quantumdata

# 980 DP1.2 Video Generator Module
# Video Pattern Testing of DisplayPort 1.2 Displays

# 980 DP1.2 Video Generator Module

# 980 DP1.2 Video Generator Module Overview

# 980 DP1.2 Video Generator Module – General Features

- Supports maximum link symbol rates of up to 2160-Mbytes/second for testing DP1.2 HBR2 capable displays with 4 lanes up to 5.4Gb/s.
- Pattern testing
  - Over 300 test patterns.
  - Configure image parameters through convenient GUI dialog boxes.
  - Advanced features such as Deep Color and 3D test patterns and formats.
- Format library
  - Over 600 timings (formats).
  - Configure format parameters through convenient GUI dialog boxes.
  - Format editor enables custom creation of formats.
- Continues…

# 980 DP1.2 Video Generator Module – General Features

- Protocol Testing
  - HDCP authentication.
- EDID Decode
  - View sink’s EDID in human readable text.

# 980 DP1.2 Video Generator Module – DP Specific Features

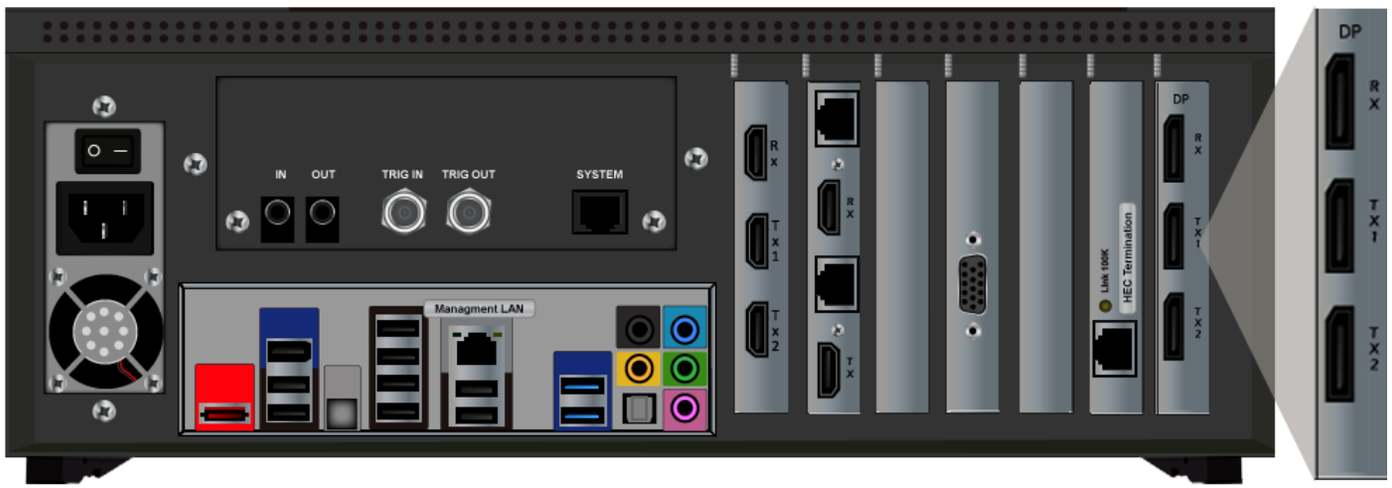
- DPCD register decode
  - View DPCD registers and link status in human readable text.
- Monitoring Aux Channel with Auxiliary Channel Analyzer (ACA) application.
  - View EDID exchanges.
  - View DPCD exchanges.
  - View HDCP authentication transactions.
  - View link training transactions.
- Set link training parameters:
  - Force link training (“non-adaptive”) – set link rate, number of lanes, clock recovery, equalization, symbol lock, etc.
  - Auto link training (“adaptive”) – application automatically configures link in the optimal way based on the capabilities of the cable and sink device.

# 980 DP1.2 Video Generator Module in 980B

- 980 DP 1.2 Video Generator module placed in slots 3 or 6 of the 980B chassis.


# 980 DP1.2 Video Generator Module in 980R

- 980 DP 1.2 Video Generator module placed in slots 1,3 or 6 of the 980R chassis.

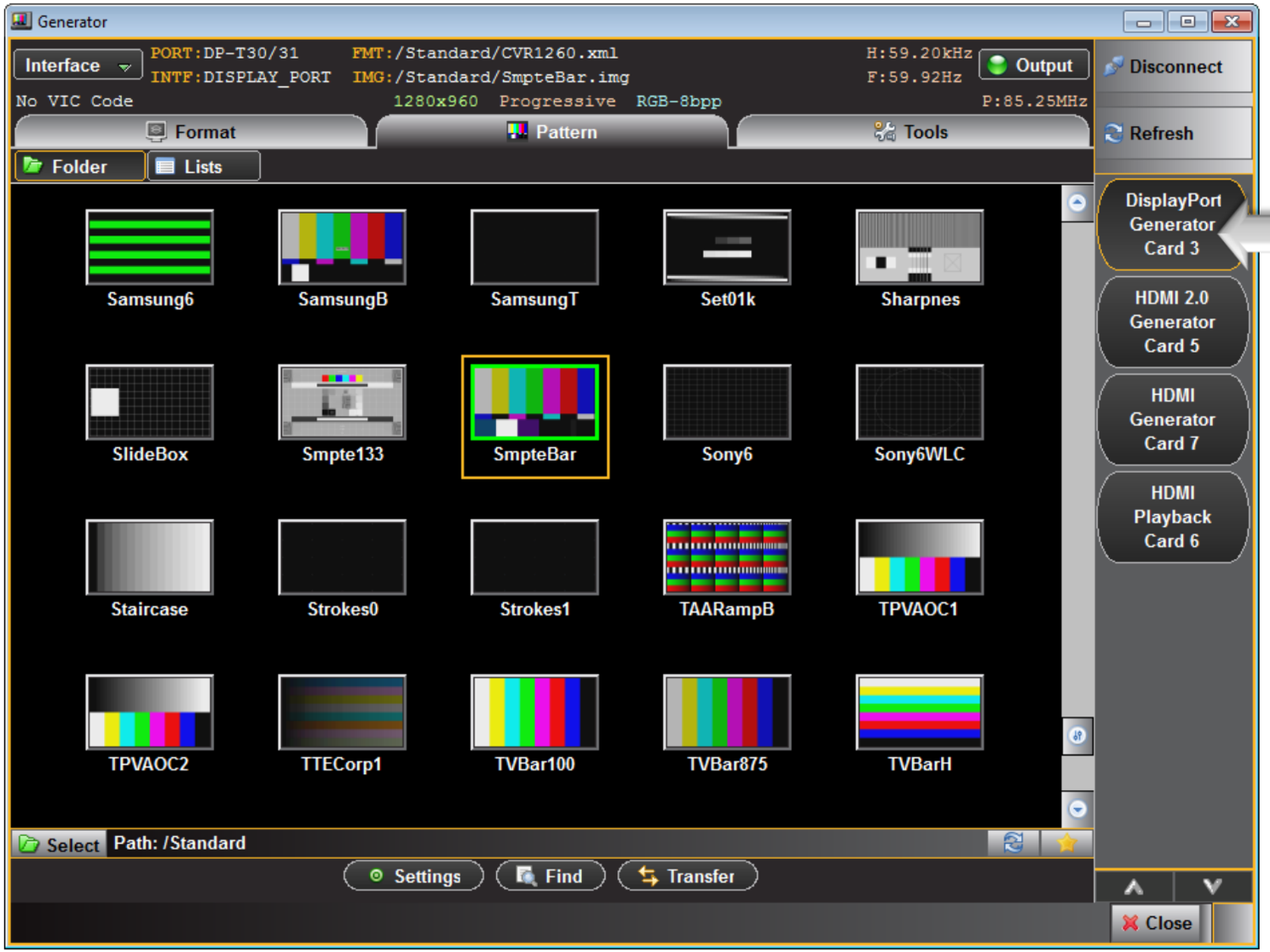
# 980 DP1.2 Video Generator Module Operation – Video Pattern Testing

# 980 DP1.2 Video Generator Module – DP1.2 Transmitter


Select Generator application:

- Generator to access GUI for controlling DP and HDMI generator modules.

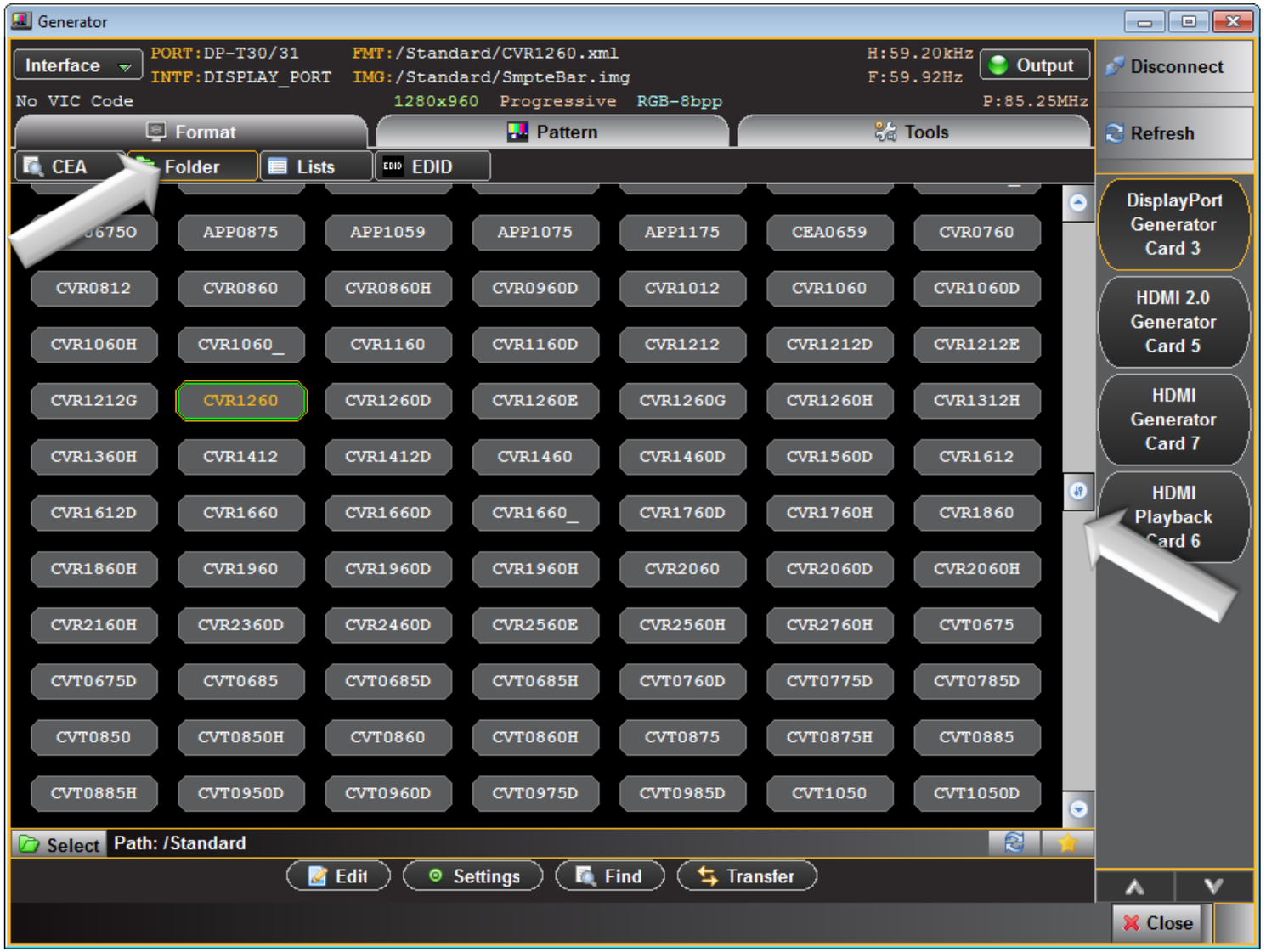
# 980 DP1.2 Video Generator Module – DP1.2 Transmitter




Select video mode:

- Select between DP1.2 or HDMI and DVI from HDMI module.

# 980 DP1.2 Video Generator Module – Format Selection




Select Format:

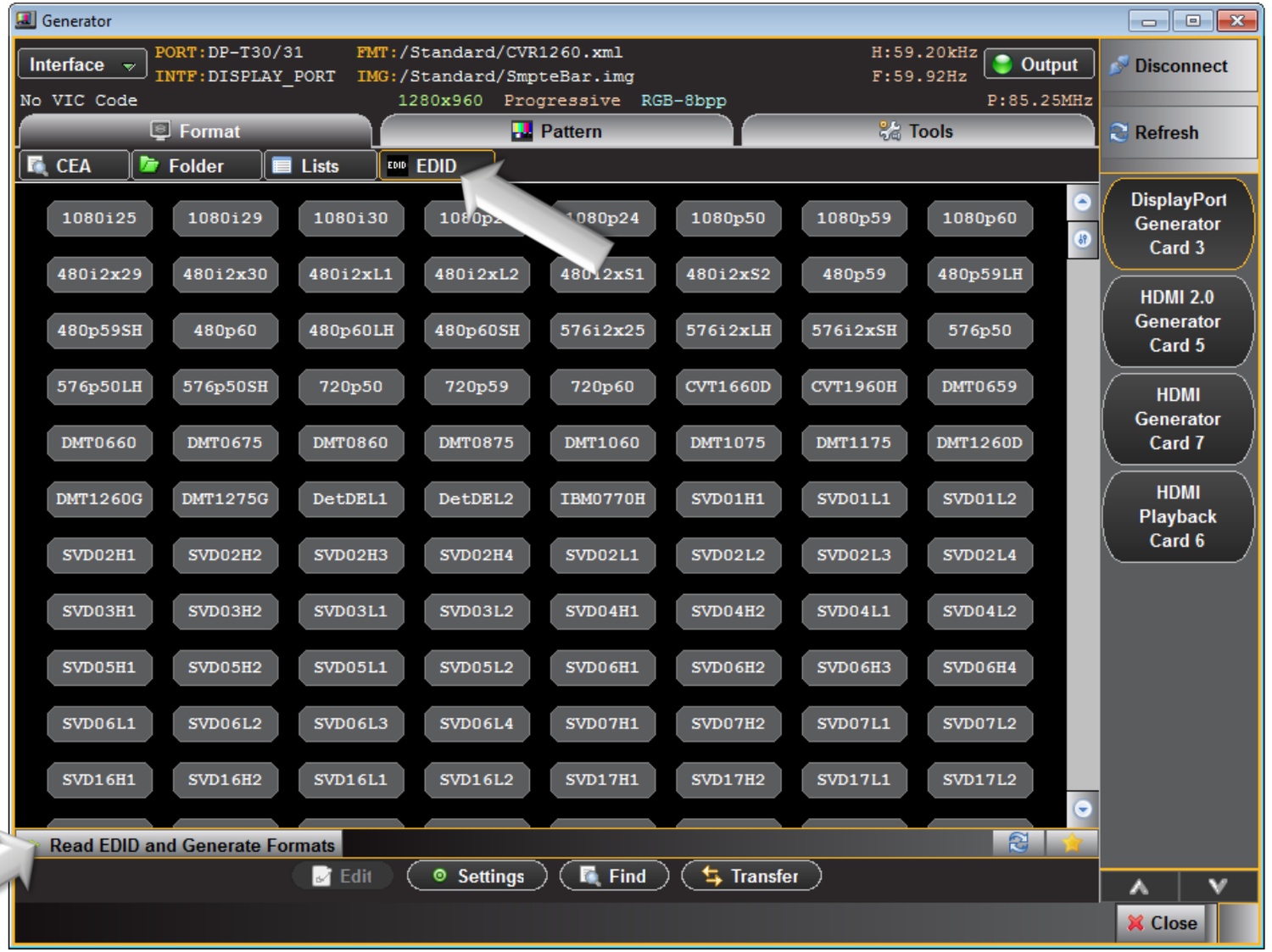
- Select timing format from Format Library from the Folder activation button.
- Scroll through list of format timings.
- Over 600 formats to select from.

# 980 DP1.2 Video Generator Module – Format Selection


Select Format:

- Use Find tool to locate formats quickly.
- Find tool allows partial strings.

# 980 DP1.2 Video Generator Module – Format Selection




Select Format:

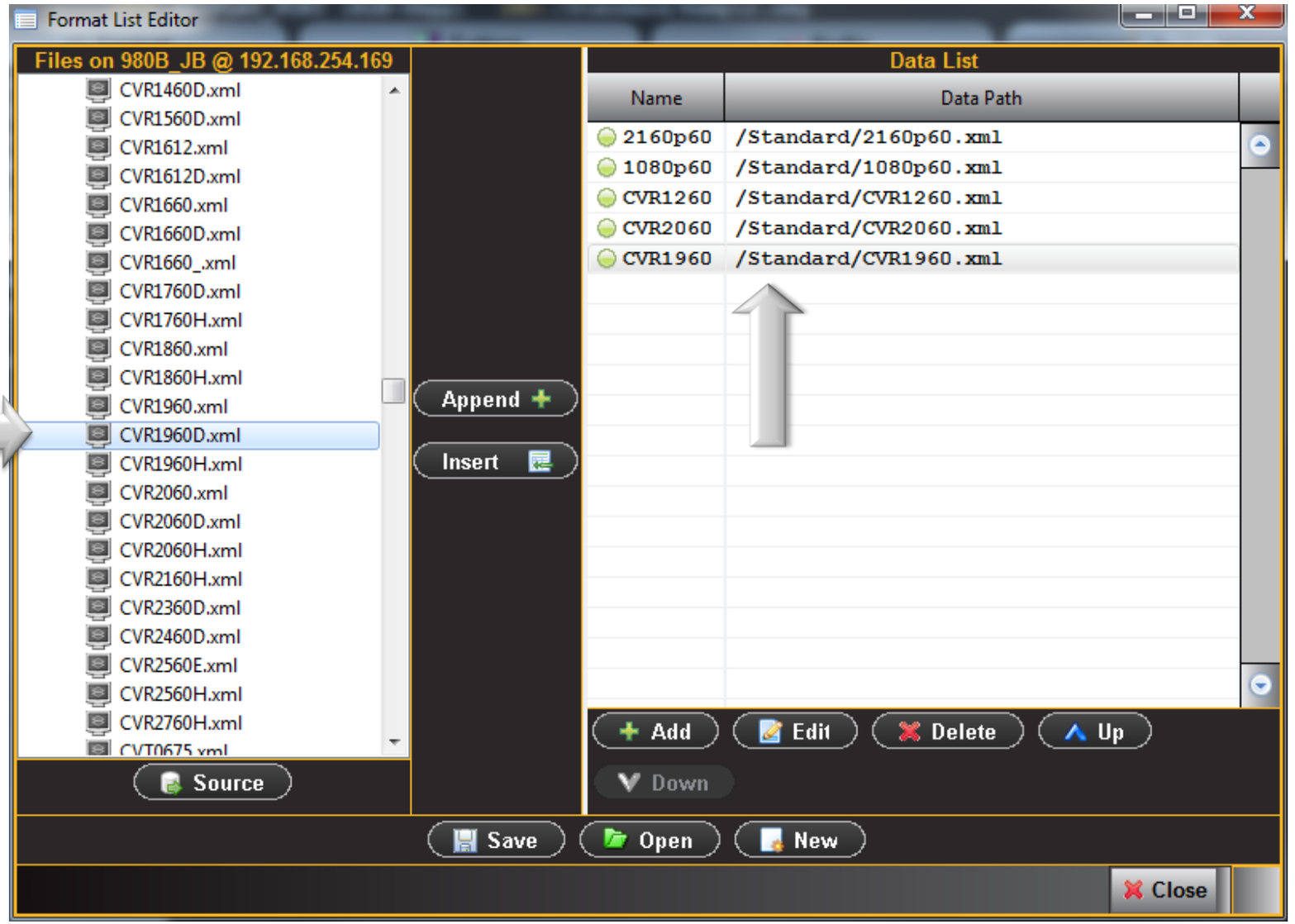
- Configure list of formats based on the EDID of the connected display.

# 980 DP1.2 Video Generator Module – Format Selection


Select Format:

- For CEA formats, use CEA smart filtering tool to locate formats.
- Select parameters either left to right or “Arbitrary.”

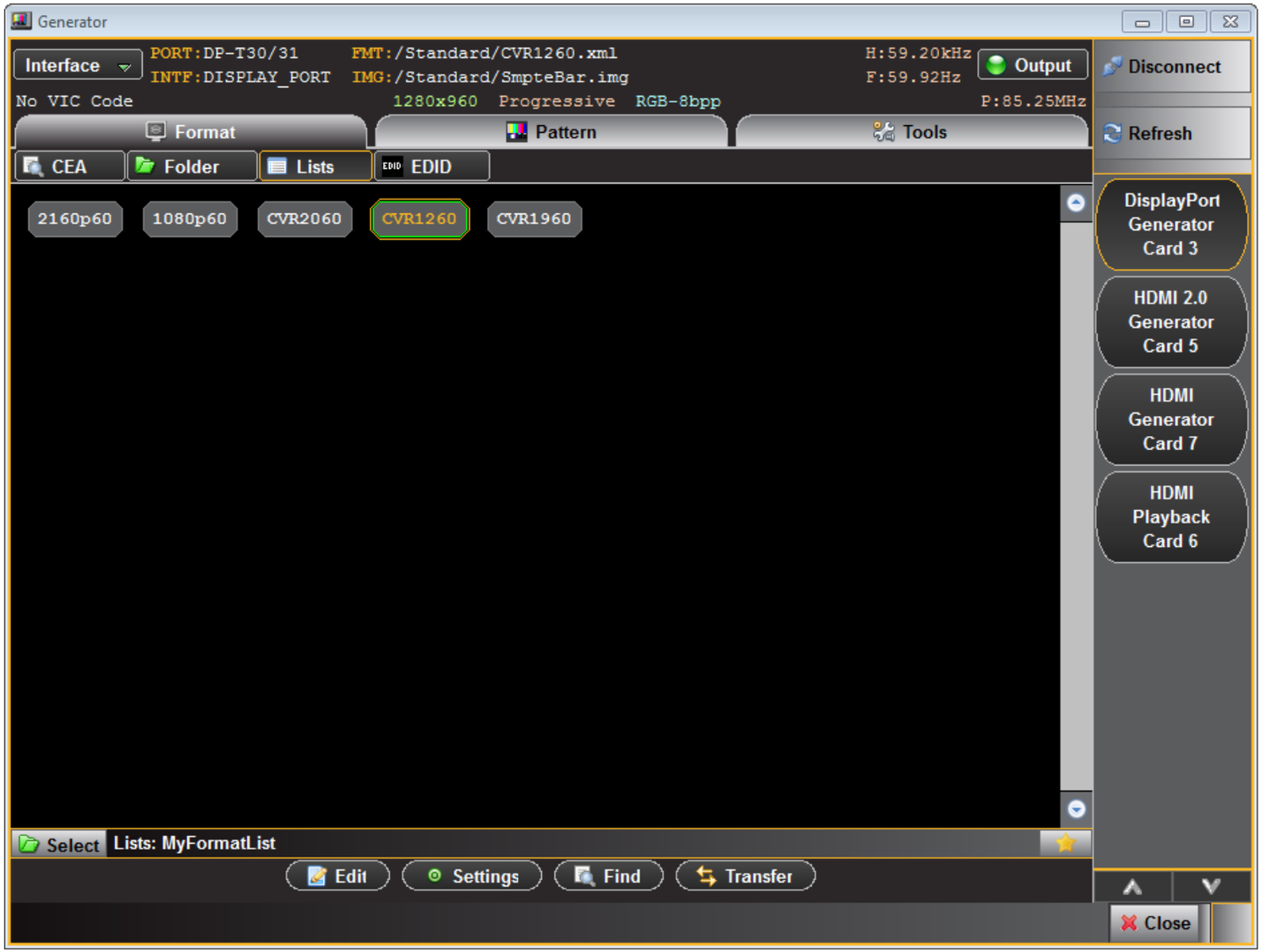
# 980 DP1.2 Video Generator Module – Format Selection




Create custom lists of formats:

- Configure a specific test of formats for viewing and selecting.
- Save for later reuse.

# 980 DP1.2 Video Generator Module – Format Selection




Select Format (Timing):

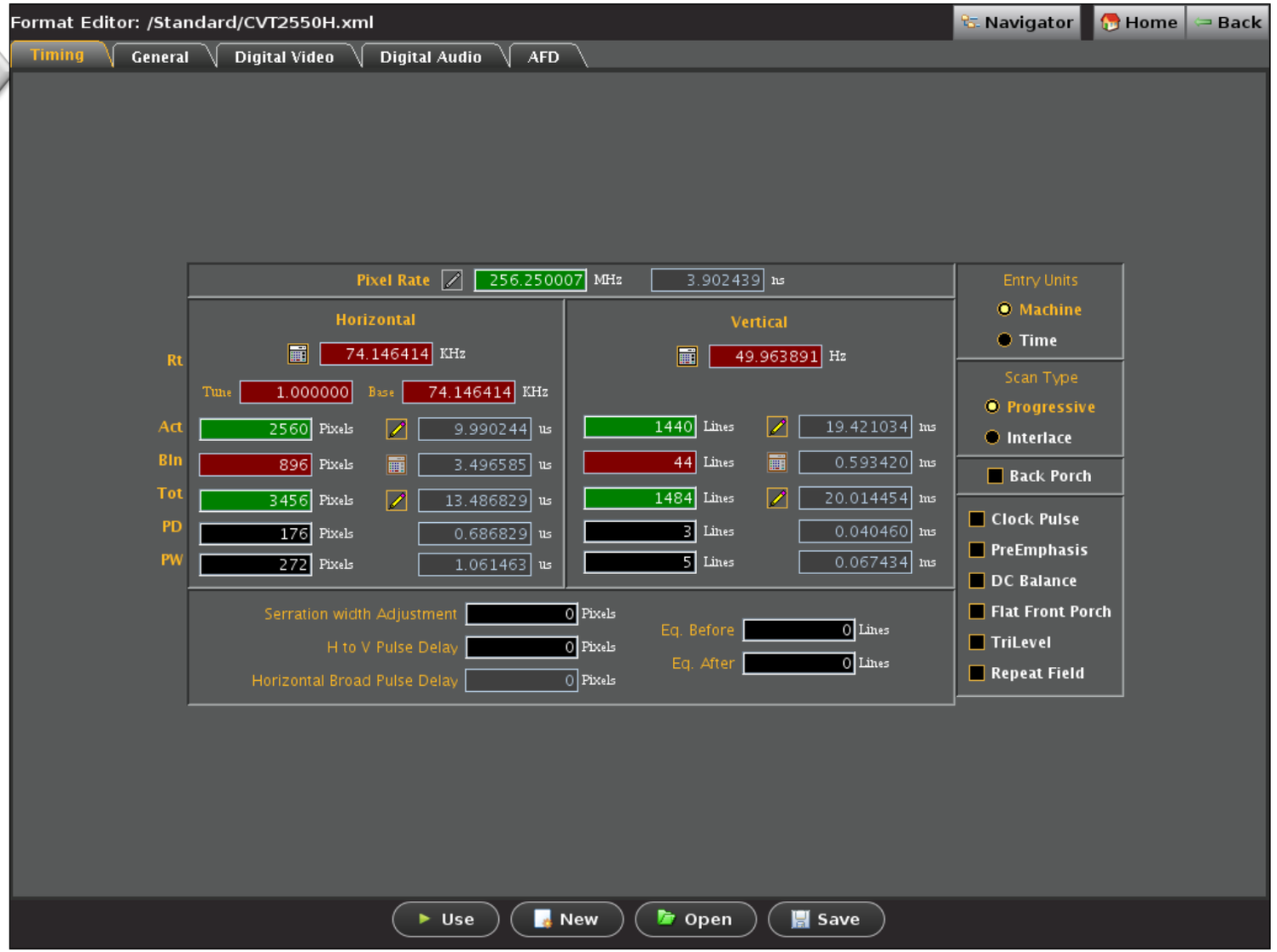
- Create your own custom format lists using the editor utilities.

# 980 DP1.2 Video Generator Module – Format Selection


Configure Format Settings:

- Select timing format from Format Library.
- Configure format parameters such as Color Space, Sampling, Range and Bits per Component (two examples shown).

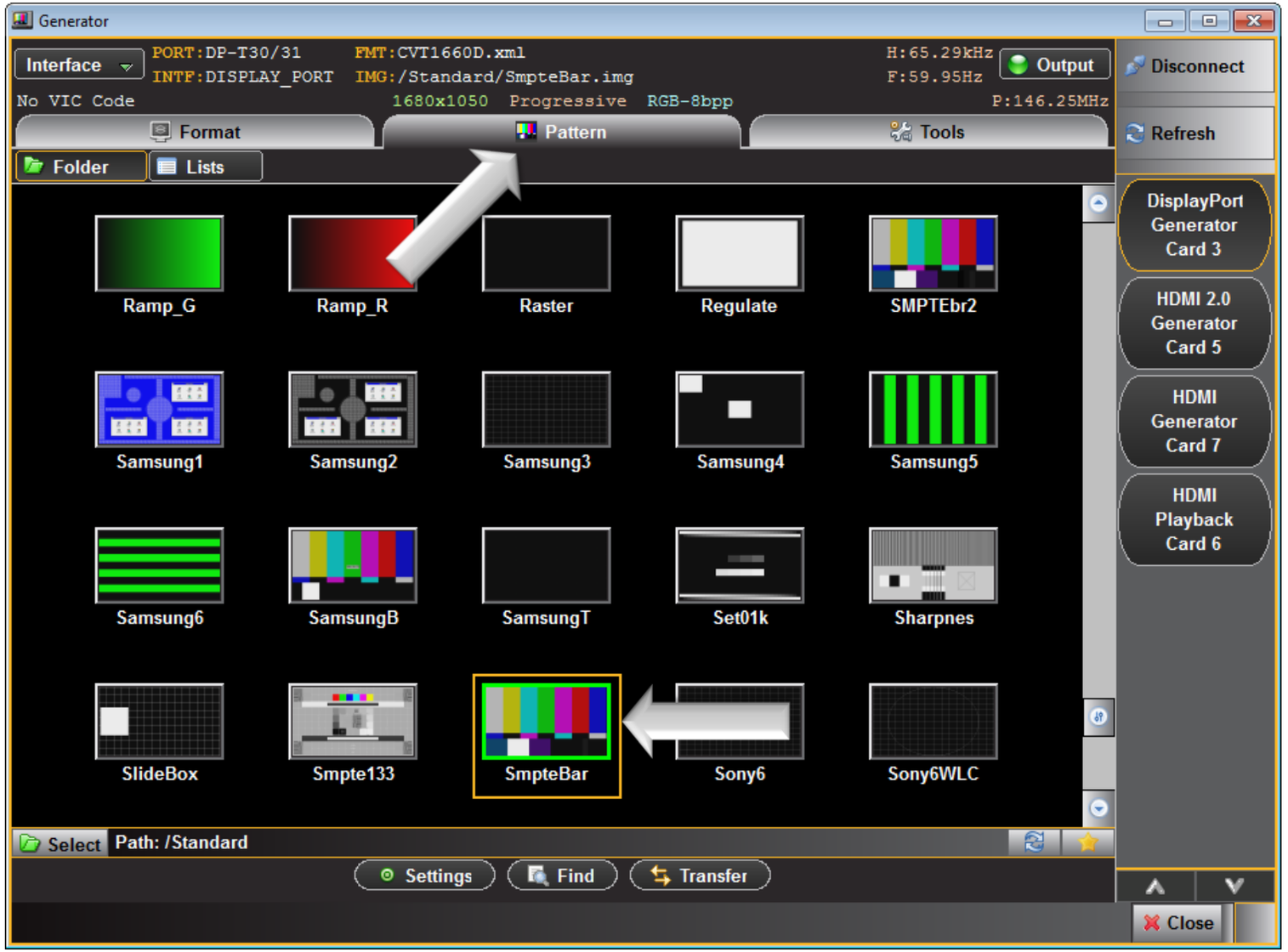
# 980 DP1.2 Video Generator Module – Format Editor




Create custom formats:

- Use Format Editor to create additional custom formats.
- Tweak individual format parameters.
- Apply immediately for testing or save custom formats for later reuse.

# 980 DP1.2 Video Generator Module – Pattern Testing




Select Test Patterns:

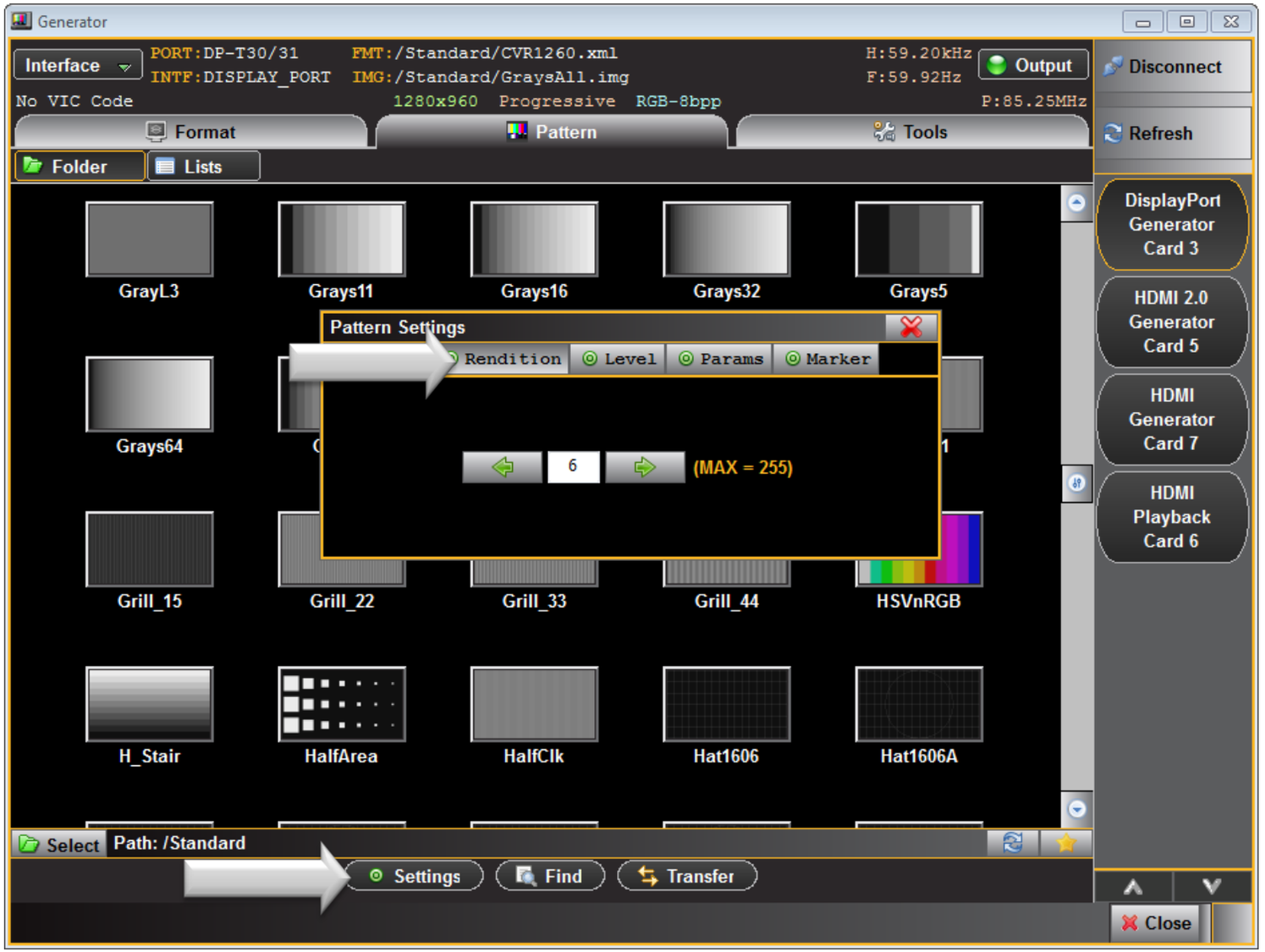
- Select test pattern from Pattern Library.
- Over 300 test patterns to select from.
- Scroll through patterns using scroll bar.

# 980 DP1.2 Video Generator Module – Pattern Testing


Configure pattern parameters:

- Set test pattern parameters such as color and gamma.

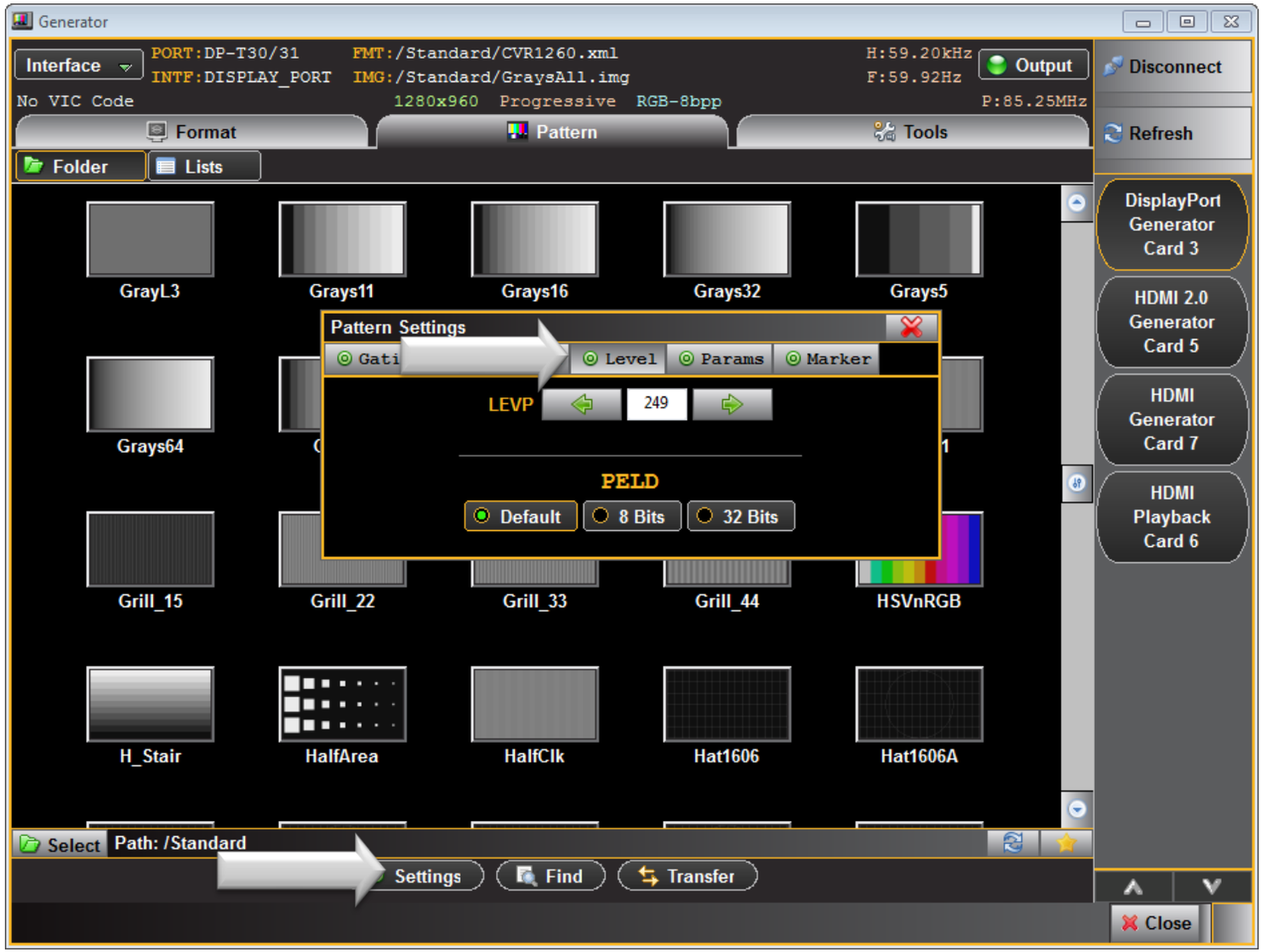
# 980 DP1.2 Video Generator Module – Pattern Testing




Configure pattern parameters:

- Some test patterns have variations. The Rendition tab enables you to test with any of these other “Renditions”.

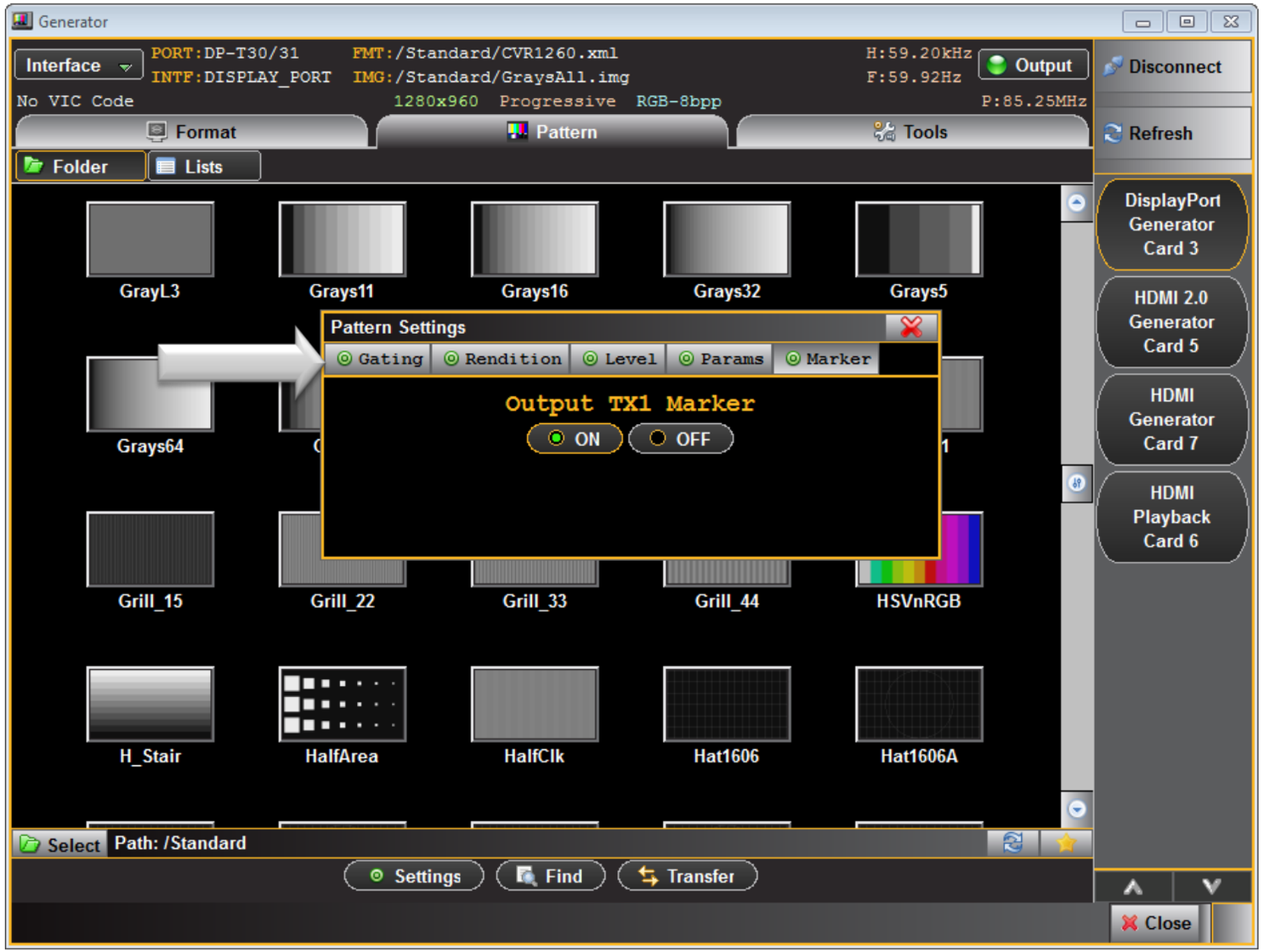
# 980 DP1.2 Video Generator Module – Pattern Testing




Configure pattern parameters:

- The Level tab enables you to set the luminance in IRE of the test pattern.

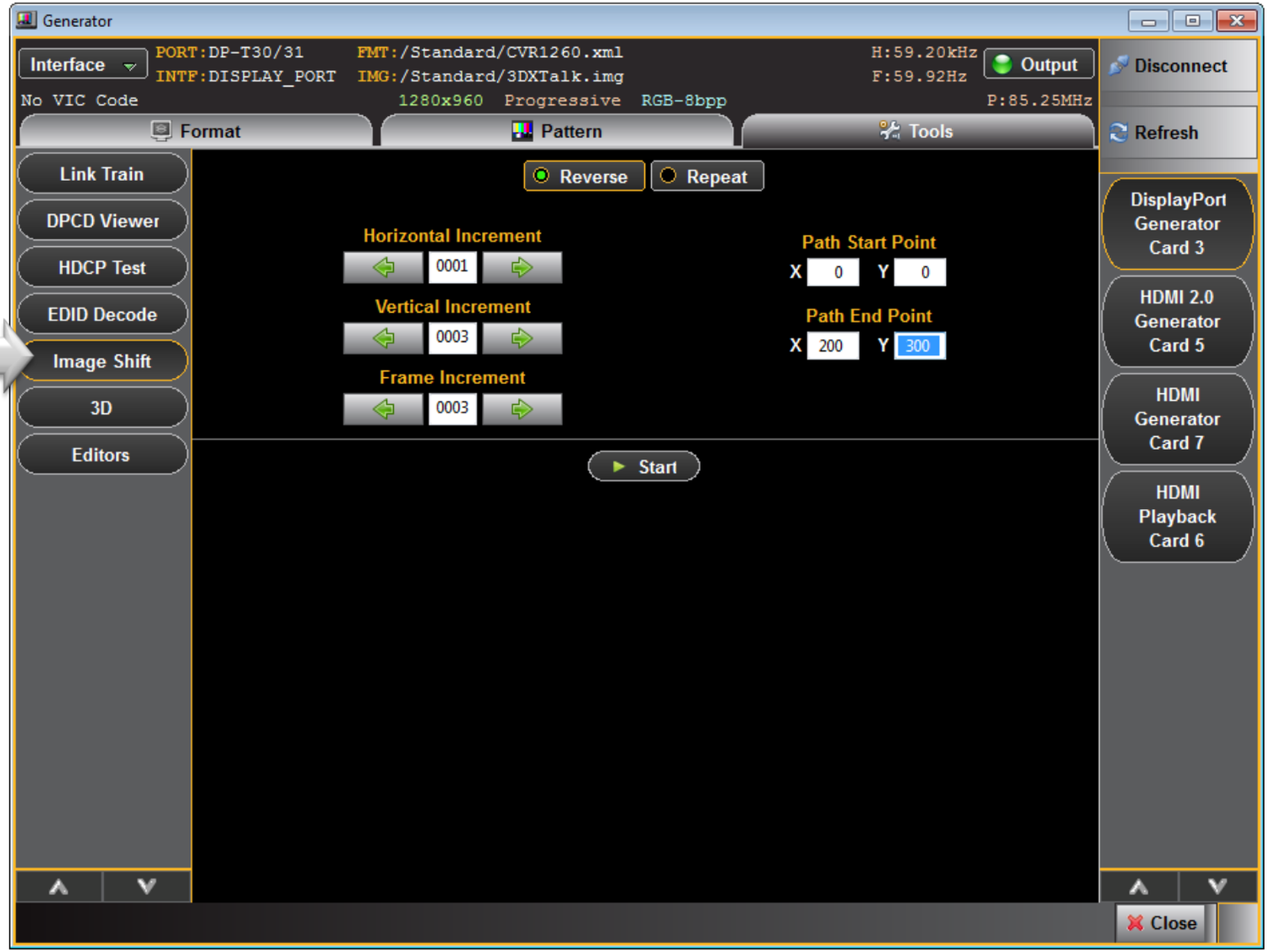
# 980 DP1.2 Video Generator Module – Pattern Testing




Configure pattern parameters:

- Put a marker on the Tx1 output so that you can distinguish which module Tx port is connected to.

# 980 DP1.2 Video Generator Module – Image Scrolling




Scroll any test pattern with Image Scroll feature:

- Select scroll speed in horizontal and vertical axes.
- Select extent of travel.
- Select reverse or repeat scrolling.

# 980 DP1.2 Video Generator Module
# Configuring Link Training Parameters

# 980 DP1.2 Video Generator – Configure Link Training


Select Link Train tool:

- Provides current status of link training on top panel.

# 980 DP1.2 Video Generator – Configure Link Training


Select Link Train tool:

- Select between Adaptive (automatic) link training and Non-Adaptive (shown in example).
- Set limits on source lane count and link rate capabilities.

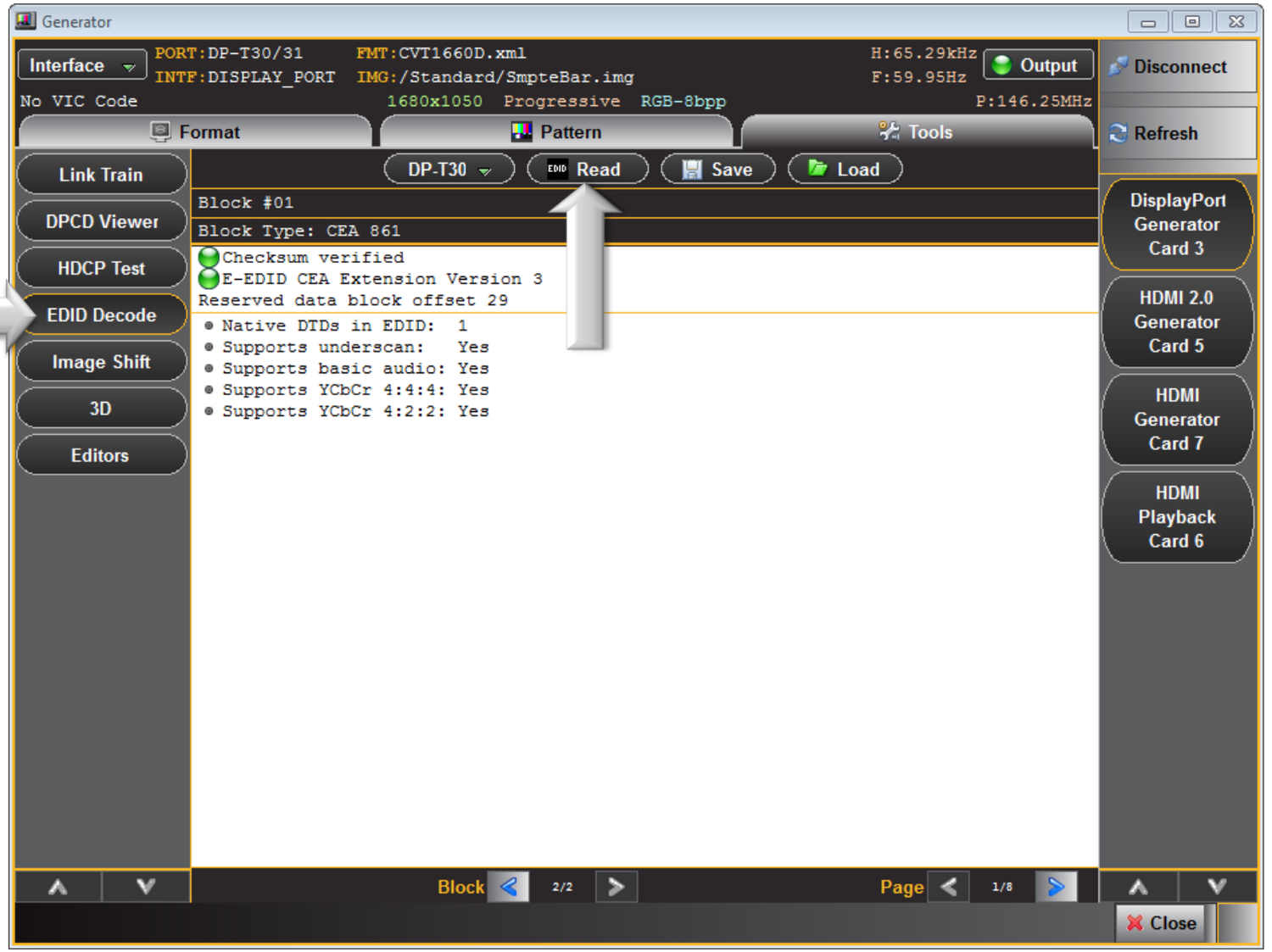
# 980 DP1.2 Video Generator – Configure Link Training


Select Link Train tool:

- Select between Adaptive (automatic – shown in example) link training and Non-Adaptive (user control).
- Enables precise control over lane count and link rate.

# 980 DP1.2 Video Generator Module
# Viewing EDIDs

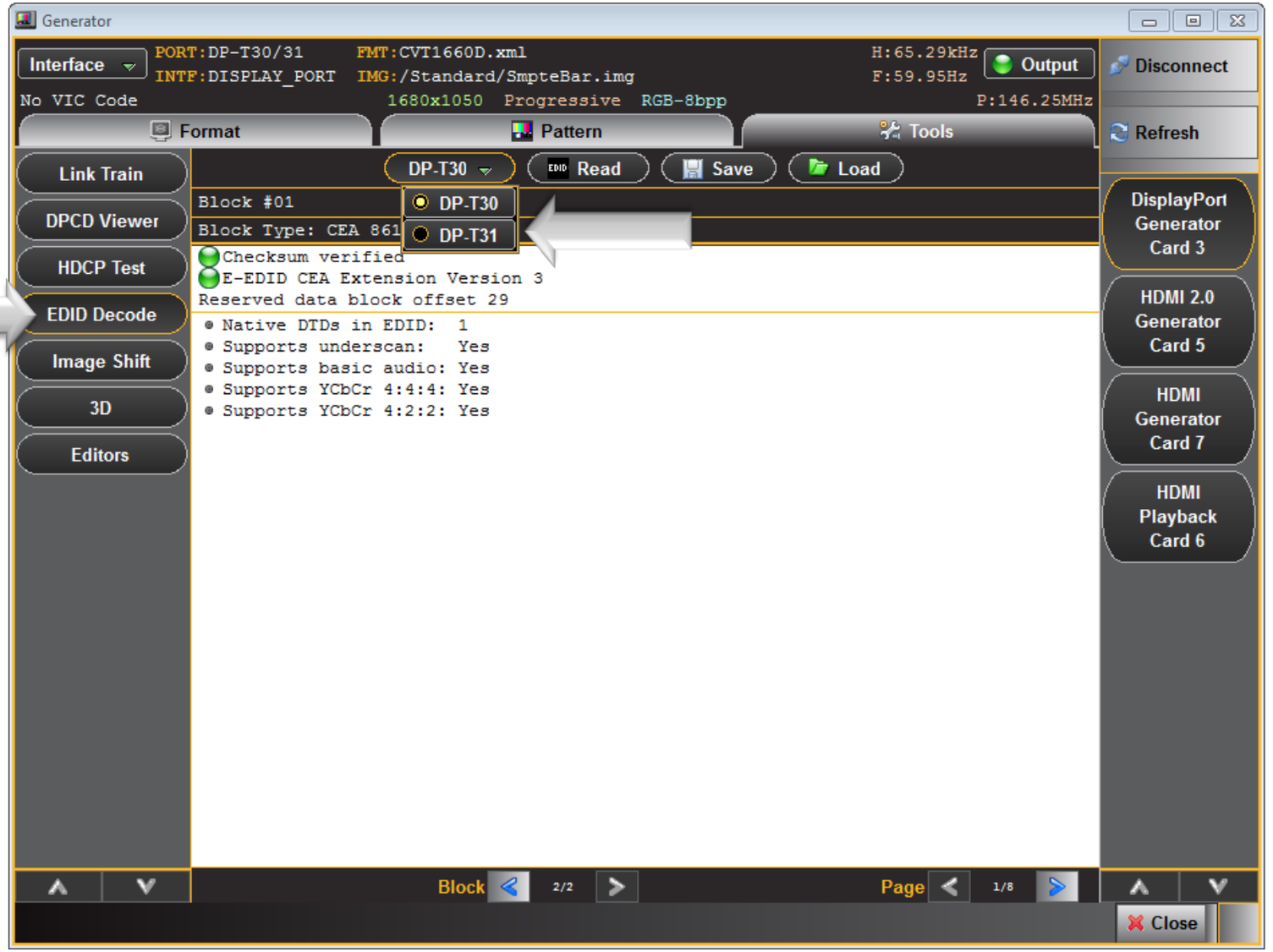
# 980 DP1.2 Video Generator Module – EDID Testing




View EDIDs – Select Interface:

- Select which Tx port to view EDID of connected display.

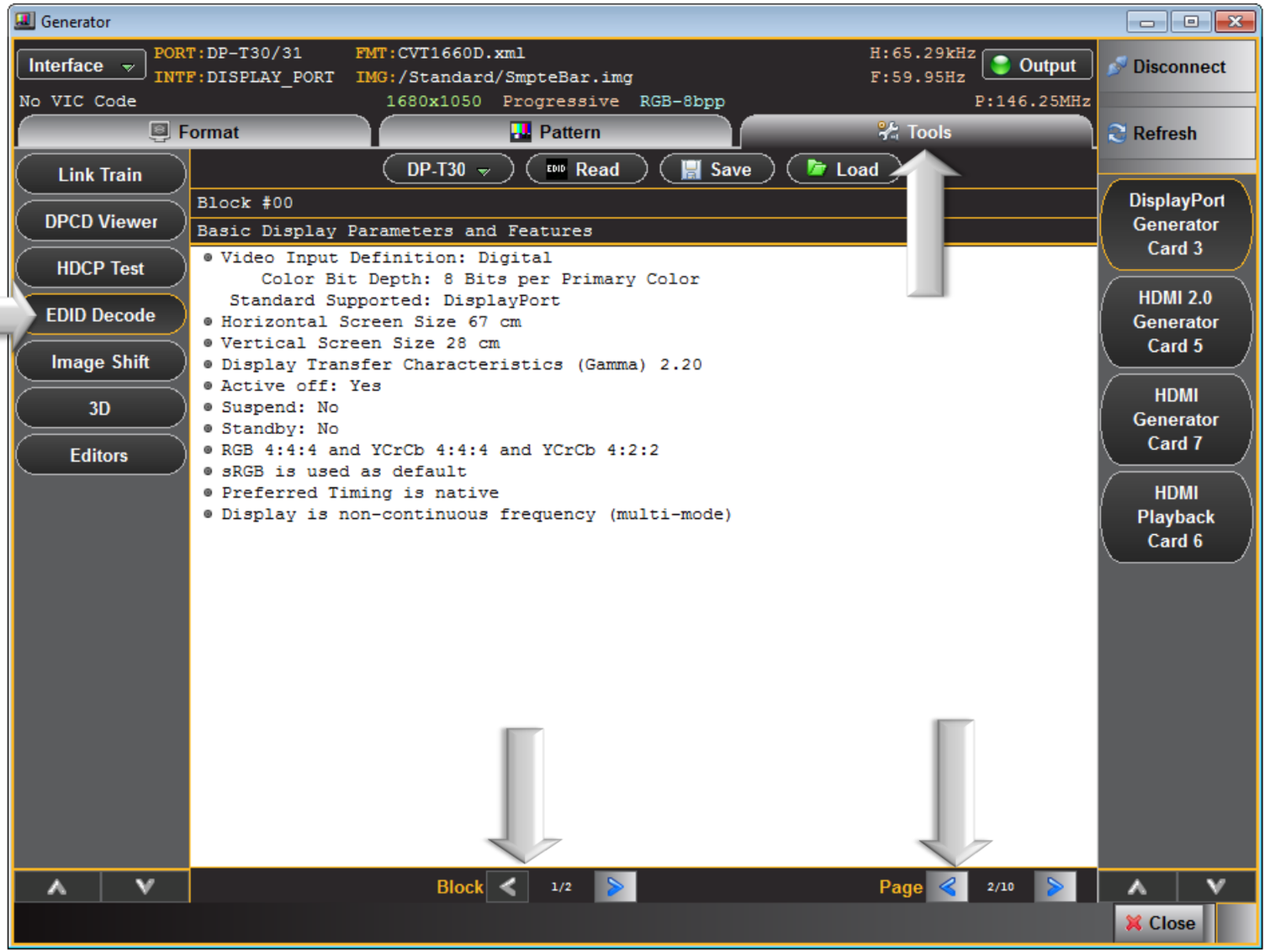
# 980 DP1.2 Video Generator Module – EDID Testing




View EDIDs – Select Interface:

- Select which Tx port to view EDID of connected display.

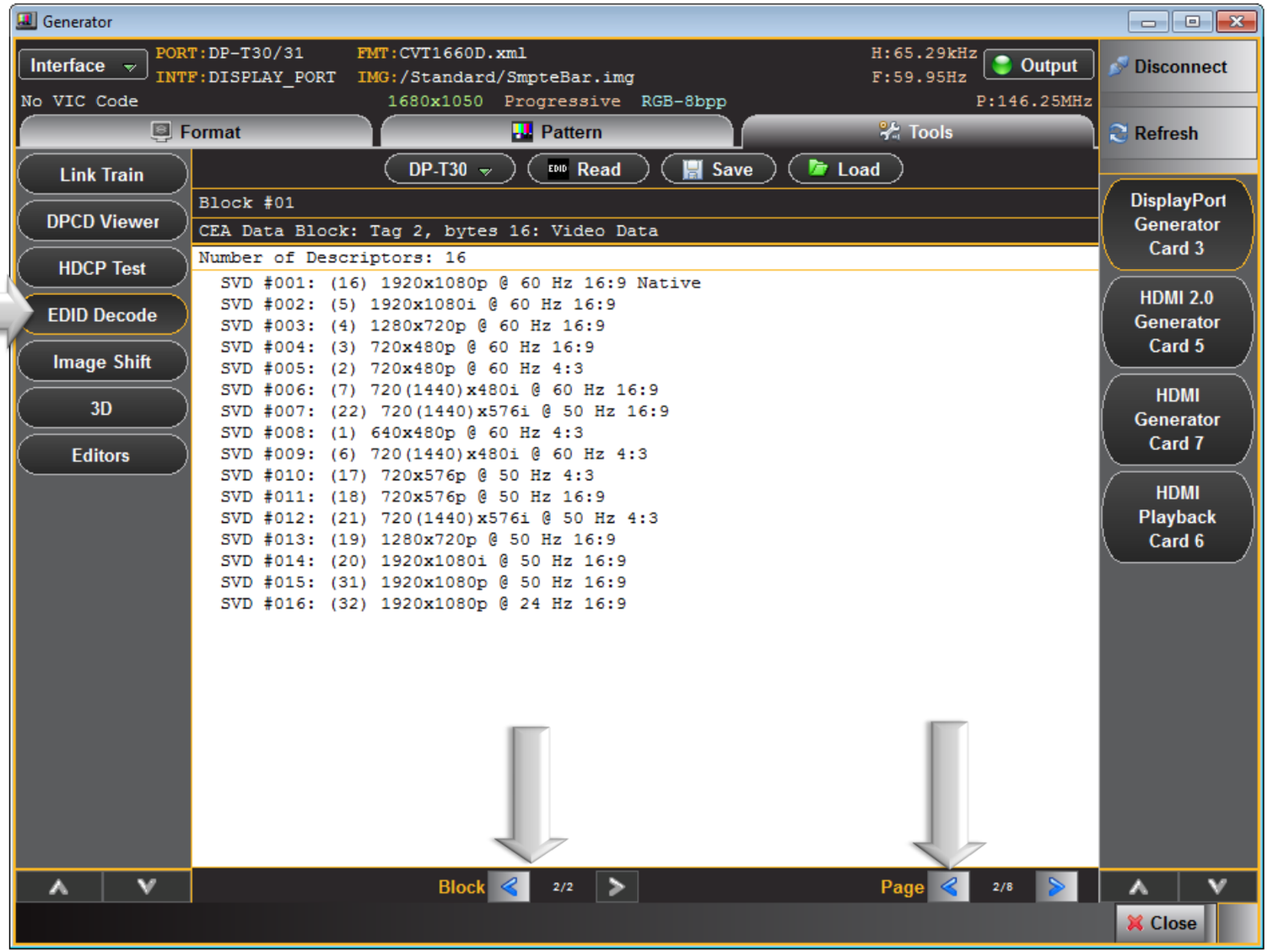
# 980 DP1.2 Video Generator Module – EDID Testing




Decode and view EDIDs:

- View EDIDs of connected display in human readable text.
- Navigate through block 0 per page.
- Navigate through block 1 per page.

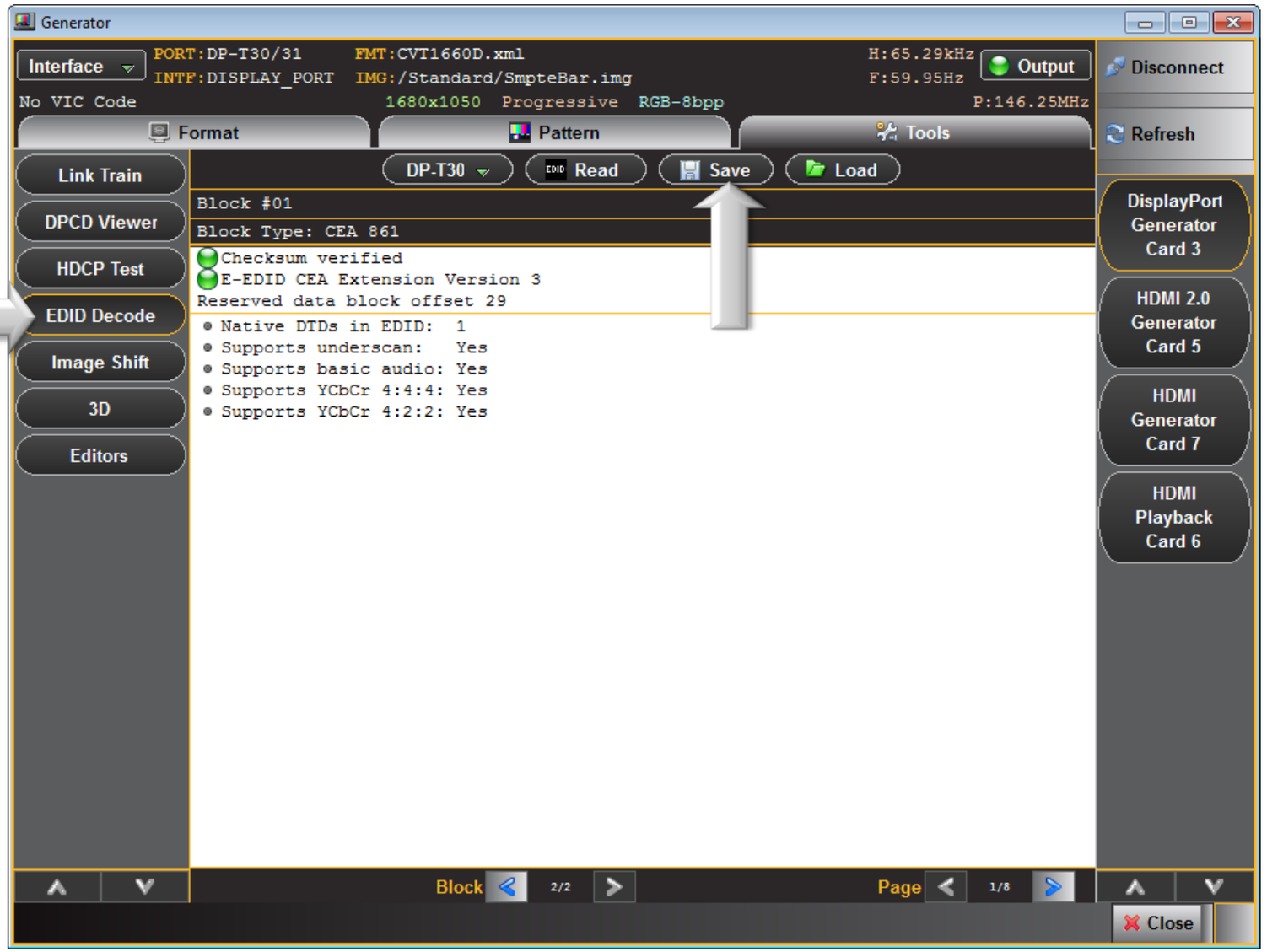
# 980 DP1.2 Video Generator Module – EDID Testing




Decode and view EDIDs:

- View EDIDs of connected display in human readable text.
- Navigate through block 0 (1) per page.
- Navigate through block 1 (2) per page.

# 980 DP1.2 Video Generator Module – EDID Testing

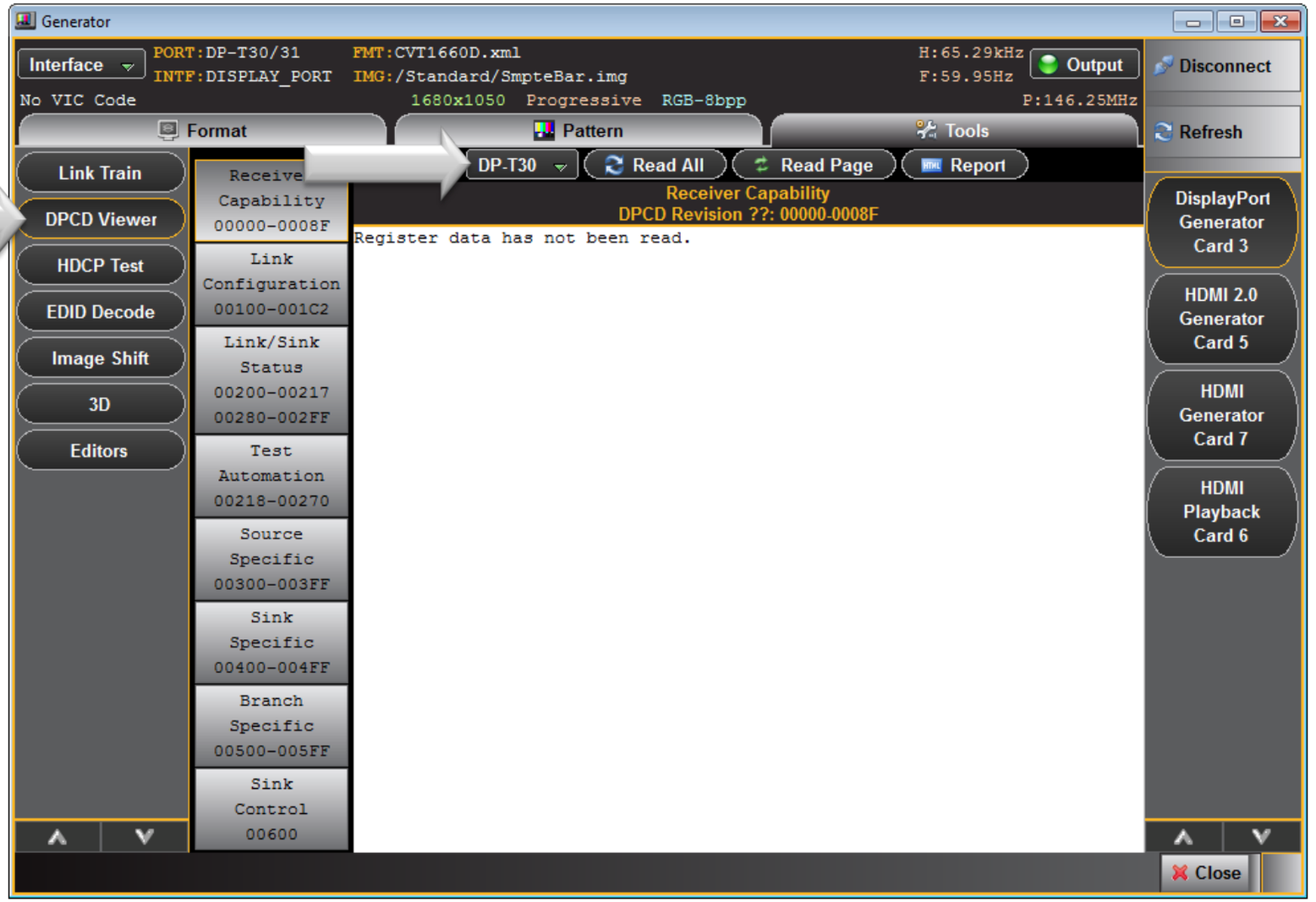



Decode and view EDIDs:

- View EDIDs of connected display in human readable text.
- Save EDIDs for emulation testing of sources.

# 980 DP1.2 Video Generator Module
# Viewing DPCD Registers

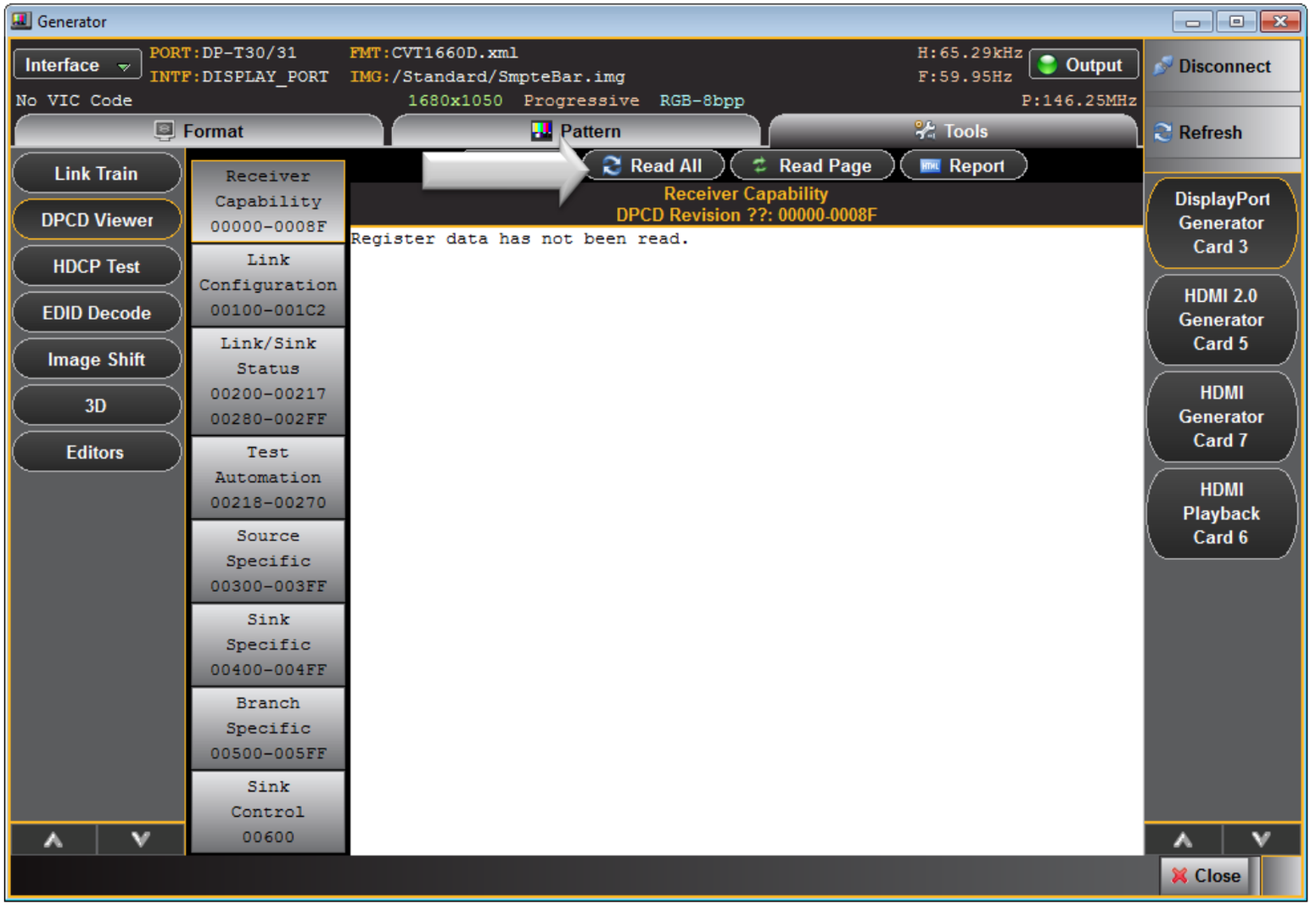
# 980 DP1.2 Video Generator Module – DPCD Testing




View DPCD Registers:

- Select DPCD Viewer.
- Select DP Tx port to view DPCD of connected display.

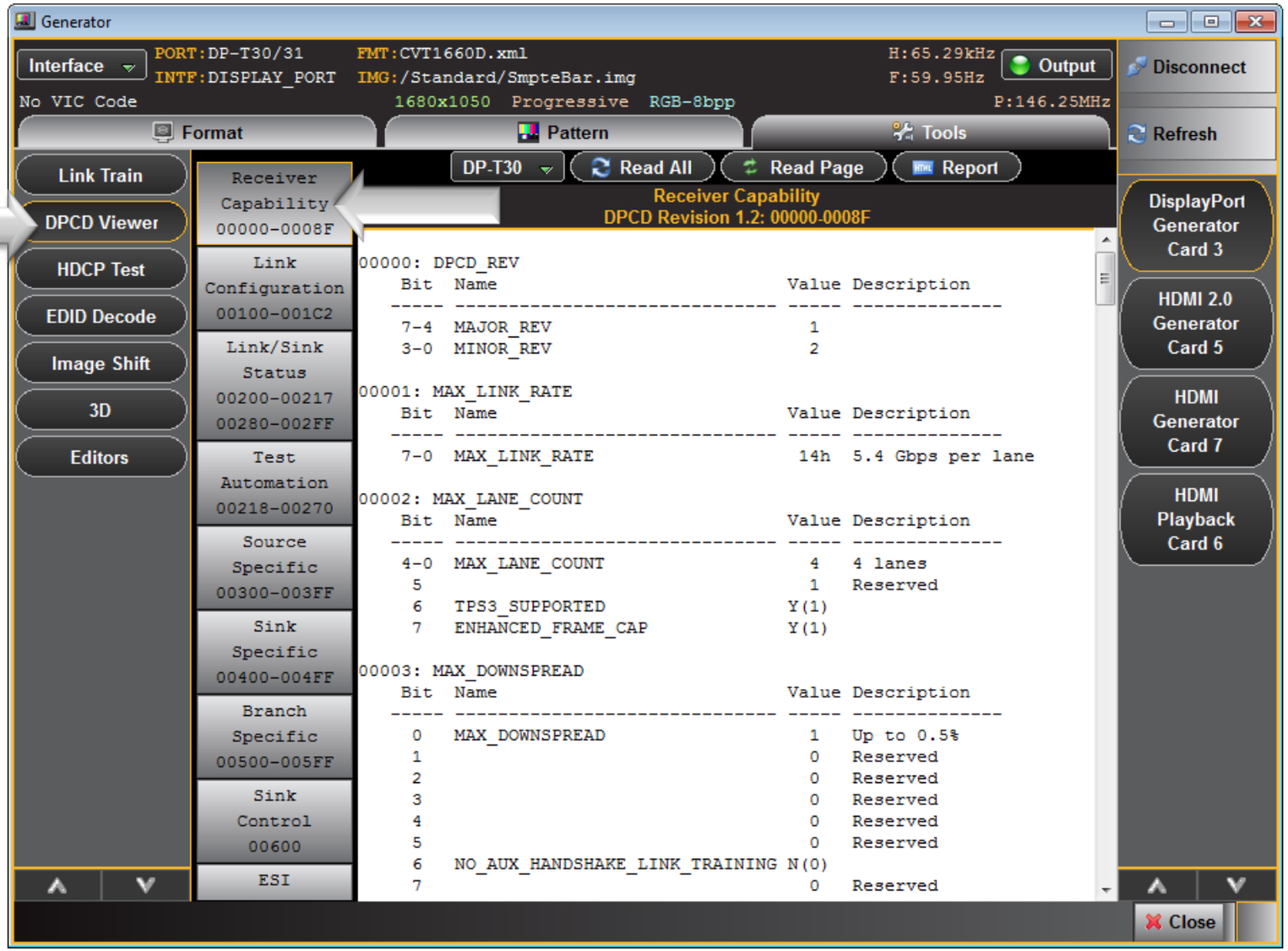
# 980 DP1.2 Video Generator Module – DPCD Testing




View DPCD Registers:

- Read either the entire DPCD or read each page.

# 980 DP1.2 Video Generator Module – DPCD Testing

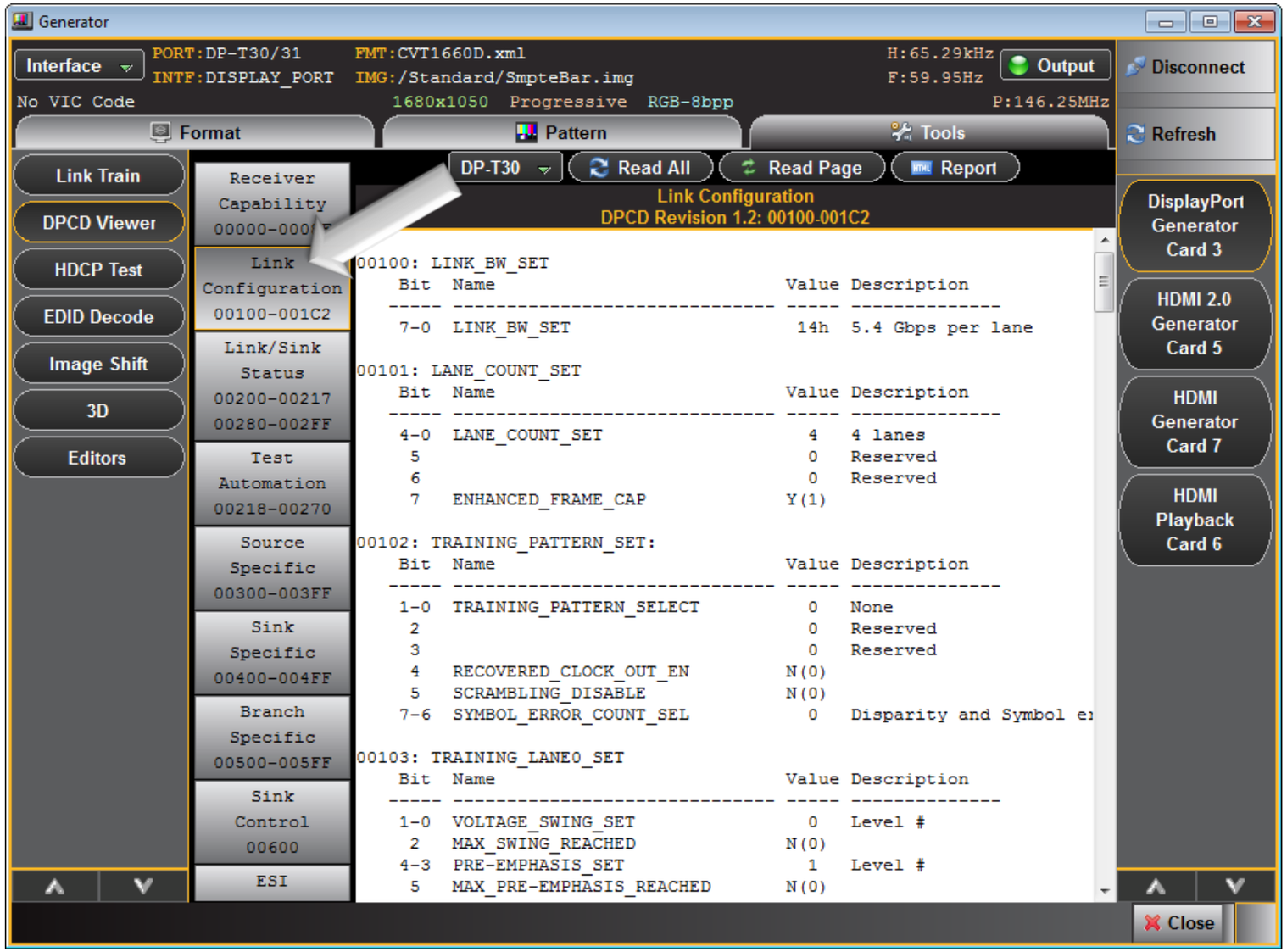



```
00000: DPCD_REV
    Bit  Name                              Value Description
   ----- -------------------------------- ----- --------------
    7-4  MAJOR_REV                          1
    3-0  MINOR_REV                          2

00001: MAX_LINK_RATE
    Bit  Name                              Value Description
   ----- -------------------------------- ----- --------------
    7-0  MAX_LINK_RATE                      14h  5.4 Gbps per lane

00002: MAX_LANE_COUNT
    Bit  Name                              Value Description
   ----- -------------------------------- ----- --------------
    4-0  MAX_LANE_COUNT                       4   4 lanes
     5                                        1   Reserved
     6   TPS3_SUPPORTED                     Y(1)
     7   ENHANCED_FRAME_CAP                 Y(1)

00003: MAX_DOWNSPREAD
    Bit  Name                              Value Description
   ----- -------------------------------- ----- --------------
     0   MAX_DOWNSPREAD                       1   Up to 0.5%
     1                                        0   Reserved
     2                                        0   Reserved
     3                                        0   Reserved
     4                                        0   Reserved
     5                                        0   Reserved
     6   NO_AUX_HANDSHAKE_LINK_TRAINING     N(0)
     7                                        0   Reserved
```

View DPCD Registers:

- Reading Receiver Capability.

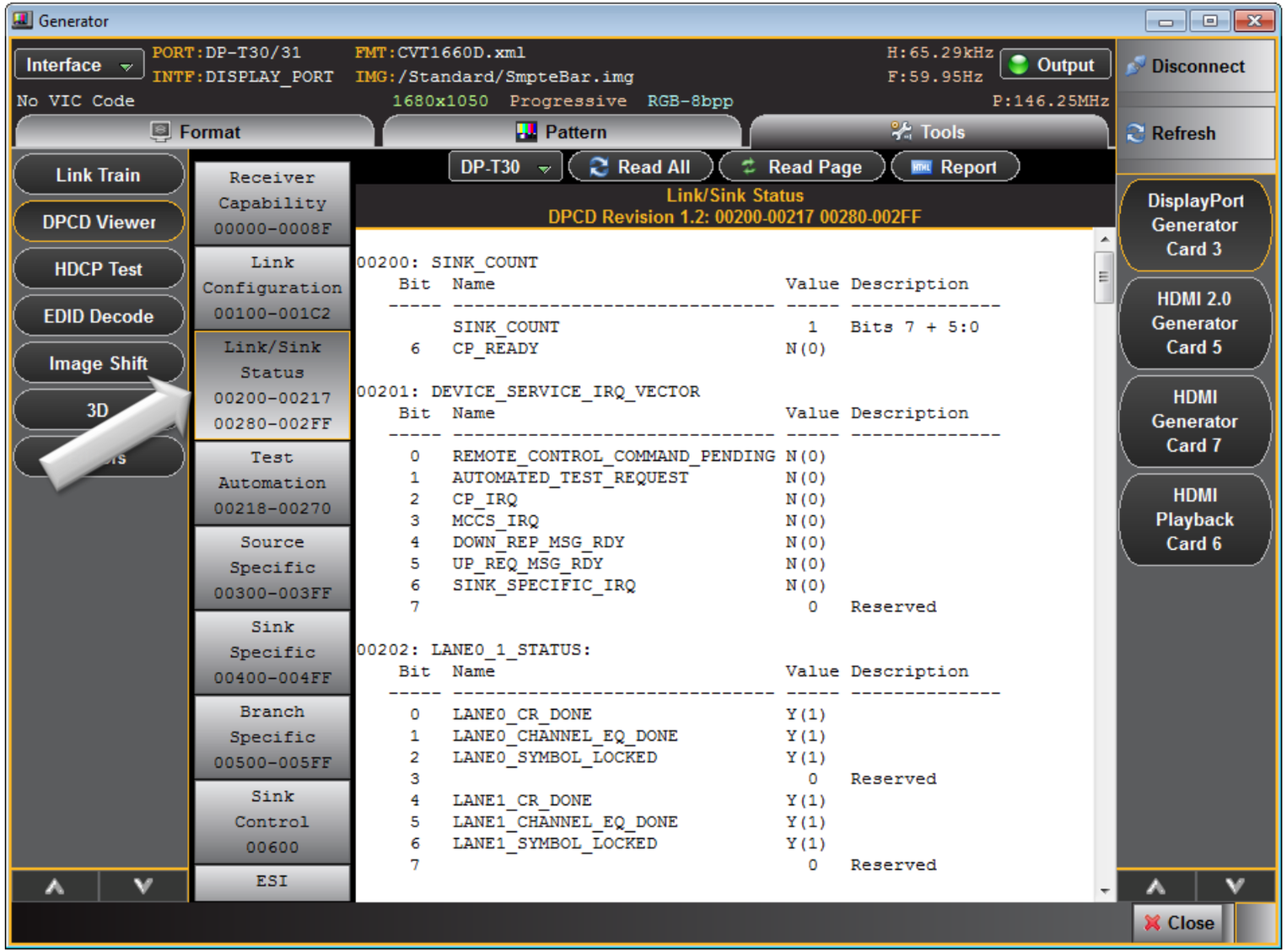
# 980 DP1.2 Video Generator Module – DPCD Testing




View DPCD Registers:

- Read Link Configuration page.

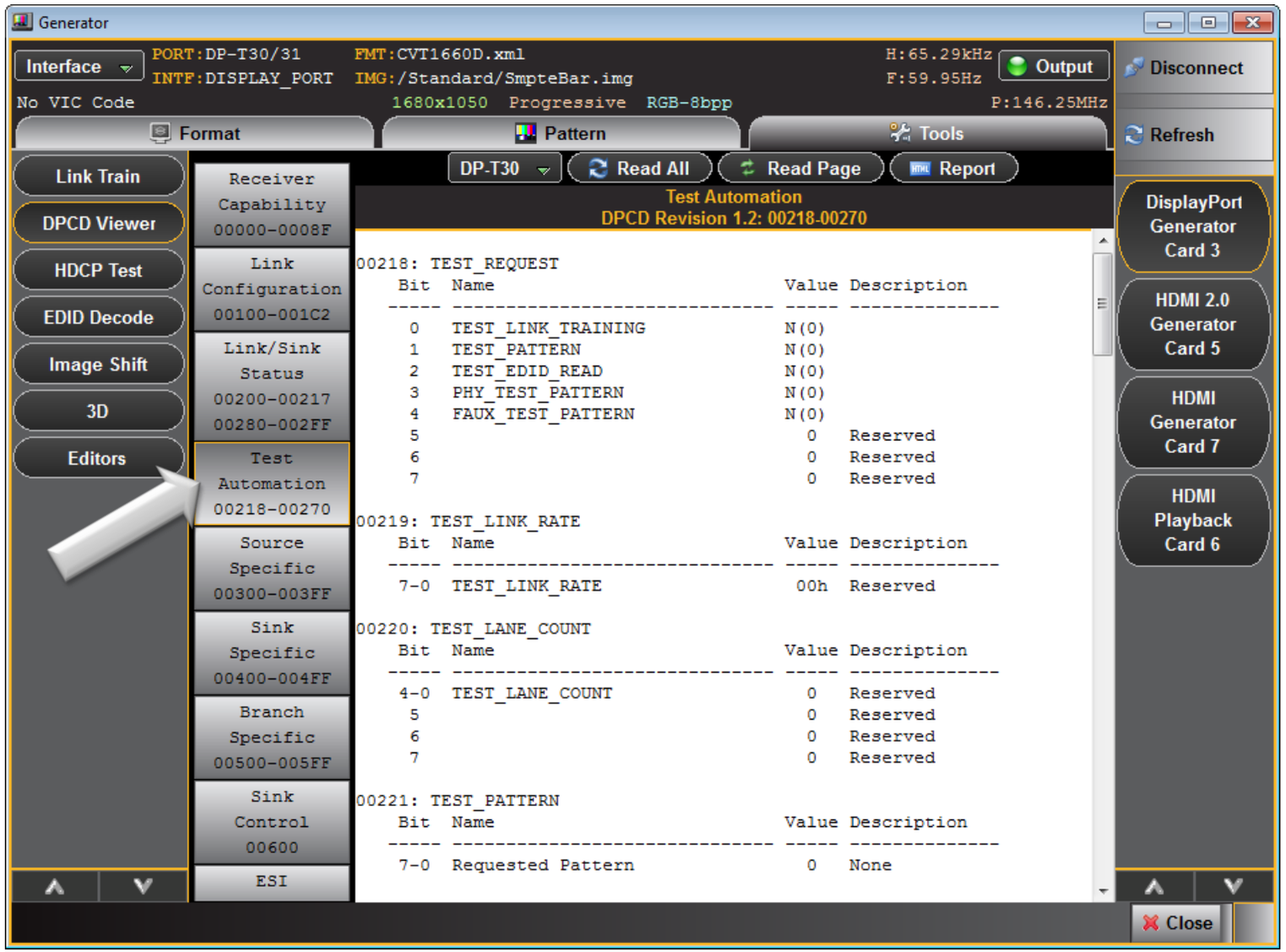
# 980 DP1.2 Video Generator Module – DPCD Testing




View DPCD Registers:

- Read Link/Sink Status page.

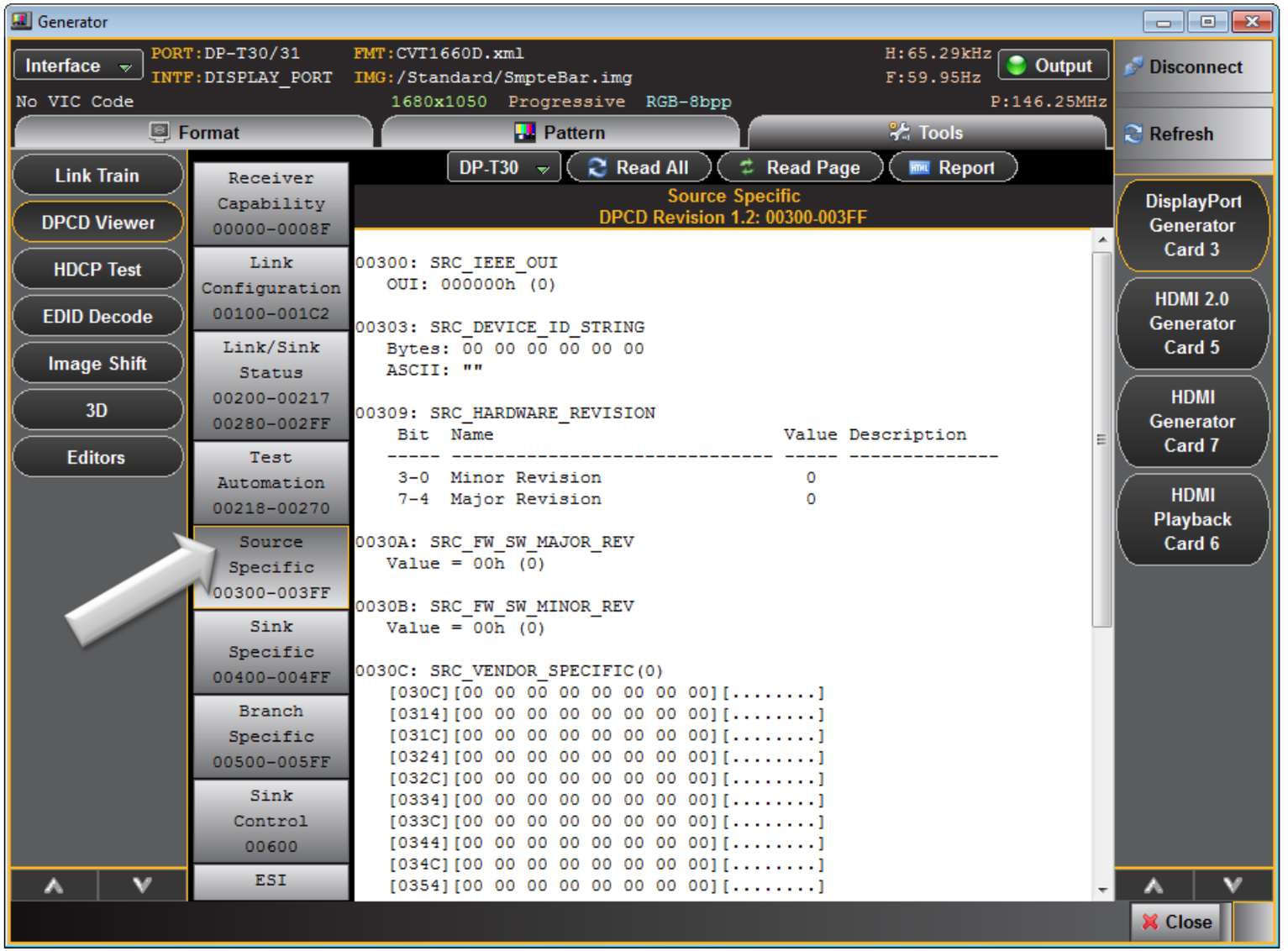
# 980 DP1.2 Video Generator Module – DPCD Testing




View DPCD Registers:

- Read Test Automation page.

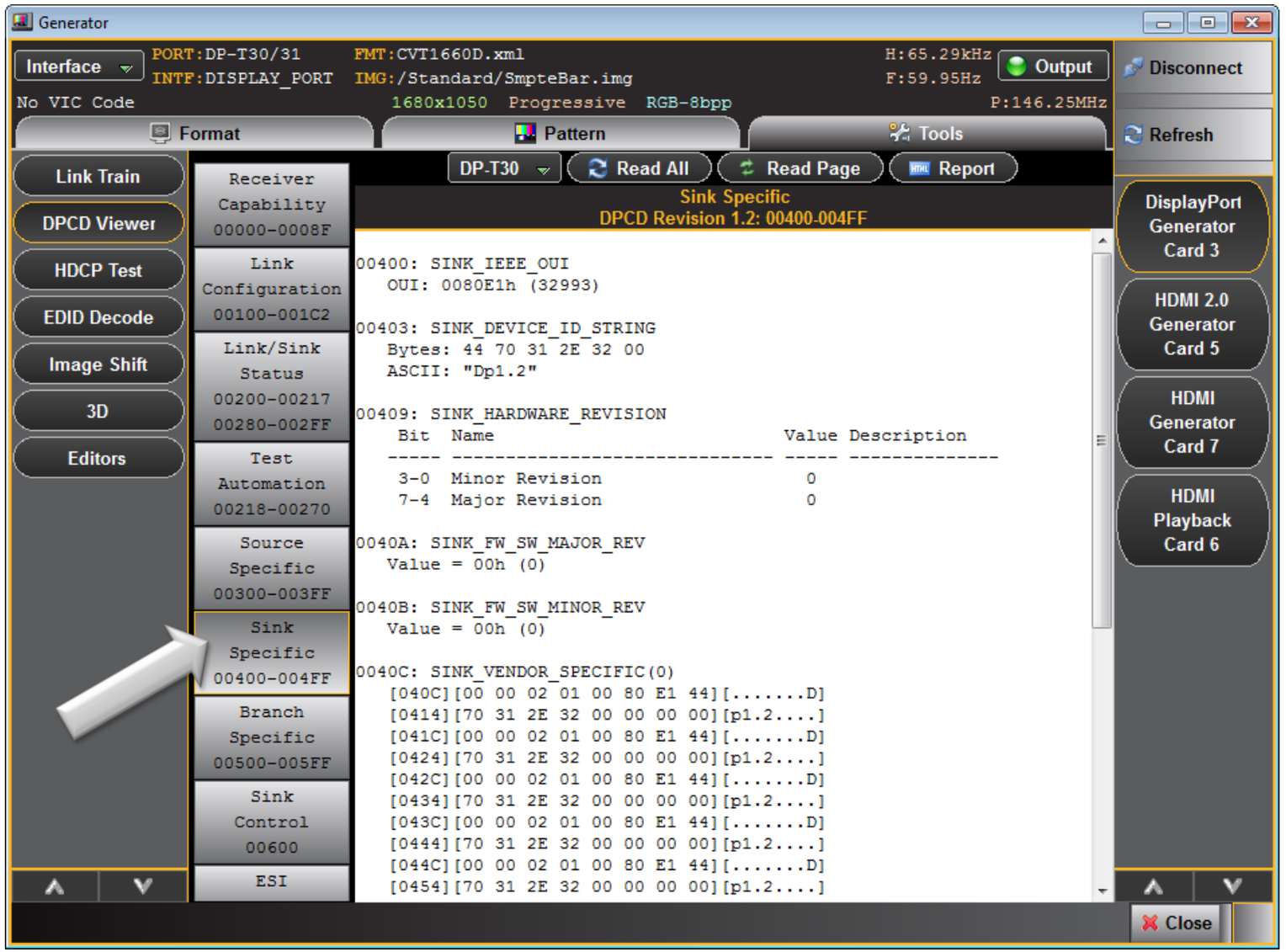
# 980 DP1.2 Video Generator Module – DPCD Testing




View DPCD Registers:

- Read Source Specific page.

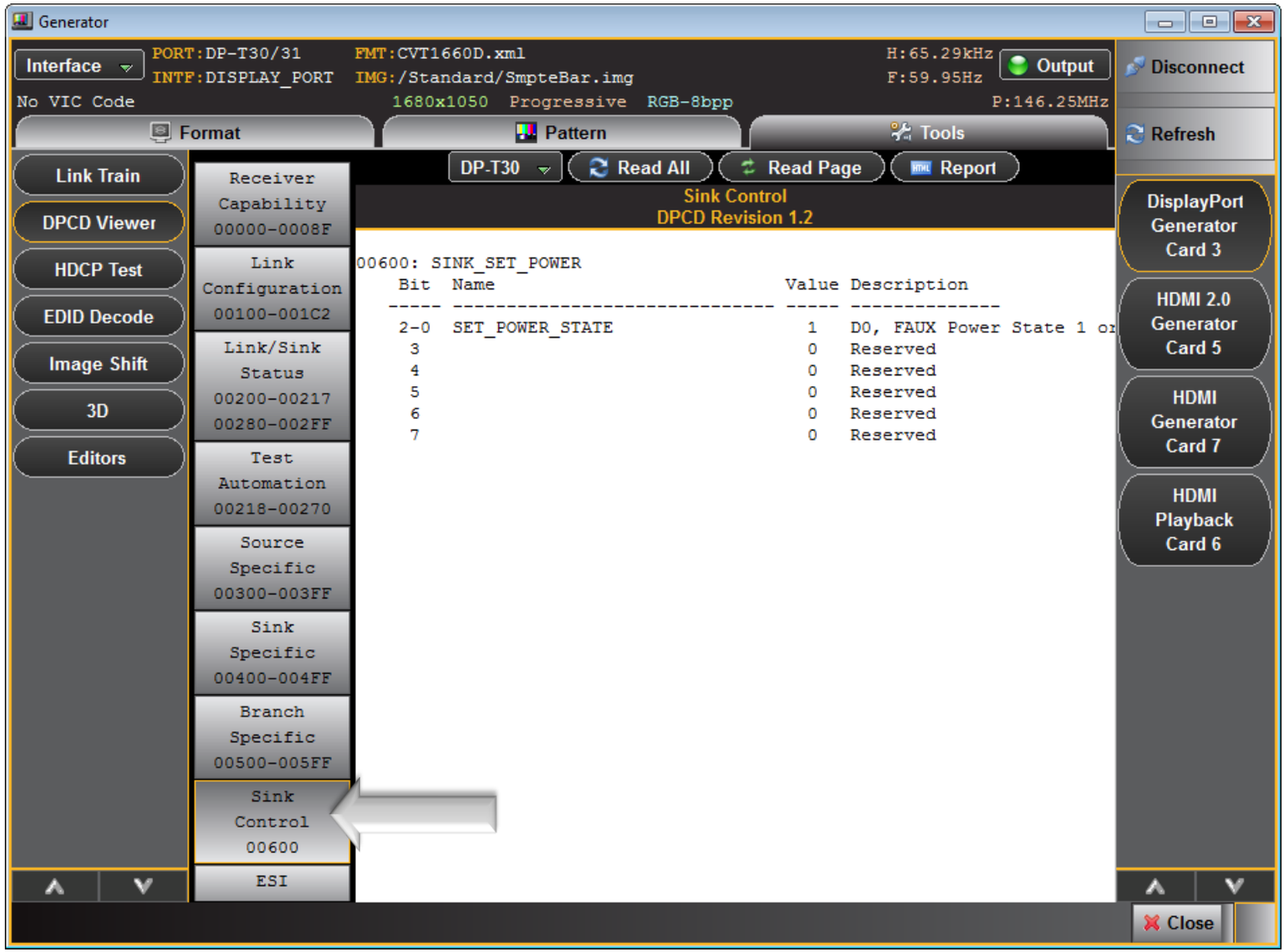
# 980 DP1.2 Video Generator Module – DPCD Testing




View DPCD Registers:

- Read Sink Specific page.

# 980 DP1.2 Video Generator Module – DPCD Testing




View DPCD Registers:

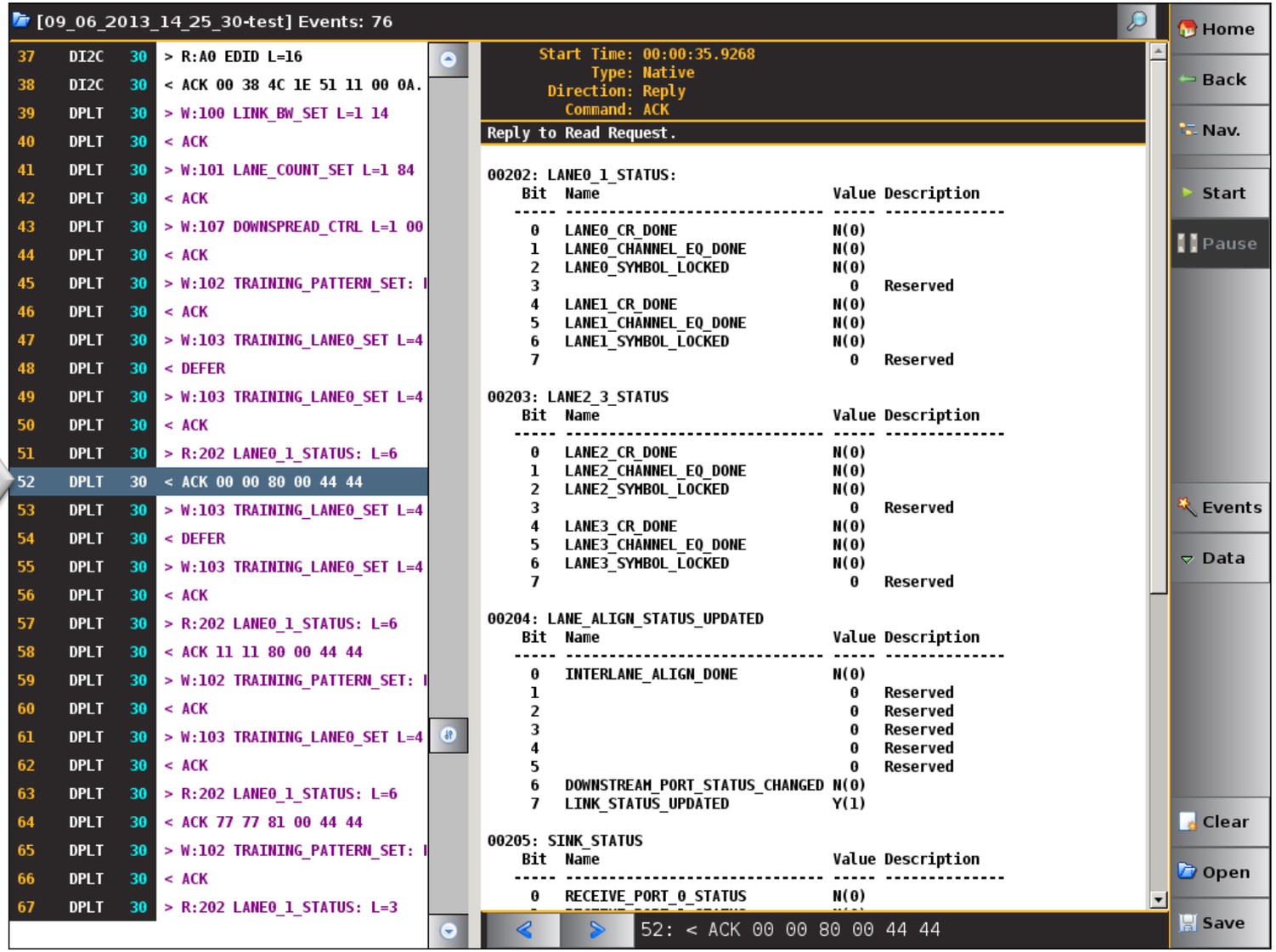
- Read Sink Control page.

# 980 DP1.2 Video Generator Module Monitoring Aux Channel Transactions

# 980 DP1.2 Video Generator - Auxiliary Channel Analyzer

- Monitor Aux Channel transactions (Link Training, DPCD exchanges, HDCP and EDID) through Auxiliary Channel Analyzer (ACA).
- 980 Video Generator module emulates DP1.2 source and monitors DPCD exchanges, Link Training transactions, HDCP authentication transactions and EDID exchanges.

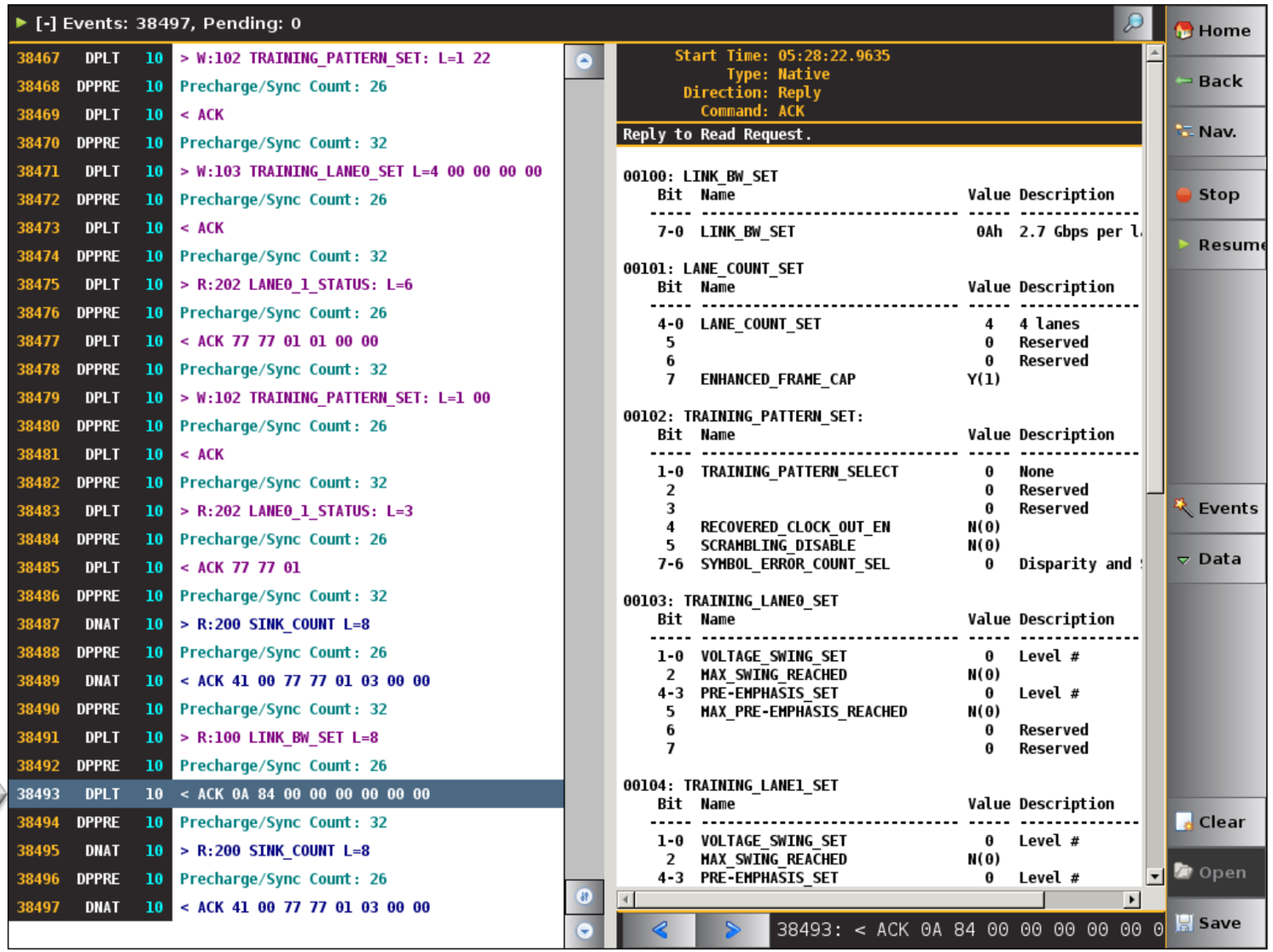
# 980 DP1.2 Video Generator Module – Monitor Link Training




View Aux Chan Link Training transactions:

- Select Specific record to view details.

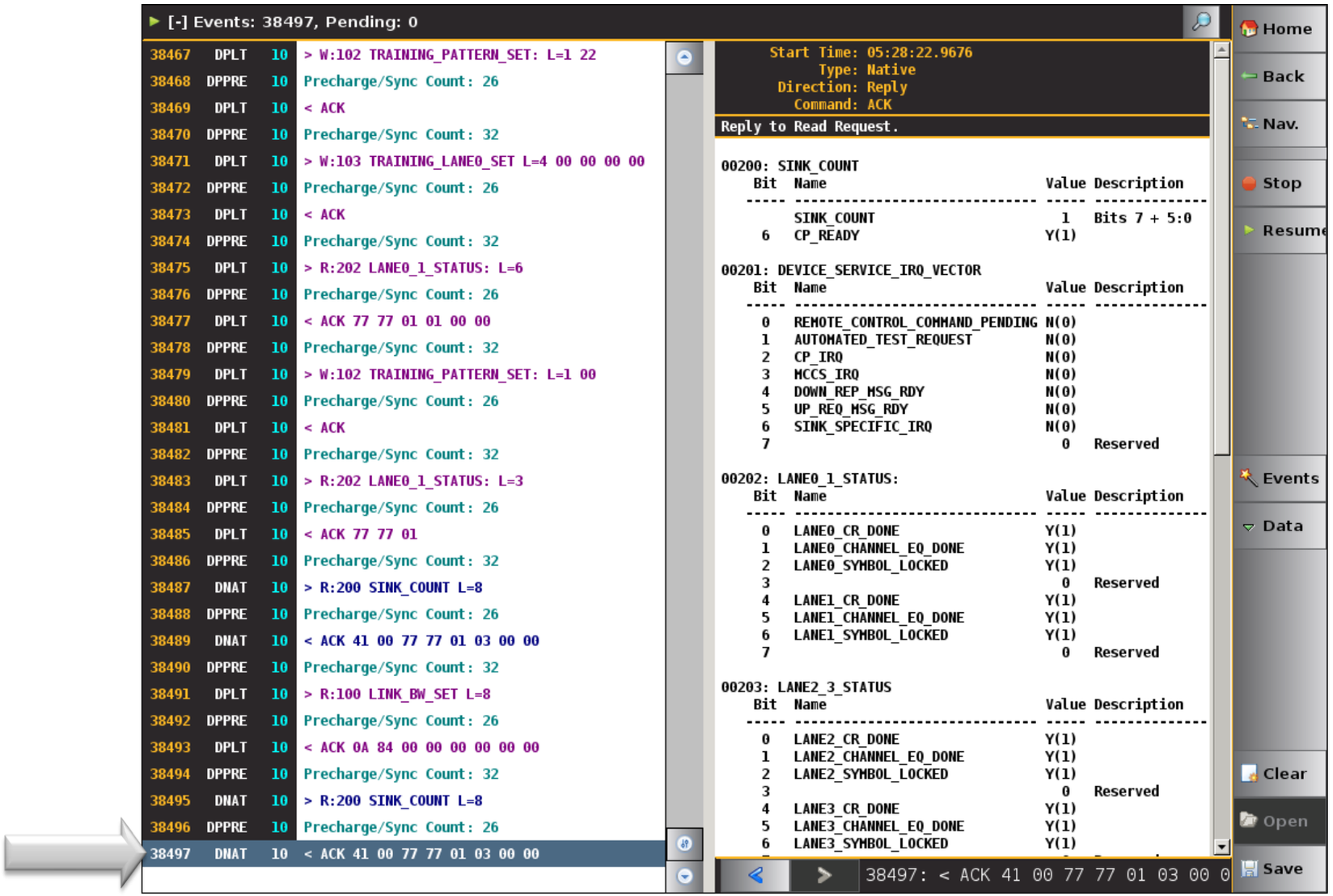
# 980 DP1.2 Video Generator Module – Monitor Link Training




View Aux Chan Link Training transactions:

- Select Specific record to view details.

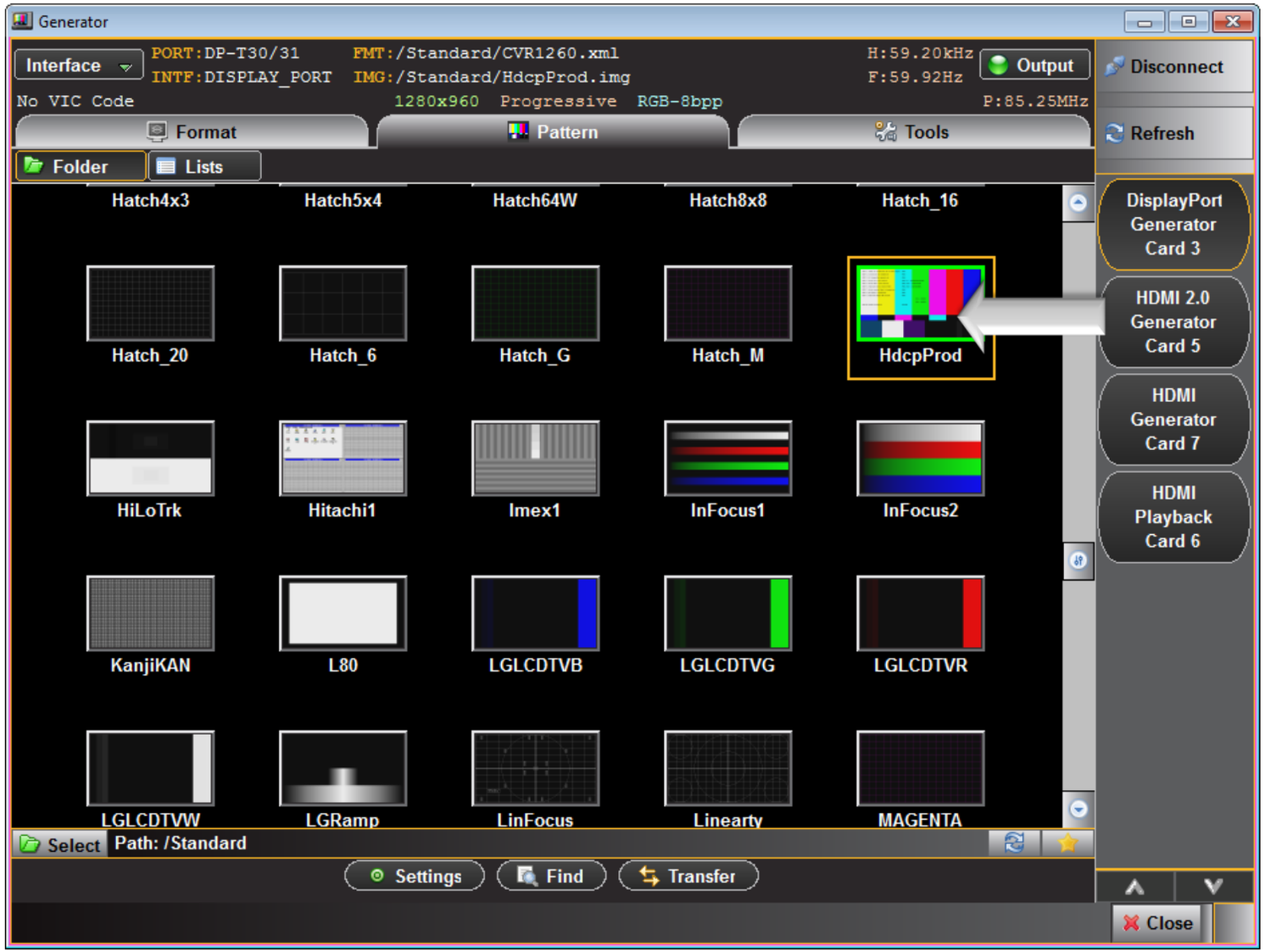
# 980 DP1.2 Video Generator Module – Monitor Link Training




View Aux Chan Link Training transactions:

- Select Specific record to view details.

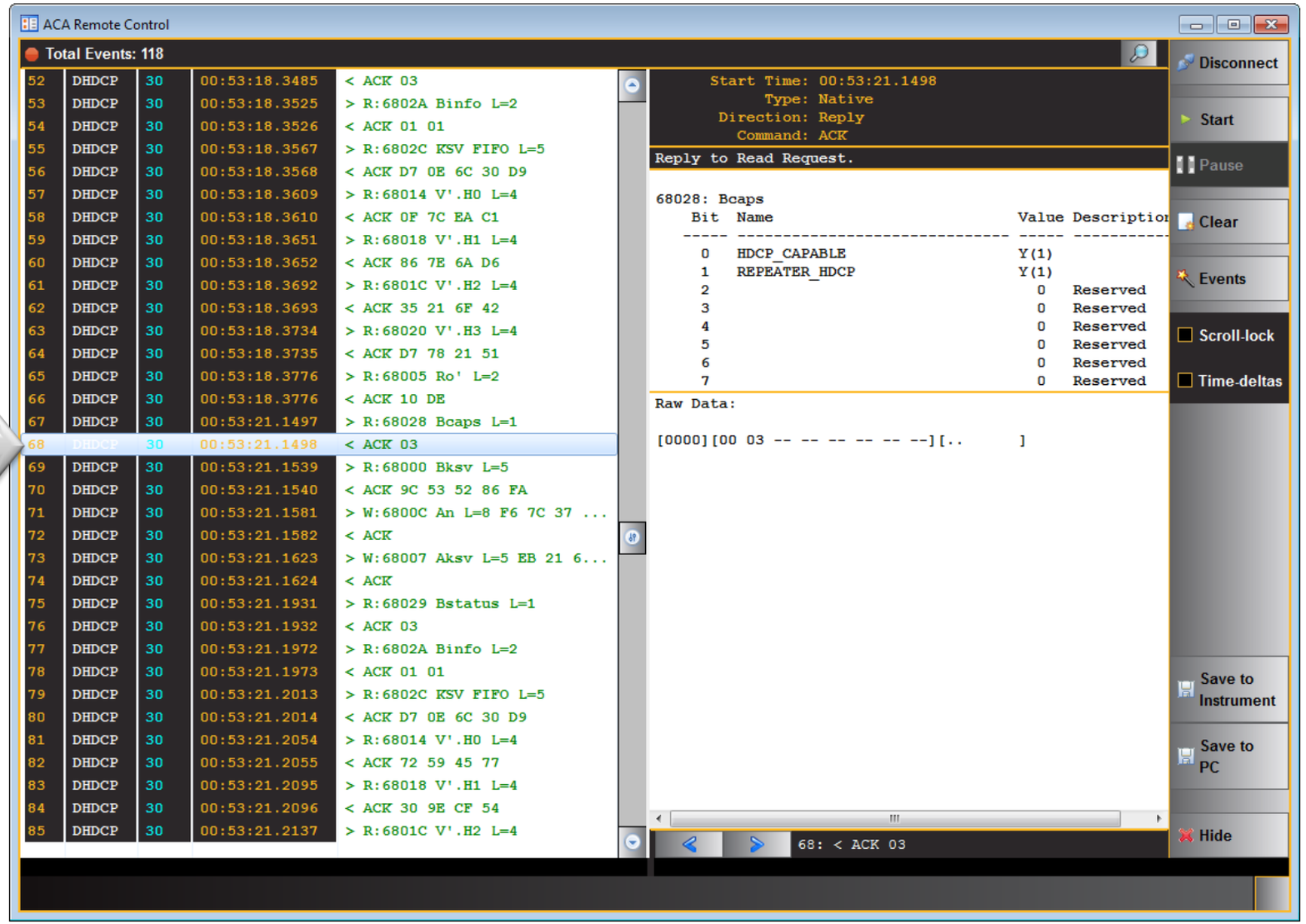
# 980 *DP* Video Generator Module – HDCP Testing




Select test images for DP protocols:

- Select HDCPProd test image.

# 980 DP Video Generator - Auxiliary Channel Analyzer




Monitoring DDC Transactions with HDMI sink device:

- Show details of selected item in human text.

# Quantum Data 980 Video Test Generation Module


**… 980 now supports video pattern testing of DP1.2-capable displays.**