

Setup Guide

USB 3.2 xHCI-based Certification Platform

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Revision 2.6

About this Document

Content Owner	SuperSpeed USB Compliance (usbcompliance@usb.org)
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Revision History

Revision 1.0	Release
Revision 1.1	Added information about USB30CV and Drivers
Revision 1.2	Added information about UAC with USB30CV
Revision 1.3	Added information about USB30CV installation, equipment setup with the NEC (Renesas) xHCI
Revision 1.4	Updated information about USB30CV documentation and updated contact information for the USB-IF Technical Support
Revision 1.5	Updated information about USB30CV directory structure
Revision 1.6	Updated information about USB30CV driver names, updated installation settings required for 64-bit operating systems and updated Renesas PDK jumper settings
Revision 1.7	Updated information about PDK Jumper Settings
Revision 1.8	Updated to xHCI spec version 1.0 based PDK boards. Added information based on use of Stack Switcher
Revision 1.9	Removed Renesas PDK. Added Dell XPS8700 certification testing platform. Modifications to Dell XPS8700 system for certification testing.
Revision 2.0	Added Dell XPS8920 Special Edition and Modification to Dell XPS 8920 Special Edition Removed Fresco PDK and Added info on Point Grey Card Removed Windows 8.1 and added Windows 10
Revision 2.1	Added Dell XPS8930 and Modification to Dell XPS 8930
Revision 2.2	Added Dell XPS8930 (9 th Gen), Updated USB 3.1 to 3.2 Removed Dell XPS8920
Revision 2.3	Added Dell XPS 8940 (11 th Gen), Removed XPS 8700, 8920, 8930
Revision 2.4	Updated FL1100 xHCI PCIe Add-In card purchase resource to Teledyne FLIR
Revision 2.5	Removed FL1100 xHCI PCIe Add-In card
Revision 2.6	Added Dell XPS 8960 (14 th Gen)

Contents

1.	INTRODUCTION	5
2.	USB 3.2 CERTIFICATION PLATFORM PREPARATION.....	6
2.1.	DELL XPS8960 Configuration.....	6
2.2.	System Modification	6
2.3.	DELL XPS8940 Configuration.....	7
2.4.	System Modification	7
3.	SOFTWARE SETUP	11
3.1.	Command Verifier Installation	11
	3.1.1. CV Stack Switcher	11
4.	TROUBLESHOOTING.....	12

Acronyms

ESD	Electro Static Discharge
DUT	Device Under Test
FW	Firmware
HW	Hardware
I/O	Input / Output
MB	Motherboard
NC	No Connection
OS	Operating System
PC	Personal Computer
PCB	Printed Circuit Board
PCI	Peripheral Component Interconnect
PCIe	PCI Express. Refer to the PCIe specification
PCLK	PHY Clock Signal
PDK	Peripheral Development Kit
PHY	Physical Layer
UAC	User Account Control
USB	Universal Serial Bus
USB-IF	Universal Serial Bus Implementers Forum
xHCI	extensible Host Controller Interface

1. INTRODUCTION

The USB-IF uses the DELL XPS8940/8960 for USB3.2 Certification. Testing is performed using the on-board Intel xHCI host controller. This document provides information and instructions to modify the XPS8940/8960 certification platform. The system hardware specifications and software installation have been tested by qualified hardware technicians. Deviation from these instructions may result in unpredictable behavior in the certification platform. This document is not a substitution for any referenced documentation. The procedures should be performed by a qualified technician only.

2. USB 3.2 CERTIFICATION PLATFORM PREPARATION

2.1. DELL XPS8960 Configuration

For best results when purchasing the DELL XPS8960 the recommended minimum system requirements are:

- Intel Core™i7 (14th Generation, 33 MB cache, 20 Cores, 28 threads, up to 5.4 GHz) or faster processor
- 16 GB of RAM
- 120GB or Higher SSD with 10GB of free space
- Microsoft Windows 11 Operating System

2.2. System Modification

DELL XPS8960 is shipped standard with a Wireless Card. This item should be removed before using the system for testing.

Modification Steps:

Step 1

Follow the DELL XPS8960 Owner's Manual for the modification listed below:

- **Remove the Wireless Mini-Card**
- **Ensure that system only has 16 GB of RAM**

Step 2

Do a fresh install of Windows 11. Be sure to delete all partitions on the hard drive beforehand.

After Windows 11 is installed, complete the Windows Updates.

BIOS for the system can be found at

<https://www.dell.com/support/home/en-us>

It is recommended that a system image be saved at this point.

Step 3 The DELL XPS8960 is a "Legacy Free" system, all USB ports are controlled by the Intel xHCI controller. When USB-IF tools like CV are launched control of Mouse and Keyboard will be lost. To avoid this issue, install a secondary PCIe USB card and connect the mouse and keyboard to the USB ports on it.

Intel USB 3.2 Gen 1x1 and USB 3.2 Gen 2x2 controller (14th Generation)

For 3.2 Gen 1x1 and USB 2.0 portion of the certification testing (i.e., for all USB 3.2 Gen 1 and 2, USB 2.0 products) use SS ports (port numbers 18 and 22) on the **back panel** routed to the Intel xHCI Host Controller. There are two SS ports on the back panel. These ports are routed to the onboard Intel XHCI Controller. For USB 3.2 Gen 2x2 use the 20 Gbps port (USB Type-C) on the back panel (Port number is 17). There is one USB 3.2 Gen 2x2 port on the back panel.



Figure 1: 5 Gbps and 20 Gbps Ports on Back Panel of XPS8940

2.3. DELL XPS8940 Configuration

For best results when purchasing the DELL XPS8940, the recommended minimum system requirements are:

- Intel Core™i7 (11th Generation), 2.50GHz or faster processor
- 8 GB of RAM
- 120GB or Higher SSD with 10GB of free space
- Microsoft Windows 11 Pro Operating System

2.4. System Modification

DELL XPS8940 is shipped standard with a Wireless Card. This item should be removed before using the system for testing.

Modification Steps:

Step 1

Follow the DELL XPS8940 Owner's Manual for the modification listed below:

- **Remove the Wireless Mini-Card**
- **Ensure that system only has 8GB of RAM**

Step 2

Do a fresh install of Windows 11 Pro. Be sure to delete all partitions on the hard drive beforehand.

After Windows 11 Pro is installed, complete the Windows Updates.

BIOS for the system can be found at

<https://www.dell.com/support/home/en-us/product-support/product/xps-8940-desktop/drivers>

It is recommended to save a system image at this point.

Step 3

The DELL XPS8940 is a “Legacy Free” system, all USB ports are controlled by the Intel xHCI controller. When USB-IF tools like CV are launched control of Mouse and Keyboard will be lost. To avoid this issue, install a secondary PCIe USB card and connect the mouse and keyboard to the USB ports on it.

Intel USB 3.2 Gen 1 controller (11th Generation)

For 3.2 Gen 1 and USB 2.0 portion of the certification testing (i.e., for all USB 3.2 Gen 1 and 2, USB 2.0 products) use SS (port numbers 21 – 24) on the **back panel** routed to the Intel xHCI Host Controller. There are 4 SS ports on the back panel. These ports are routed to the onboard Intel XHCI Controller. The front panel ports should not be used.



Figure 2: SS Ports on Back Panel of XPS8940

List of Known Issues with Dell XPS8940:

- 1) Please follow Figure 3 below in order to setup additional PCIe cards for testing:

For USB3.2 Gen2 x1 testing please insert ASM3142 Host card in the x4 PCIe Slot (labeled 19 in the diagram)

If installing EHCI card, please install in the x16 PCIe Slot (labeled 20 in the diagram)

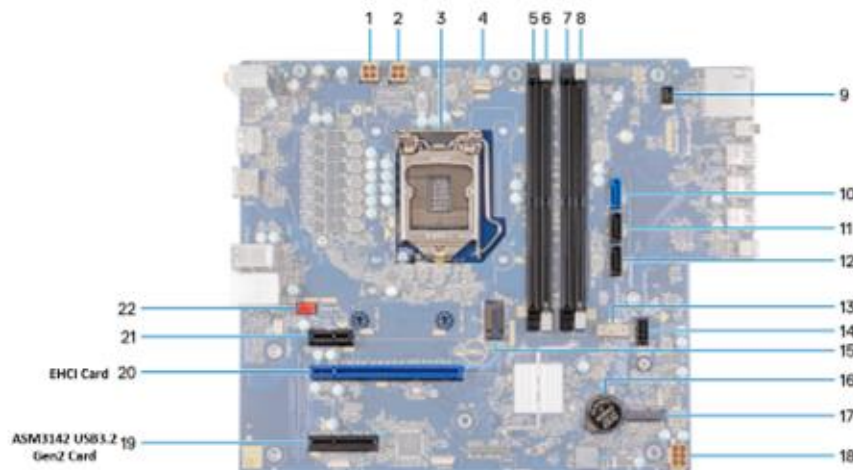


Figure 3: PCIe Add-In Card Slot Configuration for XPS8940

List of Known Issues with Dell XPS8960:

- 1) Please follow Figure 4 below in order to set up additional PCIe cards for testing:

For USB 3.2 Gen 2x1 testing please insert ASM3142 Host card in the x4 PCIe Slot (labeled 16 in the diagram)

If installing EHCI card, please install in the x4 PCIe Slot (labeled 15 in Figure 4)

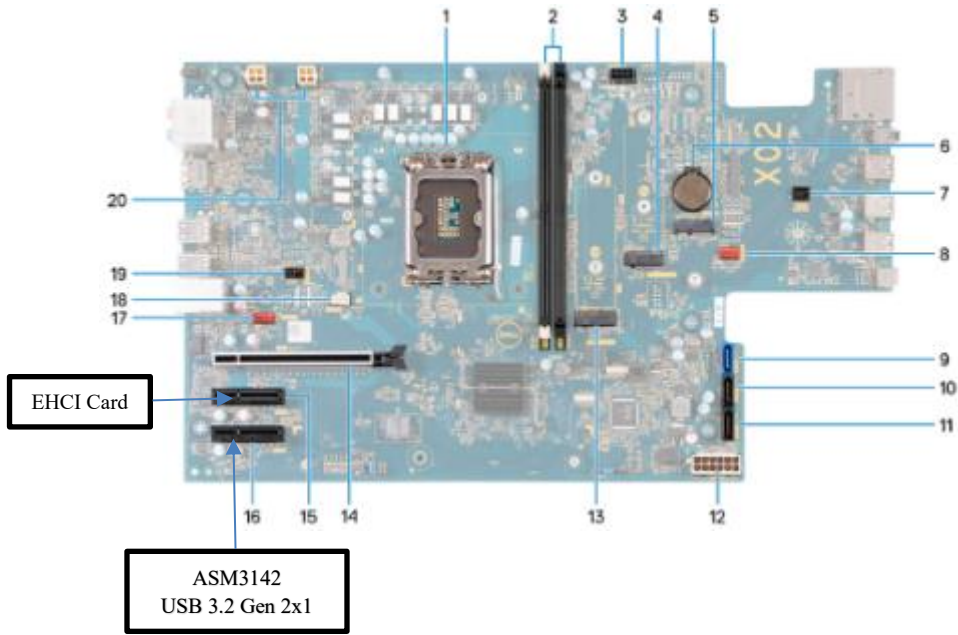


Figure 4: PCIe Add-In Card Slot Configuration for XPS8960

3. SOFTWARE SETUP

The USB3CV software is proprietary software provided by the USB-IF or their representative. Find more information regarding proprietary software setup at the USB-IF website: <https://www.usb.org/compliancetools>

3.1. Command Verifier Installation

If configuring system for use with the CV tool be sure that User Account Control (UAC) is disabled:

- In Control Panel window select **User Accounts**
- In the User Accounts menu select **User Accounts**
- In the User Accounts menu select **Change User Account Control Settings**
- Set notification status to **Never notify** and click **ok**
- Reboot the system

Install the USB3CV software available from the link:

<https://www.usb.org/compliancetools>

3.1.1. CV Stack Switcher

Under normal operation the CV software will automatically install the compliance driver in place of any other host controller driver when CV is opened. When CV is closed properly it will remove the compliance driver and allow Windows to automatically install whichever driver takes priority based on Windows internal driver installation algorithm. This process is accomplished using a tool called “Stack Switcher”. When the compliance driver is correctly installed, it will be viewable from device manager as shown in Figure 4.



Figure 4: Compliance Driver

4. TROUBLESHOOTING

Issue	Possible Cause	Solution

For technical support, contact the USB-IF at usbcompliance@usb.org

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