

# **USB-IF HWA-based PDK**

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Revision 1.0

### Significant Contributors

Chris Bauer, USB-IF  
Rahman Ismail, Intel Corporation  
Rich Minter, Intel Corporation

### Revision History

<b>Revision 1.0</b>	Release

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## Tables

### 1. Summary

This document illustrates USB-IF HWA-based PDK technical installation and operation. The procedures should be performed by a qualified systems technician. Instructions included in this document:

- System Preparation
- PDK Assembly
- PDK Installation

### 2. Introduction

This document is provided as a resource from Intel Corporation for the installation of the USB-IF HWA-based PDK and is recommended when installing the USB-IF HWA-based PDK Host for the first time or as a training refresher.

### 3. Scope

Instructions will cover workstation setup, system hardware requirements, and software installation guidelines. All three are required to ensure the PDK product will function properly. The workstation setup environment, system hardware specifications, and software installation have been tested by qualified Intel hardware technicians. Any deviation may result in unpredictable behavior in the Wireless USB Host product (PDK).

### 4. Implementation

A PC with the USB-IF HWA-based PDK Hardware will provide a Wireless USB Host controller that will allow Wireless USB devices as defined by the Wireless USB specification to connect to it. Following this documentation will provide a baseline system, providing a development test system for the development of Wireless USB devices. Furthermore this document is not a substitution for any referenced documentation.

### 5. References

Wireless USB Specification Revision 1.0

<http://www.usb.org/developers/wusb/>

PDK System Overview

[http://www.usb.org/developers/estoreinfo/PDK\\_Overview/PDK\\_Overview/HWA](http://www.usb.org/developers/estoreinfo/PDK_Overview/PDK_Overview/HWA)

## Acronyms

EEPROM	Electrically Erasable Programmable Read-Only Memory
ESD	Electro Static Discharge
CCA	Clear Channel Assessment
DUT	Device Under Test
DFU	Device Firmware Utility
FW	Firmware
HW	Hardware
HWA	Wireless Host Wire Adapter Interface
I/O	Input / Output
MAC	Media Access Controller
MB	Motherboard
MPI	MAC PHY Interface
NC	No Connection
OS	Operating System
PC	Personal Computer
PCB	Printed Circuit Board
PCI	Peripheral Component Interconnect
PCLK	PHY Clock Signal
PDK	Product Development Kit
PHY	Physical Layer
RF	Radio Frequency
RXEN	Receive Enable Signal
SMA	Sub Miniature version A Coax Cable Connection
TXEN	Transmit Enable Signal
USB	Universal Serial Bus
USB-IF	Universal Serial Bus Implementers Forum
UWB	Ultra Wide Band
WUSB	Wireless Universal Serial Bus

## 6. Workstation Preparation

### 6.1. Equipment and Materials

1. Product Development Kit
  - a. USB-IF HWA-based PDK USB Dongle
  - b. 2 WATT, DC to 18 GHz SMA Attenuator Impedance: 50 OHMS (-30 dB or a value that emulates a 1 to 2 meter loss in over the air attenuation)
  - c. RF Cable, DC to 24GHz SMP to SMA adapter cable
  - d. 3' RF Cable, DC to 24 GHz SMA Male to SMA Male
  - e. Technical Documentation
  - f. Software and Drivers
2. Recommended Computer System

Current model Desktop PC with available USB ports (preferably available front panel USB ports).
3. 5/16" Torque Wrench Calibrated to 8 lb-in
4. Recommended: UWB/Wireless USB Protocol Analyzer
5. Optional: Spectrum Analyzer 30Hz -18GHz
6. Optional: Logic Analyzer

## **6.2. PDK System Requirements**

Recommended system requirements: The following system requirements are tested and ensure the highest system stability for the PDK. Any modifications to this list of hardware may result in system related failures or system crashes.

- ATX or BTX Mid Tower Desktop System Case
- Intel Desktop Board (or equivalent) with 2 adjacent USB Ports, for PDK dongle clearance
- Intel Pentium 4 processor 1.8GHz or Higher clock speed
- 512MB of RAM or higher
- 450V Power Supply or higher power rating with AC Power Switch
- DVD/CD-Rom Drive
- 40GB or Higher Hard Disk with 10GB of free space
- Monitor, Keyboard and Mouse
- Windows Operating System

## **6.3. Hardware Configuration**

### **6.3.1. PDK Dimensions**

1. Extra space is recommended for the USB component side-to-side clearance. The outside dimensions of the PDK may obstruct the connection of adjacent USB devices or cables to the USB Host A receptacles.
  - HWA Length from the USB A connector to rear housing = 3.5" [88.9 mm]
  - HWA Width from the PCB mounting surface = 1.13" [28.6 mm]
  - HWA Height from the top of the PCB mounting surface bezel to the backside of the mounting surface bezel = 0.43" [11.0 mm]
2. An RF SMP connection is attached to HWA circuit board to provide an external RF cable or antenna connection. One SMP to SMA RF adapter cable and one 3" RF interconnect cable is provided with the PDK, antennas are not included. All RF testing should be conducted only.
3. No assembly is required before operating the HWA.

## **6.4. Software Configuration**

### **6.4.1. PDK SW Installation**

1. Install the recommended Wireless USB files provided by approved software vendors before attaching the PDK HW.
2. Install the Wireless USB-CV.msi file. NOTE: The PDK WUSB-CV software is proprietary software provided by the USB-IF or their representative. The HWA PDK DFU FW is product specific. Wireless USB-CV installs with the latest supported HWA PDK DFU FW.

3. After the Wireless USB Software installation is finished, shutdown and restart the PC then after windows loads insert the WUSB hardware in an available USB A port receptacle.
4. After the PDK A receptacle insertion, when the OS loads Windows with the PDK for the first time the PC will find a new device connected to the PC.
5. The New Hardware Wizard install will prompt the user to install a driver for the new Wimedia Device.
6. The first time windows loads this driver the (DFU) device firmware utility must be loaded. NOTE: If the incorrect driver is selected the PC will not recognize the PDK
7. It may be necessary to navigate (Browse) to the Program Files\USB-IF Test Suite\Wireless-USBCV\Driver\HWA\ folder during driver file installation if the installation wizard does not locate the DFU and HWA driver.
8. Find more information regarding proprietary software setup at the USB-IF website.

## **6.5. Hardware Configuration**

### **6.5.1. PDK Assembly**

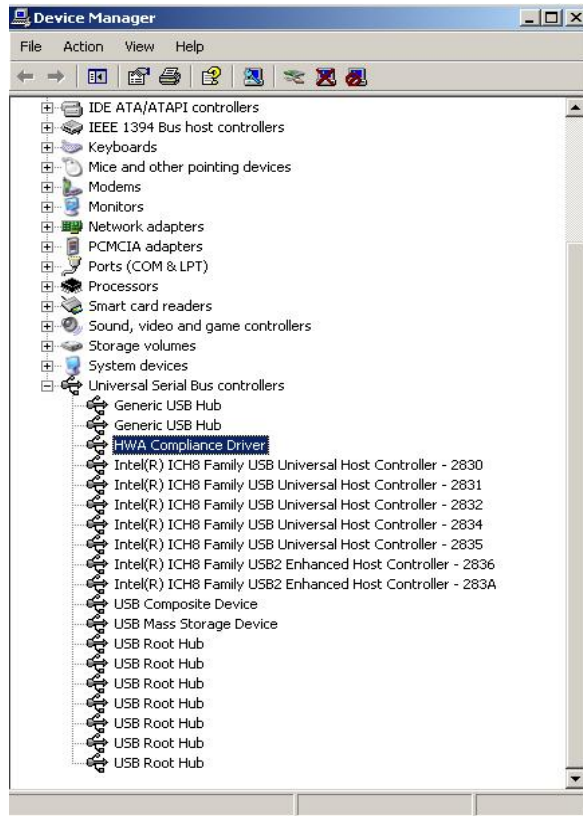
1. HWA PDK dongle is the Wireless Host Controller Interface. Attach the SMP to SMA adapter cable, 3' cable and attenuator if necessary. Refer to Figure 1.0.
2. NOTE: Do not apply excessive stress to the SMP to SMA adapter cable as the SMP mating connection may induce attenuation loss from the undue cable strain.
3. Conducted test bed setup documentation is available at the USB.org website.

### **6.5.2. Device Manager Driver Reference**

1. Once the driver installation is complete. Navigate to the Device Manager to confirm proper installation of the HWA Compliance Driver. Two driver conditions might exist when using one PC with the HWA PDK.
2. After installing the HWA driver for the first time run the HWA hardware with windows as a HWA compliance device using Wireless USB-CV.
3. Select the HWA Compliance driver when the UWB Wireless link driver is requested by the New Hardware Wizard. For an example of the HWA Compliance driver in the Device Manager refer to Figure 6.5.2.a

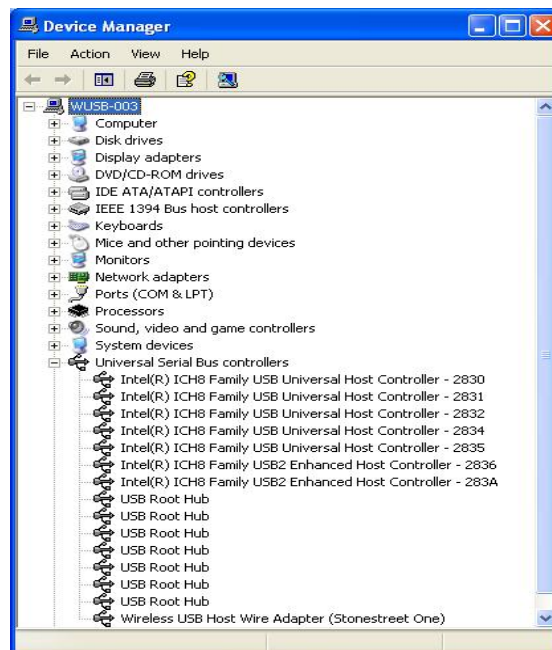


Figure 6.5.2.a



4. It may be necessary to replace the HWA compliance driver with a vendor specific driver to run the HWA as a standard WUSB Host controller. To do this select the HWA compliance driver and update the driver with the HWA vendor specific HWA Driver. For an example HWA Compliance driver loaded in the Device Manger refer to Figure 6.5.2.b

Figure 6.5.2.b

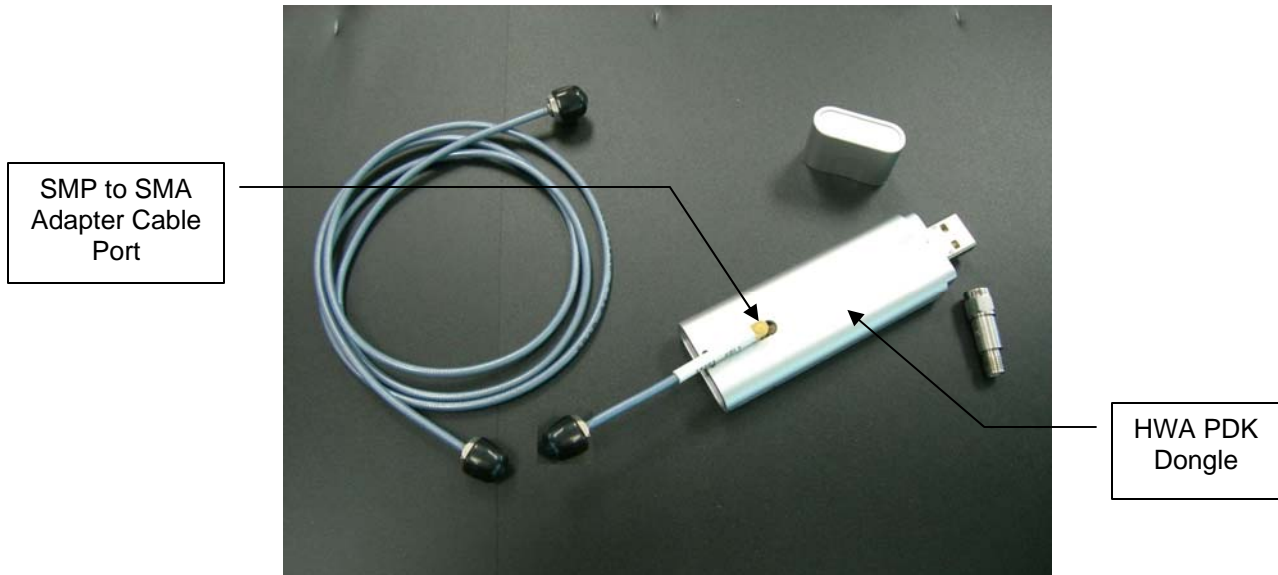


5. Swap the HWA compliance driver or vendor driver by repeating one of the previous HWA driver update steps with the Device Manager.

## 7. USB-IF HWA-based PDK

### 7.1. Graphs & Figures

**Figure 1.0:**



**7.2. HWA PDK Limitations**

The PDK firmware is proprietary incorrectly installing the DFU will render the HWA inoperable.

The HWA Compliance Driver is installed with WUSB-CV and is supported for use with MS XP. NOTE: The PDK drivers provided with WUSB-CV does not support HOST interoperation with Microsoft XP. More information to acquire HOST software and driver packages are provided by the USB-IF or their representatives.

More information to acquire MS Vista HOST software and driver support are provided by the USB-IF or their representatives.

Disable the UAC (User Access Control) option when attempting to install WUSB-CV with MS Vista.

**For more information, contact USB-IF at [admin@usb.org](mailto:admin@usb.org)**

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