

USB-IF MacOS Interoperability Test Results

(Hub Devices)

Company _____ USBH _____ Test Suite _____ Date _____
Product _____ OS v _____ Platform _____

The devices to be used in the MacOS interoperability bundle are:

Device	Part Number /ID	Quantity
Mac Mouse		1
Mac Keyboard		1
Imation SuperDisk™ Drive	SD USB U3 1	1
4-Port Entrega Hub (Self-powered)	MacHub4U	1
7-Port Entrega Hub (Self-powered)	MacHub7U	2
Philips 690K USB Camera	PCVC 690K	1
KC Tech 1.1 Hub	v1.0	1
5m cable		5

The devices should be connected to the Root Ports / Hub Ports as described below. Connect in the specified ports except where otherwise instructed in this document.

Root Onboard OHCI Controller

- **Port #1** USB Speakers
- **Port #2** Hub #1 - Mac Keyboard Hub #1
 - **Port #1** Mac Mouse
 - **Port #2** Hub # 2 - Entrega Hub MacHub4U (Self-Powered)
 - **Port # 1** Empty
 - **Port # 2** Empty
 - **Port # 3** Empty
 - **Port # 4** Hub #3 - Entrega Hub MacHub7U (Self-Powered)
 - **Port #1** Empty
 - **Port #2** Empty
 - **Port #3** Empty
 - **Port #4** Hub #4 – KC Tech 1.1 Hub (Bus-Powered)
 - **Port #1** Empty
 - **Port #2** Empty
 - **Port #3** Empty
 - **Port #4** Hub #5 – Entrega Hub MacHub7U (Self-Powered)
 - **Port #1** Philips USB Camera
 - **Port #2** Imation SmartDisk™ Drive
 - **Port #3** Empty
 - **Port #4** Empty

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Run the appropriate tests according to the table below:

Hub Type Test To Run

Hub Power	Self-Powered Tests	Bus-Powered Tests	Extended Operability Tests
Bus-Powered		X	X
Self-Powered	X		X
Both	X	X	X

Self-Powered Hub Tests

1. Enumerate Hub. Connect with the 5 meter cable Hub Under Test To Hub:

If hub under test has an embedded hub

1. Disconnect hub #4 from hub #3
2. Connect hub under test to hub #3 **with 5 meter cable**

Otherwise

1. Disconnect hub #5 from hub #4
2. Connect hub under test to hub #4 **with 5 meter cable**

Note: The 5 Meter Cable Stresses The Hub's Signal Quality

Pass

Pass Criteria:

1. Hub under test enumerates **with the 5 meter cable** AND

Fail

2. Hub under test enumerates below hub #3 if has embedded hub else hub #4 AND
3. Hub under test is correctly identified by operating system

Failure Criteria:

1. Hub under test is incorrectly identified by operating system OR
2. Hub under test does not enumerate below hub #3 if hub has embedded hub else hub #4 OR
3. Hub cannot enumerate with 5 meter cable

Record which hub the device under test successfully enumerated below:

Hub # 4 Hub # 3 Hub # 2 Hub # 1 Root

Comments: _____

2. If the hub under test has an embedded device, install software for embedded device

Pass

Pass Criteria:

1. Software successfully installs

Fail

Failure Criteria:

1. Software crashes

N/A

N/A Criteria

1. No embedded device

Comments: _____

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3. If the hub under test has an embedded device, test embedded device as used by consumer

- Pass** **Pass Criteria:**
 - 1. Embedded device under test operates as used by the consumer
- Fail** **Failure Criteria:**
 - 1. Embedded device under test fails to operate as used by the consumer
- N/A** **N/A Criteria**
 - 1. No embedded device

Comments: _____

4. Move devices that were connected to Hub #X to behind Hub Under Test

If Hub has embedded hub:

- 1. move devices that were connected to hub #4 to first tier of hub under test
- 2. move devices that were connected to hub #5 to embedded hub

Otherwise

- 1. move devices that were connected to hub #5 to hub under test

- Pass** **Pass Criteria:**
 - 1. All devices enumerate properly
- Fail** **Failure Criteria:**
 - 1. One or more devices fail to enumerate properly
 - 2. System crashes

5. Interoperability

➔ Test All Devices, including embedded device if applicable, simultaneously

- Pass** **Pass Criteria:**
 - 1. All devices operate properly
- Fail** **Failure Criteria:**
 - 1. One or more devices fail to operate properly
 - 2. System crashes

Comments: _____

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Bus-Powered Hub Tests

1. Enumerate Hub. Connect with the 5 meter cable Hub Under Test To Hub #3

Note: The 5 Meter Cable Stresses The Hub's Signal Quality

- Pass** **Pass Criteria:**
1. Hub under test enumerates **with the 5 meter cable** AND
- Fail** **Failure Criteria:**
2. Hub under test enumerates below hub #3 AND
3. Hub under test is correctly identified by operating system
- Failure Criteria:**
1. Hub under test is incorrectly identified by operating system OR
2. Hub under test does not enumerate below hub #3 OR
3. Hub cannot enumerate with 5 meter cable

Record which hub the device under test successfully enumerated below:

Hub # 3 Hub # 2 Hub # 1 Root

Comments: _____

2. If the hub under test has an embedded device, install software for embedded device

- Pass** **Pass Criteria:**
1. Software successfully installs
- Fail** **Failure Criteria:**
1. Software crashes
- N/A** **N/A Criteria**
1. No embedded device

Comments: _____

3. If the hub under test has an embedded device, test embedded device as used by consumer

- Pass** **Pass Criteria:**
1. Embedded device under test operates as **used by the consumer**
- Fail** **Failure Criteria:**
1. Embedded device under test fails to operate as **used by the consumer**
- N/A** **N/A Criteria**
1. No embedded device

Comments: _____

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4. Move devices that were connected to Hub #3 to behind Hub Under Test

Pass

Pass Criteria:

1. All devices enumerate properly

Fail

Failure Criteria:

1. One or more devices fail to enumerate properly
2. System crashes

Comments: _____

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5. Interoperability

→ Test All Devices, including embedded device if applicable, simultaneously

Pass

Pass Criteria:

1. All devices operate properly

Fail

Failure Criteria:

1. One or more devices fail to operate properly

2. System crashes

Comments: _____

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Extended Operability Tests

1. Hot Detach and Reattach

➔ Detach and reattach hub under test to same hub port

Pass

Pass Criteria:

1. All devices operate correctly

Fail

Failure Criteria:

1. One or more devices fails to operate correctly OR

2. Blue screen occurs

Comments: _____

2. Active Suspend – Hub with embedded function

**Embedded device is transmitting data when a system sleep request occurs.
(i.e., device is in active use by the consumer)**

Note: Run this test ONLY if the hub has an embedded device that uses vendor supplied software. If not, go to test #3

While device under test is in operation/use, suspend system selecting *Special* ➔ *Sleep*.

Pass

Pass Criteria:

1. System suspends OR

Fail

2. Device uses only OS provided software OR

3. System notifies user that the system cannot go into suspend. Go to test 4a.

N/A

Failure Criteria:

1. System crashes / locks up

N/A Criteria

1. No vendor supplied software OR

2. No embedded device

Comments: _____

3. Inactive Suspend – hub/embedded function under test is idle

(i.e., device is not in active use by the consumer)

NOTE: Only run this test if during Test #2 the system did not go sleep OR the embedded device does not use any vendor supplied software OR if the hub does not have an embedded device

Pass

Pass Criteria:

1. System Suspends.

Fail

Failure Criteria:

1. System blue screens / locks up.

N/A

2. System fails to enter standby.

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N/A Criteria

1. System entered suspend in test 2

Comments: _____

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4. Wakeup system by embedded remote wakeup device

Note: Run this test for all hubs with embedded devices that are remote wakeup devices. Otherwise, use mouse or keyboard to wake up system

- Pass** **Pass Criteria:**
1. Embedded Device under test wakes up system AND
- Fail** **Failure Criteria:**
1. System wakes up
- N/A** **Failure Criteria:**
1. Embedded device fails to wake up system OR
2. System locks up
- N/A Criteria**
1. Hub does not have an embedded device OR
2. Embedded device is not a remote wakeup device

Comments: _____

5. Interoperability after resume

→ Test All Devices, including embedded device if applicable, simultaneously

- Pass** **Pass Criteria:**
1. All devices operate properly
- Fail** **Failure Criteria:**
1. One or more devices fail to operate properly
2. System crashes

Comments: _____

6. Interoperability after warm boot

→ Restart system by selecting *Special* → *Restart*.

→ Test All Devices, including embedded device if applicable, simultaneously

- Pass** **Pass Criteria:**
1. All devices operate properly
- Fail** **Failure Criteria:**
1. One or more devices fail to operate properly
2. System crashes

Comments: _____

7. Interoperability after cold boot

→ Restart system by selecting *Special* → *Shut down*.

→ Turn machine back on

→ Test All Devices, including embedded device if applicable, simultaneously

- Pass** **Pass Criteria:**

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1. All devices operate properly

Fail

Failure Criteria:

1. One or more devices fail to operate properly
2. System crashes

Comments: _____

8. Interoperability after cold boot with hub connected to root.

→ Shutdown system through by selecting *Special* → *Shutdown*.

→ Disconnect speakers (if applicable).

→ Connect hub under test to root port.

→ Turn system back on.

→ Test functionality after system boots.

Pass

Pass Criteria:

1. All devices operate properly

Fail

Failure Criteria:

1. One or more devices fail to operate properly
2. System crashes

Comments: _____
