WirelessUSB™ LS Development Kit
Release Notes v1.6

Purpose

The WirelessUSB™ LS Development Kit is provided to customers interested in evaluating and developing wireless peripherals with the Cypress Semiconductor WirelessUSB LS Radio System on a Chip IC (CYWUSB6934/ CYWUSB6932).

Kit Contents

This kit includes the following items:

• WirelessUSB DVK Platform Board – Peripheral	Fully-populated development board that provides development and tutorial support for, wireless keypads, mice, and gamepads
• WirelessUSB DVK Platform Board – USB HID Bridge	Partially-populated development board that provides a low-speed USB HID bridge to allow a host PC to communicate with WirelessUSB LS peripherals
• WirelessUSB LS Radio Micro Module	Micro Modules are loaded with the WirelessUSB LS Radio SoC and connected to the platform boards (1 per platform board)
• WirelessUSB LS Radio Module Adapter	Adapter to provide connector form factor conversion from 2x6 to 1x14
• WirelessUSB Listener Tool	Listener Tool decodes the transactions of one or more WirelessUSB LS devices – especially useful for development and debugging
• Chip Kit	Chips that provide peripheral and USB HID Bridge support for keypad, mouse, and gamepad (PSoC Adapter Board – qty 3, enCoRe – qty 7), and a 10k-ohm carbon film resistor (see the *WirelessUSB LS Development Kit Advance Firmware User's Guide* for further details)
• WirelessUSB LS DVK CD-ROM	CD-ROM provides kit documentation, hardware schematics and bills of materials, development tools, tutorial and advanced firmware for keypad, mouse, gamepad, and RS-232 (see *CD-ROM Contents* below)
• AC/DC Power Adapter and AA Batteries	Adapter and batteries provide power to the Peripheral DVK Platform Board for development and testing
• USB Cable	USB type A-to-type B cable connects the USB HID Bridge to a host PC and additionally provides power to the USB HID Bridge Platform Board
• Serial Cable	Serial cable connects to the Peripheral DVK Platform Board to the serial port of a host PC to view debugging information during development
• Documentation Packet	Packet contains the welcome letter and select documentation from the DVK CD-ROM

CD-ROM Contents

The CD-ROM for this development kit contains the following files:

In the Root directory

- Release Notes – This document

In the Docs subdirectory:

- WirelessUSB LS DVK Errata
- WirelessUSB Kit Software License Agreement

In the Docs\Advanced subdirectory:

- WirelessUSB LS DVK Advanced Firmware User's Guide
- WirelessUSB LS DVK Advanced Firmware Design Notes
- WirelessUSB LS DVK Gamepad Firmware Design Notes
- WirelessUSB LS DVK Keypad Firmware Design Notes
- WirelessUSB LS DVK Mouse Firmware Design Notes
- WirelessUSB LS DVK RS-232 Master Firmware Design Notes
- WirelessUSB LS DVK RS-232 Slave Firmware Design Notes

In the Docs\ Application Notes subdirectory:

- Calculating Battery Life In WirelessUSB Systems
- Managing Power in WirelessUSB Systems
- Maximizing Range in WirelessUSB Systems
- WirelessUSB Crystal Guidelines
- WirelessUSB Dual Antenna Design Layout Guidelines
- WirelessUSB Antenna Design Layout Guidelines
- WirelessUSB LR Printed Circuit Board Layout Guidelines
- WirelessUSB LS Printed Circuit Board Layout Guidelines
- WirelessUSB LS Micro-Bridge Layout Guidelines
- Guidelines for Evaluating WirelessUSB RF System Performance
- WirelessUSB LS 1-Way HID Networks
- WirelessUSB LS 2-Way HID Systems
- WirelessUSB LS Firmware Tips and Tricks
- WirelessUSB LS Interference Avoidance
- WirelessUSB LS Printed Circuit Boards Layout Guidelines
- WirelessUSB LS Radio Module ETSI Testing
- WirelessUSB LS Radio Module FCC Testing
- WirelessUSB LS Theory of Operation Application Note

In the Docs\Datasheets subdirectory:

- Cypress WirelessUSB LR Radio System on a Chip Datasheet
- Cypress WirelessUSB LS Radio System on a Chip Datasheet
- Cypress enCoRe Datasheet (CY7C63743)
- Cypress MicroSystems Programmable System-on-Chip Datasheet (CY8C27643)
- CY8C27243, CY8C27443, and CY8C27643 Automotive PSoC Mixed-Signal Array Datasheet

In the Docs\Tools subdirectory:

- WirelessUSB Listener Tool Getting Started Guide
- WirelessUSB EMC Tester User's Guide

In the Docs\Tutorials subdirectory:

- WirelessUSB LS DVK Tutorial

In the Firmware\Binaries subdirectory:

- Binaries for enCoRe and PSoC images on kit hardware

In the Firmware\Source Code\Tutorials subdirectory:

- enCoRe (CY7C63743) firmware source code for transmit, receive, and protocol support
- PSoC (CY8C27643) firmware source code for transmit, receive, multi-byte, and protocol support

In the Firmware\Source Code\Advanced subdirectory:

- enCoRe (CY7C63743) firmware source code for mouse/keypad and gamepad support

- PSoC (CY8C27643) firmware source code for mouse, keypad, gamepad, and RS-232 support

In the Firmware\Source Code\Tools subdirectory:

- enCoRe (CY7C63743) firmware source code for EMC Tester
- PSoC (CY8C27643) firmware source code for EMC Tester

In the Hardware\DVK Platform Board subdirectory:

- DVK Platform PCBA – Schematics (Orcad 9.2 / PDF) and Bills of Materials (PDF)

In the Hardware\LS Radio Micro Module Board subdirectory:

- LS Single Antenna Radio Micro Module PCBA – Schematics (Orcad 9.2 / PDF), Bill of Materials (PDF), and Gerbers (ZIP)

In the Hardware\PSoC Adapter subdirectory:

- PSoC CY8C27643 DIP48 Adapter PCBA – Schematics (Orcad 9.2 / PDF), Bill of Materials (PDF), and Gerbers (ZIP)

In the Hardware\Radio Module Socket Adapter subdirectory:

- Radio Module Socket Adapter PCBA – Schematics (Orcad 9.2 / PDF), Bill of Materials (PDF), and Gerbers (ZIP)

In the Software subdirectory:

- CYASM v2.04
- Cypress MicroSystems PSoC Designer™ 4.2 + Service Pack 2 BETA
- WirelessUSB Listener Tool Software
- WirelessUSB EMC Tester
- WirelessUSBSysTray

About the WirelessUSB LS Development Kit v1.6

There have been some significant improvements and changes to the WirelessUSB LS Development Kit v1.6 over previous kit revisions:

- The WirelessUSB LS DVK firmware now includes tutorials that introduce basic radio functionality, including: Transmit, Receive, Protocol, Multi Byte.
- The WirelessUSB LS DVK firmware supports EMC Tester tool for Telec, FCC, and ETSI certifications.
- The WirelessUSB LS DVK firmware uses PSoC Designer 4.2 Service Pack 2 BETA. Previous versions of PSoC Designer are no longer supported.
- The WirelessUSB LS DVK firmware includes protocol optimizations and bug fixes.
- The feature set of the WirelessUSB LS DVK firmware has been expanded with the new tutorials and certification tool. Cypress has made the features of previously supported applications even more robust. A summary of the features is provided below:

Feature	WirelessUSB LS DVK (v1.6)
Radio Support	WirelessUSB LS Radio System on a Chip
Throughput	64 kbps
Directionality	2-way (with ACK and retransmission)
Devices per Bridge Receiver	1:1 and 2:1 (for simultaneous keypad and mouse support)
Peripheral Support	Keypad, Mouse, Gamepad, and RS-232
Binding	Basic (gamepad only), Automatic
Error Detection(corrupt packets)	Yes
Error Correction	Yes, up to 8 bits per packet
Interference Avoidance Algorithm	Yes, automatically selects new channel if channel is corrupt (with automatic bind)
WirelessUSB Listener Tool	Supports future firmware updates
Wireless USB Certification Tool	Telec, FCC, and ETSI certifications

Feature	WirelessUSB LS DVK (v1.6)
Tutorials	Transmit, Receive, Protocol, Multi Byte

Firmware Comments

1. When using the Gamepad at power-on, initial values are not transmitted for the Z Axis and X Rotation. This occurs after they are first moved. Typical gamepads use Return-to-Zero (RTZ) potentiometers to avoid this. The DVK Hardware does not use RTZ potentiometers.
2. Some Gateway machines may indicate that the hardware was not installed correctly when inserting a Keypad/Mouse Combo USB bridge. The device is, however, fully functional.