DisplayPort Alternate Mode on USB Type-C Vendor Information File Specification

1 DisplayPort_Product_Summary

1.1 DP_Alt_Mode_Device_Type

This field defines the DisplayPort Alternate Mode device type.

Setting	Enum (B0:2)	Description
DisplayPort Sink (Display/Dock)	000	Supports SOP Messaging
DisplayPort Source (Notebook)	001	Supports SOP Messaging
DisplayPort Type-C to Type-C Cable	010	Supports SOP'(SOP") Messaging
DisplayPort to Type-C Cable	011	Supports SOP' and SOP Messaging
DisplayPort Source/Sink	100	Supports SOP Messaging

1.2 DP_Version

Setting	Enum B3:5	Description
DP1.4	000	
DP2.0	001	
DP2.1	010	

1.3 DP_Signaling_Rate_Support

This field defines the DisplayPort Signaling Rate supported by the device

Setting	B6:11	Description
HBR3 Supported	B3	
UHBR10 Supported	B4	
UHBR13.5 Supported	B5	
UHBR20 Supported	B6	
Reserved	B7:8	

1.4 Device_Power_Source – Stored in VIF (Tester can pull this from the USB portion)

This field defines how the device is powered in normal working conditions

Setting	Enum B12:14	Description
Self Powered	000b	
Bus Powered	001b	
Dual Powered	010b	

1.5 TBD – Place Holder

2 SOP_DP_Capabilities (USB PD Discover Modes for 0xFF01)

2.1 DP_Capability

This field will correspond to the capabilities of the DisplayPort product. DP Sink is used for end-products such as monitors, docks, etc. DP Sources is used for end-products such as Notebooks, Cell Phones, etc. DP Source & Sink is used for end-products such as bi-directional Type-C to DP cables, docks, etc.

Setting	VDO Value (B1:0)	Description
DP Sink Capable	01b	
DP Source Capable	10b	
Both DP Source & Sink Capable	11b	

2.2 Signaling for Transport of DisplayPort Protocol

This value shall always be set to 0001b

2.3 DP_Receptacle_Indication (This is defined in the VIF already – captive cable)

This field corresponds where the DisplayPort interface is presented, either Type-C Plug or Receptacle

Setting	VDO Value (B6)	Description
DP on USB-C Plug	0b	
DP on USB-C Receptacle	1b	

2.4 USB2_Used

This field is set when USB2.0 is need while in a DisplayPort Configuration

Setting	VDO Value (B7)	
USB2.0 may be needed	0b	
USB2.0 is not needed	1b	

2.5 DP_Src_Pin_Assignments (DP Sink Assignments for Plug)

This field will correspond to 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 information is set by the information in **DP_Receptacle**_Indication

Setting	VDO Value (B15:8)	
Pin Assignment C	B10	
Pin Assignment D	B11	
Pin Assignment E	B12	

2.6 DP_Sink_Pin_Assignments (DP Source Assignments for Plug)

This field will correspond to 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 information is set by the information in **DP_Receptacle_**Indication

Setting	VDO Value (B23:16)	
Pin Assignment C	B18	
Pin Assignment D	B19	
Pin Assignment E	B20	

2.7 DP_Alt_Mode_Version

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

Setting	VDO Value (B31:30)	
DPAM Version 2.0 or earlier	00b	
DPAM Version 2.1 or higher	01b	

1.8 DP_Mode_Auto_Entry

This field is specific for a DFP (DP Source) in which it will automatically enter DP Alt Mode. This field is not set for a UFP (DP Sink) as the DP Alt Mode sequence would be initiated by the DFP port partner.

2 SOP' DisplayPort Capabilities (USB PD Discover Modes for 0xFF01)

2.1 DP_Signaling_Rate

This field corresponds to the rates supported by the cable.

Setting	VDO Value (B5:2)	
HBR3	0001b	
HBR3 & UHBR10	0011b	
HBR3, UHBR10, & UHBR20	0111b	

2.2 DP_Src_Pin_Assignments

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

Setting	VDO Value (B15:8)	
Pin Assignment C & D	0Ch	
Pin Assignment E	10h	

2.3　　　DP_Sink_Pin_Assignments

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

Setting	VDO Value (B24:16)	
Pin Assignment C & D	0Ch	
Pin Assignment E	10h	

2.4　　　DP_UHBR13p5_Support

This field is set when the cable supports UHBR13.5. Passive cables supporting UHBR20 shall have this field set.

Setting	VDO Value (B26)	
UHBR13.5 Supported	1b	
UHBR13.5 Not Supported	0b	

2.5　　　DP_Active_Component

This field corresponds to the Active Component in the cable.

Setting	VDO Value (B29:B28)	
Passive Cable	00b	
Active Re-Timer Cable	01b	
Active Re-Driver Cable	10b	
Optical Cable	11b	

2.6　　　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.

Setting	VDO Value (B31:30)	
DPAM Version 2.0 or earlier	00b	
DPAM Version 2.1 or higher	01b	

3　DisplayPort Status

3.1　　　DP_Src_Sink_Device_Connected

This field defines the DisplayPort Status Update or Response message for the type of device connected

Setting	VDO Value (B1:0)	
Neither DP Source/Sink	00b	
DP Source Connected	01b	
DP Sink Connected	10b	
DP Source/Sink Connected	11b	

3.2 DP_Multifunction_Preferred

This field will set if the device will respond with the Multifunction Preferred - Pin Assignment D

Setting	VDO Value (4)	
No preference for multifunction	0b	
Multifunction is preferred	1b	

3.3 DP_Suspend_Support

This field will set if the device supports DisplayPort Alternate Mode Suspend

Setting	VDO Value (9)	
No Preference for Low Power Entry	0b	
No Low Power Preferred	1b	

3.4 TBD

4 Proposed Location in USB-IF VIF Tool

4.1 Option1: Making the Optional Content Port Specific

The change will require the "Option Content" tab to be updated to be a port specific field instead of a general field. This will allow the added DP Alt Mode information in the "Optional Content" to inherit the port specific behavior. This relies on USB-IF to update their existing tool.