DisplayPort Alternate Mode Vendor Info File Generator

Instruction Manual

Version: 0.2
Date: November 2024

VESA

Introduction

A Vendor Information File (VIF) is a device capability declaration form in XML format. VIFs provide an accurate capture of product capabilities and serve as replacements for the Capabilities Declaration Form (CDF). They enable parsing of certified products, facilitate product audits, and help automate registration, testing, and data collection processes.

To expedite compliance testing for products supporting DisplayPort Alternate Mode (DPAM), vendors must submit one or more DisplayPort Vendor Information Files (DPAM VIF tools) describing the product to be tested.

For instance, a product like a DP Multi-Stream Transport (MST) Hub, which can operate with or without an external power source, would require two DPAM VIF tools—one for each mode of operation.

This document explains how to use the DPAM VIF tool Tool to generate a DPAM VIF tool for use with DPAM testing equipment.

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Glossary

Alternate Mode or Alt Mode	Operation defined by a vendor or standards organization that is associated with an SVID assigned by the USB Implementers Forum, Inc. (USB-IF; see usb.org/members). Entry to and exit from an Alternate Mode is controlled by the USB PD SVDM Enter Mode and Exit Mode commands.
CDF	Capabilities Declaration Form
DisplayPort Alt Mode	DisplayPort Mode, as defined by DP Standard. Alternate Mode in which, when entered, the USB-C interface behaves according to this standard.
DP or DisplayPort	Connector or DisplayPort port presented through a connector defined in DP Standard.
DP Sink Device	Contains the DPTX and at least one stream sink. Leaf device of DP topology. Refers to both a DP Sink device or a DP Sink device on a DP Branch Device.
DP Source Device	Contains the DPRX and at least one stream source. Root device of DP topology. Refers to both a DP Source device or DP Source device on a DP Branch Device.
DP UHBR13.5 Support	DisplayPort Ultra-High Bit Rate 13.5 Support (13.5 Gbps/lane).
MST	Multi-stream Transport.
Parsing	Sorting through device capabilities.
SOP or Start of Packet	Otherwise known as Start of Packet. There are three start of packet sequences which are defined as SOP, SOP', and SOP", with SOP* used when referring to all three.
VIF or Vendor Information File	A VIF is a device capability declaration form in XML format.
XML Format	Extensible Markup Language lets you define and store data in a shareable manner.

Reference Documents

DPAM VIF Spec and Tool	https://groups.vesa.org/wg/DPUSB/document/folder/3024)
USB Document Library	www.usb.org/documents
USB-IF Vendor Info File Document	https://usb.org/document-library/usb-vendor-info-file-generator

Revision History

Version	Date	Revision
0.1	11-04-2024	Added revision history table and numbered headers.
0.2	11-21-24	Added revisions discussed.

1. How to use the DPAM VIF Tool

To use the DPAM VIF tool, you'll first need to generate a USBIF VIF using the USB Vendor Info File Generator. Visit the USB Document Library at www.usb.org/documents, locate the folder labeled **USB Vendor Info File Generator**, and click download.

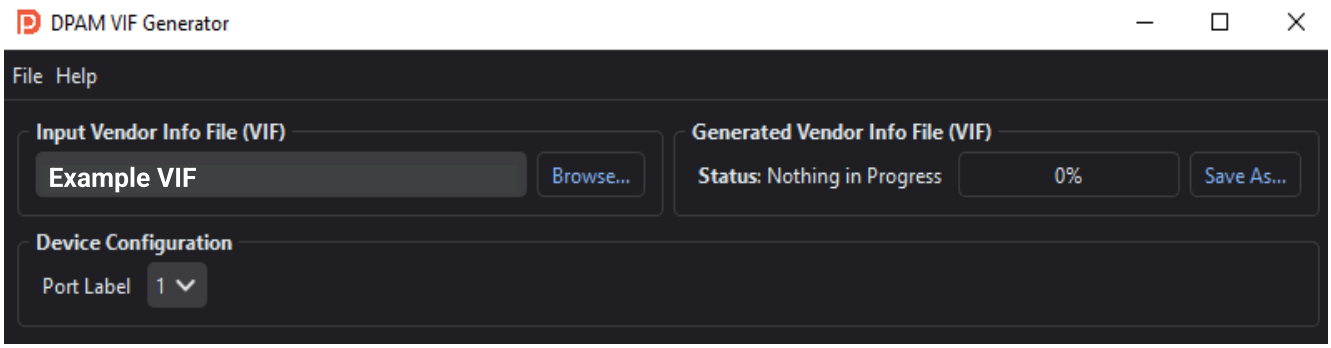
Once you've obtained the USB VIF generator, use it to create a USB VIF that accurately details your product's USB capabilities. Alternatively, you can request this file from your USBPD controller's provider or OEM.

Next, load the generated USB VIF. You can find this tool within the **DP on USB Type-C Connector Subgroup** folder, located in the sub-folder titled **DP Alt Mode VIF**. In this folder, download the **DPAM VIF Spec and Tool** (https://groups.vesa.org/wg/DPUSB/document/folder/3024).

After downloading, unzip the folder and launch the application named **dpamvifgenerator**. The application icon should appear as follows:

1.1 Using the DPAM VIF Generator

When you open the application, the following screen will appear. By clicking “Browse”, you can select, configure, and generate a VIF for testing. Hovering over the category titles will display a summary of its purpose.



Input VIF

To input a VIF you’ll first select “Browse” and select a path to an existing USB VIF XML file.

Device Configuration

In the "Device Configuration" section, there is a "Port Label" field with selectable options depending on the number of USB Type-C ports available in the device.

Generated VIF

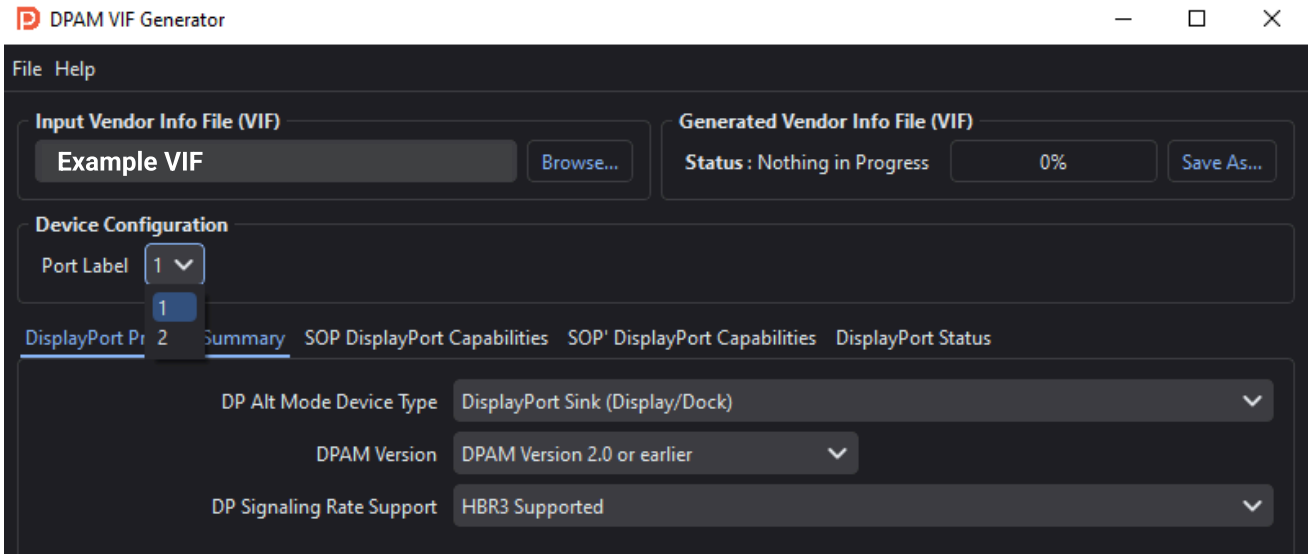
The "Generated Vendor Info File" section shows the generation status as a percentage and provides the option to save the VIF to your computer once complete.

Port Label

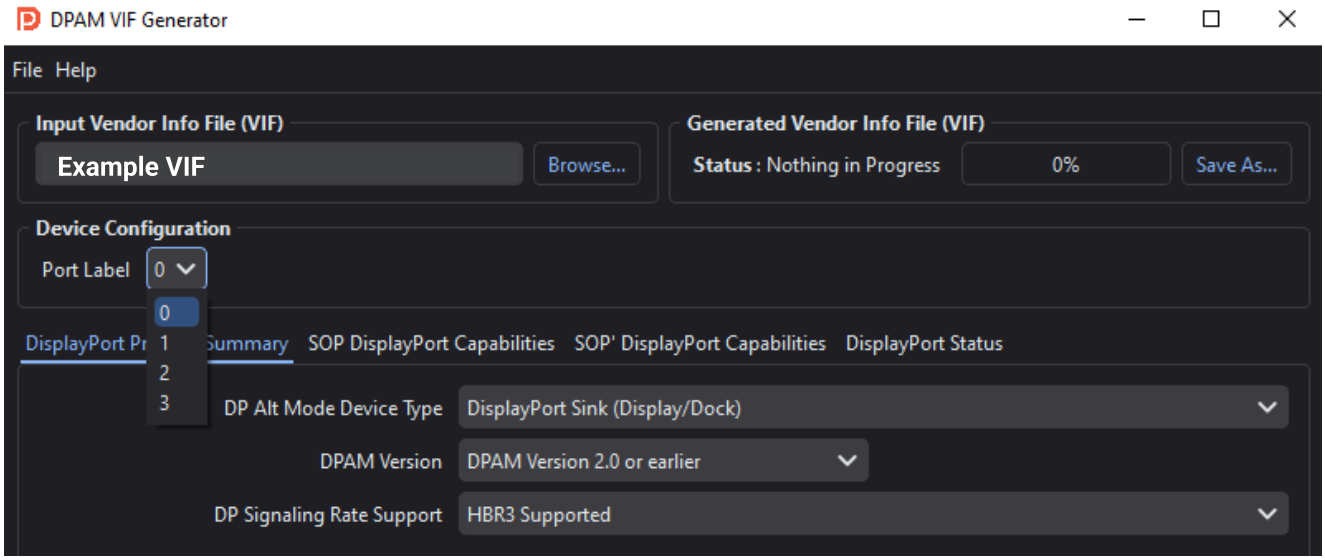
To be provided by the vendor, the port label is a user defined label which differentiates one USB Type-C port from another. Refer to latest USB-IF Vendor Info File Document (https://usb.org/document-library/usb-vendor-info-file-generator).

If Port Label fields are blank or not as expected they must be corrected using the USB-IF VIF Editor tool prior to importing to the DPAM tool. If the fields and Port Labels are red, the field has not been completed and must be corrected before use. Port Label is not applicable to cables.

Two Port Example

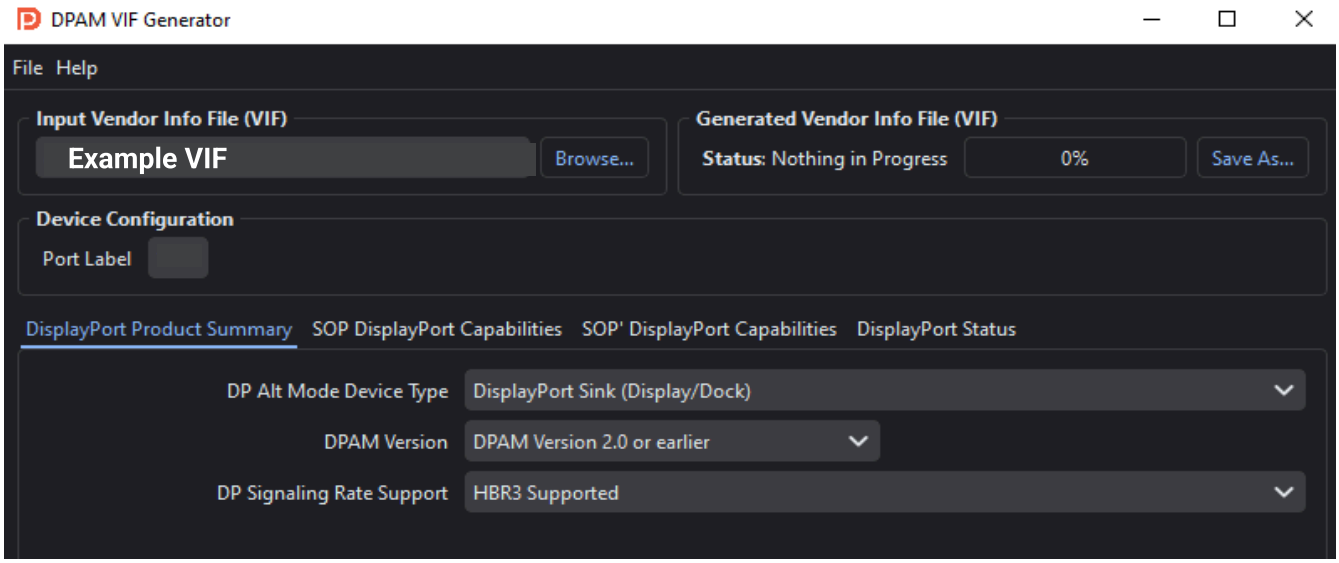


Three Port Example



1.2 DisplayPort Product Summary

The "DisplayPort Product Summary" category includes the following fields: DP Alt Mode Device Type, DPAM Version, and DP Signaling Rate Support.



DP Alt Mode Device Type

This field specifies the type of DisplayPort device:

- **DP Sink:** Refers to devices such as monitors, docks, and other end-products that act as the receiver (sink) of DisplayPort data.
- **DP Source:** Refers to devices like laptops, smartphones, and other end-products that transmit (source) DisplayPort data.
- **DP Source & Sink:** Applies to bi-directional devices, such as USB Type-C to DP cables and docks, which can function as both a DisplayPort source and sink.

DPAM Version

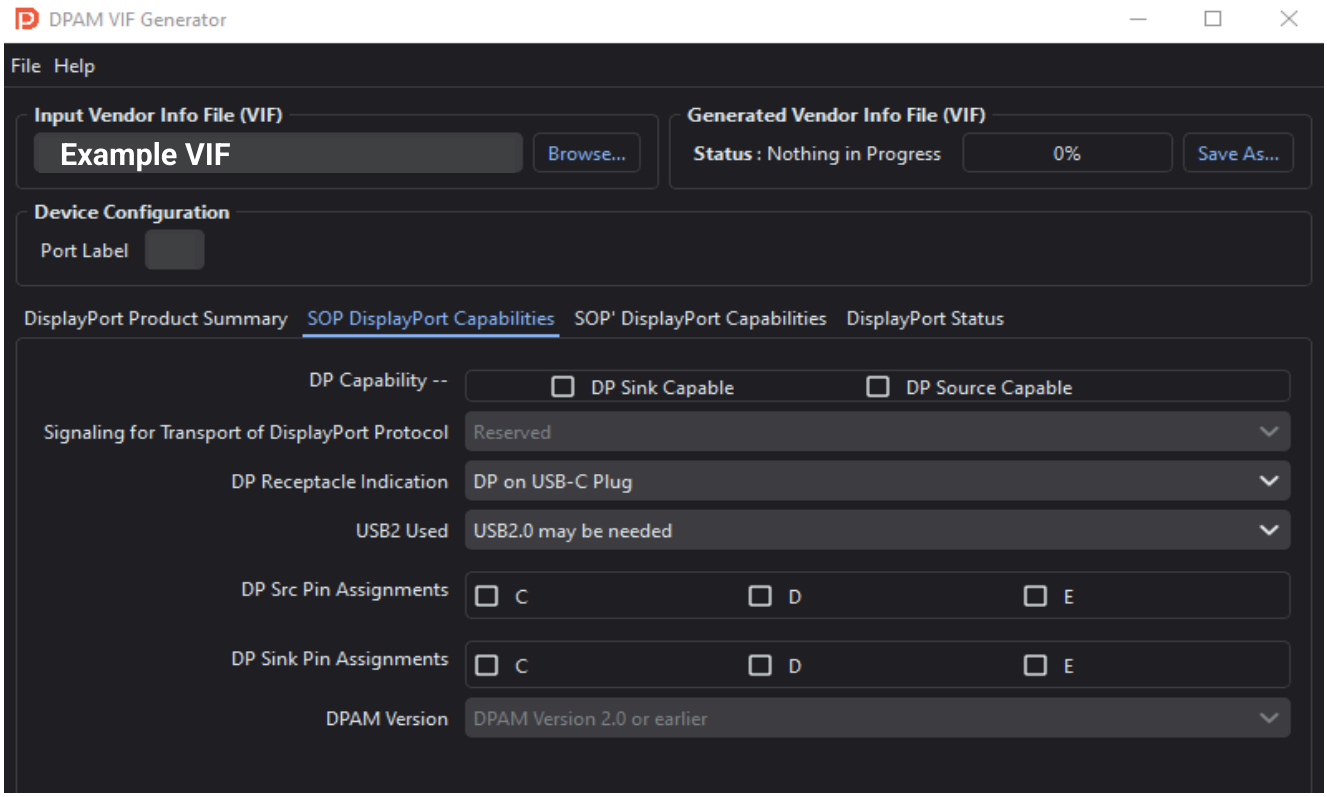
This field indicates whether the product supports DP Alt Mode Version 2.0 (or earlier) or DP Alt Mode Version 2.1 (or higher).

DP Signaling Rate Support

This field indicates the highest DisplayPort data rate supported by the interface: HBR3, UHBR10, UHBR13.5, or UHBR20.

1.3 SOP DisplayPort Capabilities

The "SOP DisplayPort Capabilities" section enables users to assess the capabilities of a USB Power Delivery-enabled DP Source or DP Sink device within the VIF. This section includes fields such as DP Capability, Signaling for Transport of DisplayPort Protocol, DP Receptacle Indication, USB2 Usage, DP Source Pin Assignments, DP Sink Pin Assignments, and DPAM Version.



DP Capability

This field corresponds to the capabilities of the DisplayPort product.

- **DP Sink:** Refers to devices such as monitors, docks, and other end-products that act as the receiver (sink) of DisplayPort data.
- **DP Source:** Refers to devices like laptops, smartphones, and other end-products that transmit (source) DisplayPort data.
- **DP Source & Sink:** Applies to bi-directional devices, such as USB Type-C to DP cables and docks, which can function as both a DisplayPort source and sink.

Signaling for Transport of DisplayPort Protocol

This value will always be set to 0001b.

DP Receptacle Indication

This field corresponds to where the DisplayPort interface is presented: USB Type-C Plug or Receptacle.

USB2 Used

This field is set where USB2.0 is needed while in a DisplayPort Configuration.

DP Src Pin Assignments

This field specifies the supported DP Source Pin Assignments for a USB-C receptacle or the supported DP Sink Pin Assignments for a USB-C plug. The receptacle details are determined by the DP Receptacle Indication field. Users can also select C, D, or E pin assignments.

DP Sink Pin Assignments

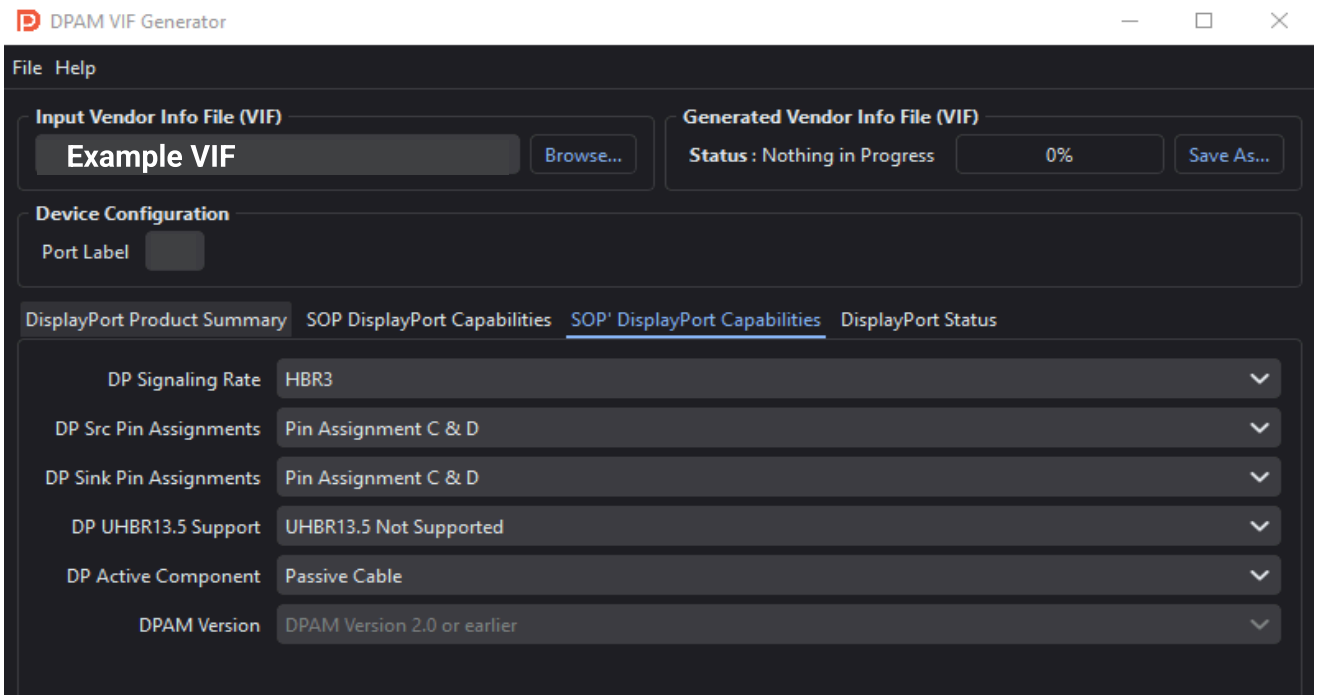
This field specifies the supported DP Sink Pin Assignments for a USB-C receptacle or the supported DP Source Pin Assignments for a USB-C plug. The receptacle details are determined by the DP Receptacle Indication field. Users can also select C, D, or E pin assignments.

DP Alt Mode Version

This field specifies the DisplayPort Alternate Mode version, either DisplayPort 2.1 or higher, or DisplayPort 2.0 or earlier.

1.4 SOP’ DisplayPort Capabilities

The "SOP DisplayPort Capabilities" category allows the user to select options based on the capabilities of a VBUS-powered device or a cable plug capable of USB PD SOP' communication.



DP Signaling Rate

This field specifies the rates supported by the cable: HBR3, HBR3 & UHBR10, or HBR3, UHBR10, & UHBR20.

DP Src Pin Assignments

This field specifies the DP Source Pin Assignments supported by the cable. Pin Assignments C and D are supported by USB-C to USB-C cables, while Pin Assignment E is supported by DP to USB-C cables.

DP Sink Pin Assignments

This field specifies the DP Sink Pin Assignments supported by the cable. Pin Assignments C and D are supported by USB-C to USB-C cables, while Pin Assignment E is supported by DP to USB-C cables.

DP UHBR13.5 Support

This field is enabled when the cable supports UHBR13.5. Passive cables that support UHBR20 will also have this field set.

DP Active Component

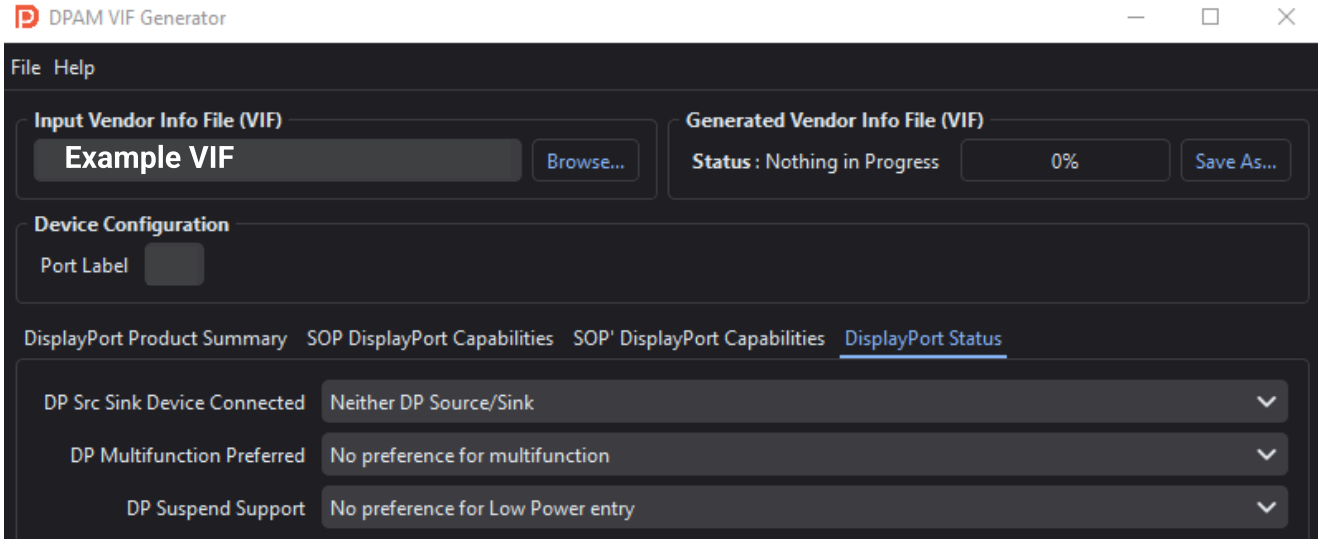
This field corresponds to the Active Component in the cable.

DPAM Version

This field sets the DisplayPort Alternate Mode Version for DisplayPort 2.1 or higher (or) DisplayPort 2.0 or earlier supported by the cable.

1.5 DisplayPort Status

The “DisplayPort Status” category allows the user to select options from the following fields: DP Src Sink Device Connected, DP Multifunction Preferred, and DP Suspend Support.



DP Src Sink Device Connected

This field defines the DisplayPort Status Update or Response message for the connected device. Choose from the following options:

- Neither DP Source/Sink.
- DP Source Connected.
- DP Sink Connected.
- DP Source/Sink Connected.

DP Multifunction Preferred

This field specifies whether the device will respond with the Multifunction Preferred - Pin Assignment D. The user can also select from the following options:

- No preference for multifunction.
- Multifunction is preferred.

DP Suspend Support

This field indicates if the device supports DisplayPort Alternate Mode Suspend. The user can also choose from the following options: No preference for Low Power entry, No Low Power preferred.