

USB Implementers Forum Compliance Document
USB 2.0 Interoperability and EHCI Test Procedures

Revision 1.2

January 2017

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Introduction:

The purpose of this document is to outline the compliance procedures for testing USB products including hosts, hubs, and peripherals against the EHCI controller. In addition to this document all vendors must follow the xHCI Interoperability Test Procedures document for peripherals, hosts and hubs found at http://www.usb.org/developers/compliance/ssusb_testing/ and perform all interoperability tests on the SuperSpeed interoperability tree using the methodologies defined in the xHCI Interoperability Test Procedures document. This means that any USB product designed to the USB 2.0 Specification must be tested against the USB 3.x interoperability tree in accordance with its product category.

Methodologies:

1. Interoperability tree methodologies are documented in the xHCI Interoperability Test Procedures Document.
2. Devices must be tested for Bus powered operation. Self-powered hubs and peripherals must initially be attached to a host without their external power connected. The tester then ensures that the product under test does not enumerate without external power. If the product enumerates without external power, the product under test must be tested completely as a bus powered product (i.e. without its external power source).
3. All testing of 2.0 products will use cable lengths defined in the SuperSpeed interoperability tree. If the product under test requires a removable cable it must be of maximum length appropriate for the connector type. For example, if the product under test has a mini-B connector, the cable used for testing is a 4.5m mini-B cable (the maximum cable length for a mini-B cable).
4. If LPM is supported, USB 2.0 products must pass LPM related tests defined in the xHCI Interoperability Test Procedures document.
5. When testing a USB Type-C™ product against the USB 2.0 Specification, please contact techadmin@usb.org for current methodologies and product lists.
6. For current OS used for testing please contact techadmin@usb.org.
7. For definition of OS boot states please visit www.microsoft.com

Device Under Test (DUT):



Figure 1: USB 2.0 EHCI Interoperability Configuration When Product Under Test is a Peripheral

Equipment:

- Certified System
- Certified EHCI add-in card
- Certified USB Cable

EHCI Procedures for USB 3.1 Peripheral:

- EHCI Root port
 - Driver Installation
 - Enumeration
 - Interoperability
 - Hybrid Sleep/ Remote Wake
 - Interoperability
 - Hibernate / Resume
 - Interoperability
 - Warm Boot
 - Interoperability
 - Hybrid Boot
 - Interoperability
 - Cold boot
 - Interoperability

EHCI Procedures for USB 2.0 Peripheral:

- EHCI Root port
 - Driver Installation
 - Enumeration
 - Interoperability
 - Hybrid Sleep/ Remote Wake
 - Interoperability
 - Hibernate / Resume
 - Interoperability
 - Warm Boot
 - Interoperability
 - Hybrid Boot
 - Interoperability
 - Cold boot

- Interoperability

xHCI Procedures for USB 2.0 Peripheral:

- USB 2.0 Peripheral required to perform peripheral testing defined in the xHCI Interoperability Test Procedures Document found on the usb.org website. The xHCI Interoperability Test Procedures Document does not specifically reference 2.0 Peripheral, but all interoperability test methodologies applicable to 3.1 Peripheral are applicable to 2.0 Peripheral.

xHCI Procedures for USB 3.1 Peripheral:

- Refer to xHCI Interoperability Test Document.

Hub Under Test (HUT)

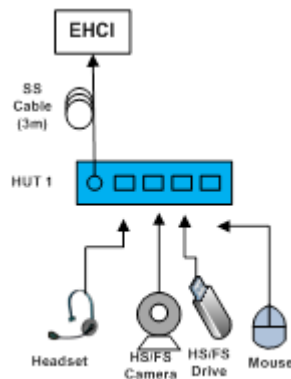


Figure 2: USB 2.0 EHCI Interoperability Configuration When Product Under Test is a Hub

Equipment:

- Certified System
- Certified EHCI add-in card
- Certified USB Cable
- Certified USB headset
- Certified USB HS Camera
- Certified USB MSC Device
- Certified USB HID class device

EHCI Procedures for USB 3.1 Hubs:

- EHCI Root port
 - Driver Installation
 - Enumeration
 - Interoperability
 - Hybrid Sleep/ Remote Wake
 - Interoperability
 - Hibernate / Resume
 - Interoperability
 - Warm Boot
 - Interoperability
 - Hybrid Boot
 - Interoperability
 - Cold boot
 - Driver Installation
 - Enumeration
 - Interoperability

EHCI Procedures for USB 2.0 Hubs:

- EHCI Root port
 - Driver Installation

- Enumeration
- Interoperability
- Hybrid Sleep/ Remote Wake
 - Interoperability
- Hibernate / Resume
 - Interoperability
- Warm Boot
 - Interoperability
- Hybrid Boot
 - Interoperability
- Cold boot
 - Driver Installation
 - Enumeration
 - Interoperability

xHCI Procedures for USB 2.0 Hubs:

- USB 2.0 Hubs required to perform hub testing defined in the xHCI Interoperability Test Procedures Document found on the usb.org website. The xHCI Interoperability Test Procedures Document does not specifically reference 2.0 hubs, but all interoperability test methodologies applicable to 3.1 hubs are applicable to 2.0 hubs.

xHCI Procedures for USB 3.1 Hubs:

- Refer to xHCI Interoperability Test Document.

Host Under Test:

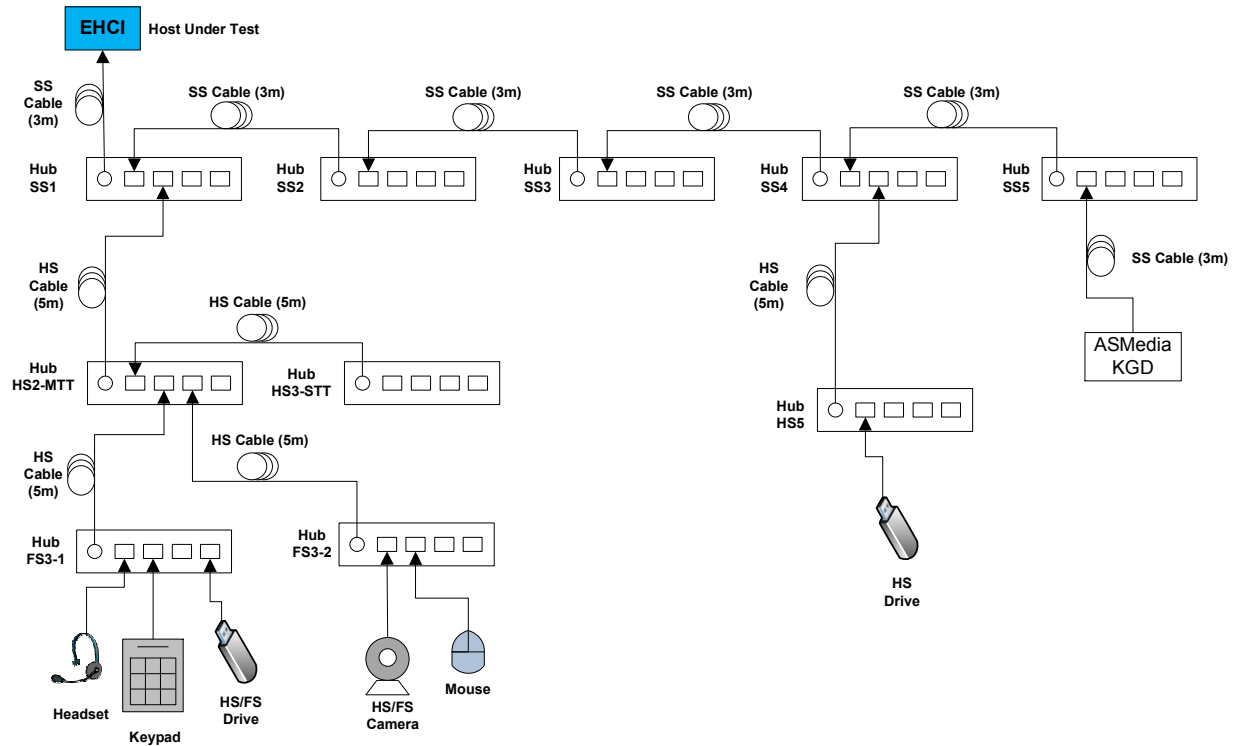


Figure 3: USB 2.0 EHCI Interoperability Configuration when Product Under Test is a Host

Equipment:

- SuperSpeed Interoperability Tree

EHCI Procedures for USB 2.0 Hosts:

- EHCI Root port
 - Driver Installation
 - Enumeration of the SuperSpeed tree
 - Interoperability of the SuperSpeed tree
 - Hybrid Sleep/ Remote Wake
 - Interoperability
 - Hibernate / Resume
 - Interoperability
 - Warm Boot
 - Interoperability
 - Hybrid Boot
 - Interoperability
 - Cold boot
 - Interoperability

EHCI host with embedded USB 2.0 hub

- USB 2.0 Embedded Hub Root Port
 - Remove Hub SS1
 - Connect HS2-MTT hub to DFP of Hub SS2

- Connect Hub SS2 to EHCI root port
- Interoperability
- Hybrid Sleep/ Remote Wake
 - Interoperability
- Hibernate / Resume
 - Interoperability
- Warm Boot
 - Interoperability
- Hybrid Boot
 - Interoperability
- Cold boot
 - Interoperability