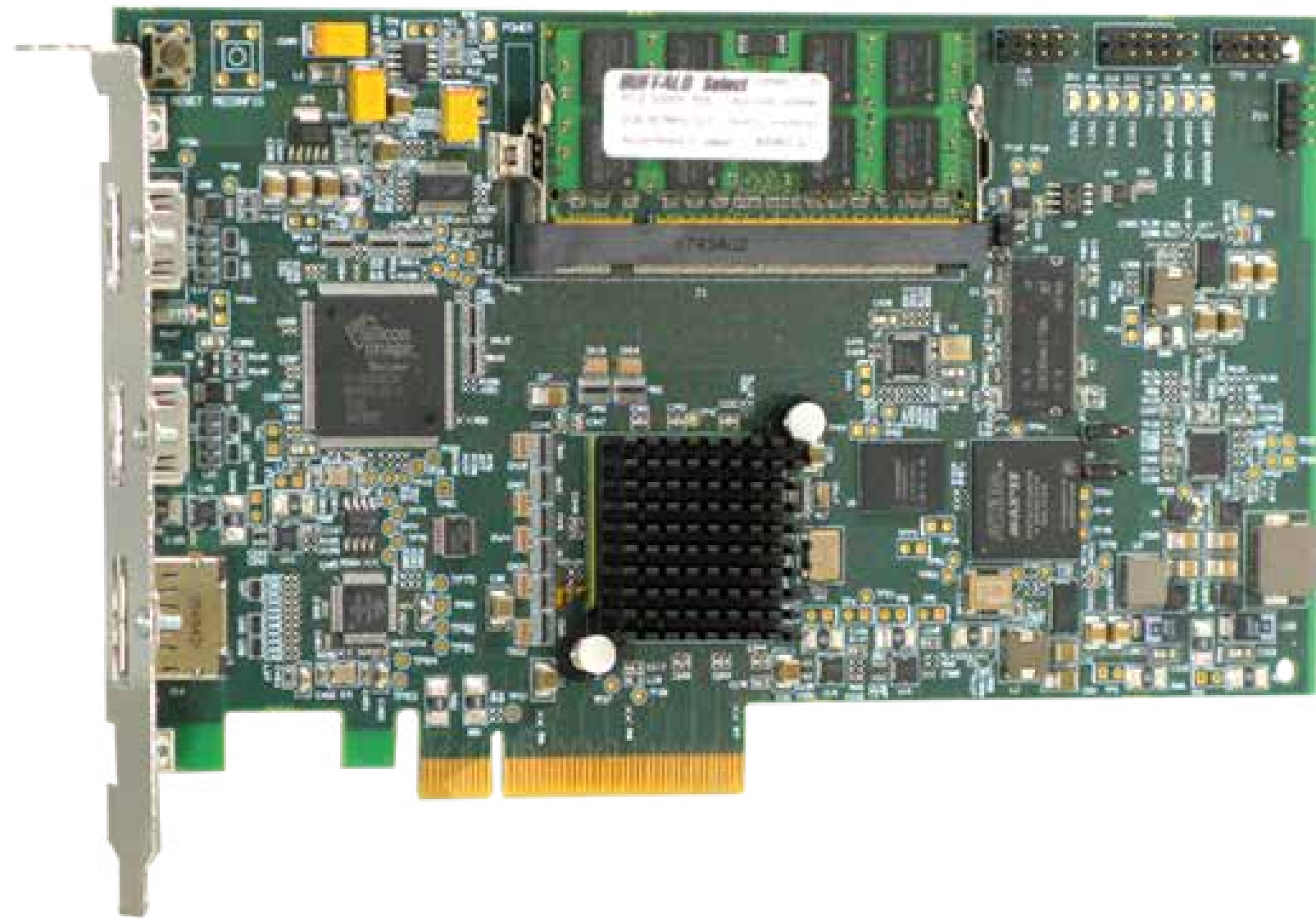
UFG-06

Interoperability Test Tool for HDMI 1.4 and DP 1.1 Sources

UFG-06 HDDP Nopea is a powerful and affordable interoperability test tool for HDMI™ 1.4 and DP 1.1 for source devices. UFG-06 can capture DP 1.1 up to 1920x1200@60(RB). UFG-06 HDDP is compatible with TSI, Unigraf high level test interface API. Combined with the TSI Test Cases, UFG-06 HDDP is a functionality testing tool with ready test routines for testing HDMI and DisplayPort™ interfaces.

For more information, please visit:

[UFG-06 Web Page](#)



USB-C™



USB-C™ Test Tools

UCD-424

USB-C DP Alt Mode 8K Video Generator & Analyzer

UCD-424 is a test unit for verifying DisplayPort™ Alt Mode over USB-C up to 8K@30 Hz and 4K@120 Hz video modes. The device gives you control for USB-C data and power roles.

UCD-424 is a platform for DP 1.4a Link Layer Compliance Tests. You can use the same unit for testing DisplayPort Sink and Source. The unit also supports FEC, DSC and LTTTPR.

Unigraf UCD series are flexible and robust tools either via a GUI on a laboratory desktop or via automated functionality tests. The associated software provide the user access to the vital parameters and controls needed when evaluating the various functions of the interface.

Highlights

- DP 1.4a Link Layer CTS & HDCP 2.3 CTS support
- 8K and 4K Reference Sink & Source
- DP 1.4a features:
 - » Up to HBR3 simultaneous input and output in one unit
 - » DSC Sink & Source, FEC and LTTTPR support
 - » MST support (4 streams)
- USB-C v1.3 with Power Delivery 3.0
 - » DP Alt Mode
 - » Capable to Sink and Source 9V@3A
 - » PD Role swaps supported
- USB3.2Gen2 (10Gbit/s) bypass from port 2 port
- HDCP 1.3, HDCP 2.2 and HDCP 2.3 support



UCD-340

4K Video Analyzer and Generator for Testing USB-C DP Alt Mode Sinks and Sources

UCD-340 is the first integrated analyzer and test equipment for DisplayPort™ over USB-C™ sinks and sources. UCD-340 features a flexible and robust way of analyzing video, audio and power delivery functions of USB-C™. The provided software enables user access to the vital parameters and controls needed when evaluating the various functions of the interface. The optional Electrical Testing feature of UCD-340 enables testing the continuity of signals in the USB-C™ interface by verifying current flow in signal lines

For more information, please visit:

[UCD-340 Web Page](#)

Download UCD-340 Data Sheet:

[UCD-340 Data Sheet](#)



External Power Unit

Enables UCD-340 to Test Vbus Voltages From 5V to 20V

UCD-340 External USB-C™ Power Test Unit enables testing the full range of USB-C™ Vbus voltages from 5 V to 20 V. Current sink and current source capabilities of the DUT can be tested all the way up to 20 V / 5 A.

For more information, please visit:

[External Power Unit Web Page](#)



UCD-240

Automated USB-C DisplayPort™ Alt Mode Tester with Electrical Test

UCD-240 is a cost-effective and flexible Test Automation tool for testing USB Type-C products in the production line environment. UCD-240 supports 4K@60Hz, DP Alt Mode and NI TestStand. UCD-240 is easy-to-use and its test coverage over USB Type-C Sinks and Sources including video & audio testing, Electrical Test to verify whole USB-C connector, Link status, Power Delivery, and USB 2.0 & 3.0 functionalities.

For more information, please visit: [UCD-240 Web Page](#)

Download UCD-240 Data Sheet: [UCD-240 Data Sheet](#)

Highlights

- Automated tests for USB-C™ DisplayPort™ Alt Mode
- Electrical Test to verify whole USB-C connector with single cable insert
- Test USB 2.0 and USB 3.0
- 4K@60 support
- Easily set test parameters with provided Software
- Easily run tests from the command-line
- Unigraf's Test System Interface (TSI) Support
- Third Part Test Management Software Support e.g. NI TestStand Support





DisplayPort™ Compliance Test Tools

Link Layer Compliance Testing Tools

UCD-400

DisplayPort™ 1.4 Link Layer CTS for Testing Sink, Source and Branch DUT

UCD-400 is a VESA certified test tool for DP 1.4 Link Layer Compliance Tests. You can use the unit for testing Sink, Source and Branch DUTs. The unit supports FEC, DSC and LTTTPR.

For more information, please visit:

[UCD-400 Web Page](#)

Download UCD-400 Data Sheet:

[UCD-400 Data Sheet](#)



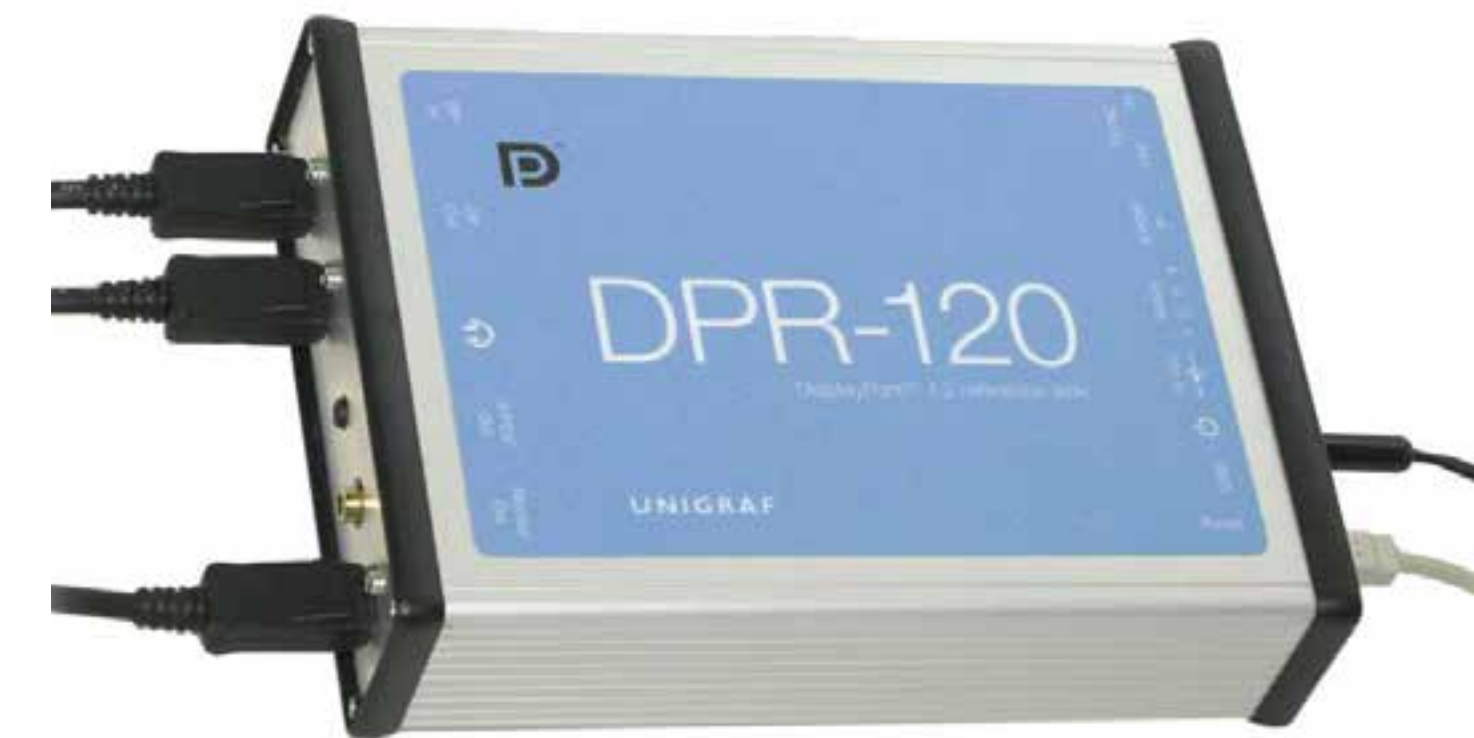
DPR-120

VESA Certified Link Layer 1.2 CTS Tool for Testing Source DUT

VESA has certified DPR-120 as the Authorized Test tool for testing Link layer CTS 1.2 Core and Extension Set 1 revision 1.1. DPR-120 is a fully featured DisplayPort™ 1.2 compliant Reference Sink. It provides all features needed for testing DP Multistream (MST) source devices like PC display cards or portable computers.

For more information, please visit:

[DPR-120 Web Page](#)



Authorized HDCP 2.3 Compliance Testing Tools

UCD-400

HDCP 2.3 CTS for Testing Transmitter, Receiver and Repeater on DisplayPort™

UCD-400 is a DCP Approved Test Tool for testing HDCP 2.3 Transmitters, Receivers and Repeaters on the DisplayPort interface. HDCP 2.3 Compliance test capability is an add-on feature to the debug PC software called the UCD Console. The tests can be straightforwardly enabled to any UCD-400 installation with an SW update and application of the corresponding license key.

For more information, please visit:

[UCD-400 Web Page](#)

Download UCD-400 Datasheet:

[UCD-400 Data Sheet](#)



UCD-340

HDCP 2.3. CTS Tool for Testing Transmitter and Receiver on DisplayPort™ over USB-C™

UCD-340 is a HDCP2.3 Compliance test tool for DisplayPort™ over USB Type-C Transmitters and Receivers. HDCP 2.3 Compliance Test capability is an add-on feature to UCD-300 debug PC software called the UCD Console. The tests can be straightforwardly enabled to any UCD-300 installation with an SW update and application of the corresponding license key.

For more information, please visit:

[UCD-340 Web Page](#)

Download UCD-340 Data Sheet:



Authorized HDCP 2.3 Compliance Testing Tools

UCD-323

HDCP 2.3 Tool for Testing Transmitter and Receiver on DisplayPort™

UCD-323 is a DCP Approved Test Equipment for verifying HDCP 2.3 Compliance on DisplayPort Transmitters and Receivers. HDCP 2.3 Compliance Test capability is an add-on feature to UCD-300 debug tool called UCD Console. The tests can be straightforwardly enabled to any UCD-300 installation with an SW update and application of the corresponding license key.

For more information, please visit:

[UCD-323 Web Page](#)

Download UCD-323 Data Sheet:

[UCD-323 Data Sheet](#)



UCD-301

HDCP 2.3 CTS Tool for testing Transmitter on DisplayPort™

UCD-301 is a DCP Approved Test Equipment for verifying HDCP 2.3 Compliance on DisplayPort Transmitters. HDCP 2.3 Compliance Test capability is an add-on feature to UCD-300 debug tool called UCD Console. The tests can be straightforwardly enabled to any UCD-300 installation with an SW update and application of the corresponding license key.

For more information, please visit:

[UCD-301 Web Page](#)

Download UCD-301 Data Sheet:

[UCD-301 Data Sheet](#)



HDCP 2.3 CTS Software

UCD-400 & UCD-300 Series Test Equipment as Hardware Platform

HDCP 2.3 CTS Software enables DisplayPort HDCP 2.3 Compliance Tests for testing DP Transmitters, Receivers and Repeaters. Compatible Hardware test platforms are UCD-400, UCD-340, UCD-323 or UCD-301.

Unigraf HDCP 2.3 CTS solution for testing DP Transmitter and Receiver DUTs has already been listed by DCP LLC as DCP Approved Test Tool on UCD-400, UCD-340, UCD-323 and UCD-301 test equipment platforms (www.digital-cp.com/compliance). HDCP 2.3 CTS capability is an add-on feature to UCD-300 debug tool called UCD Console. The tests can be straightforwardly enabled to any UCD-400 or

UCD-300 installation with an SW update and application of the corresponding license key. In addition to the Compliance Tests, UCD-400 and UCD-300 Series devices feature also Functionality Testing of HDCP 1.3 and HDCP 2.3 encryp-

VESA Requires HDCP Testing For DP Logo Certification

In 2018 VESA announced that it now requires HDCP testing as part of the DP testing requirement for certification. If a DP Transmitter or Receiver supports HDCP (as reported in the product CDF) it shall be tested as part of the certification

requirements for obtaining the DP Logo. (Source: VESA)

	UCD-400	UCD-340	UCD-323	UCD-301
HDCP 2.3 CTS for Transmitter	Yes*	Yes*	Yes*	Yes*
HDCP 2.3 CTS for Receiver DUT	Yes*	Yes*	Yes*	
HDCP 2.3 CTS for Repeater DUT	Yes*			

*DCP Approved Test Tool

Authorized HDCP 1.3 Compliance Testing Tools

DPR-100

HDCP 1.3 CTS Tool for testing Transmitter on DisplayPort™

DPR-100 with an appropriate software is a DCP LLC approved HDCP 1.3 CTS tool for testing DP Transmitter DUT devices. DPR-100 is a compact sized Reference Sink for running audio tests for DP Source DUT and HDCP tests on DP Transmitter DUT devices. The 'DP RefSink CTS' SW GUI allows the user to configure the test to match the DUT capabilities, follow execution of the test and get a easy-to-read report of the actions during the test and the details of the pass or failure.

For more information, please visit:
[DPR-100 Web Page](#)



DPT-200

HDCP 1.3 CTS Tool for testing Receiver on DisplayPort™

DPT-200 is fully compatible with Unigraf DP RefSource CTS tools and is a DCP LCC approved HDCP 1.3 CTS tool for testing DP Receiver DUT devices. DPT-200 is a fully featured and easy to use DisplayPort™ Transmitter for development, debug and compliance testing of DP connected monitors.

For more information, please visit:
[DPT-200 Web Page](#)

