

Zero-Install Wireless USB 2.0 Evaluation Kit

Overview

The Zero-Install Wireless USB 2.0 Evaluation Kit allows anyone to evaluate Freescale's UWB technology. The kit uses the XS110 chipset, which provides full wireless connectivity implementing a Direct Sequence Ultra-Wideband (DS-UWB) physical layer and the IEEE 802.15.3™ media access control (MAC) layer protocol. The chipset supports applications such as streaming video, streaming audio and high-rate data transfer at very low levels of power consumption. The kit contains the necessary components to demonstrate USB communications over a UWB communications channel.

Advantages of Zero-Install Wireless USB 2.0

- > Wired speeds without wires
- > No new software drivers required
- > Wireless link replaces USB cables with no software changes
- > Works with existing USB devices regardless of operating system

Functionality

The Zero-Install Wireless USB 2.0 Evaluation Kit allows users to operate USB 2.0 devices on a UWB communications channel and evaluate USB devices' performance when the timing and delay environment is different from a short wire.

Requirements

No software or additional installation is required. The kit supports USB 2.0 Host Controller (EHCI) enabled hardware and can connect to any USB device. Simply plug in and apply power to experience Zero-Install Wireless USB 2.0.

Evaluation Kit Features

The Zero-Install Wireless USB 2.0 Evaluation Kit provides the equipment needed to create high-speed UWB links using USB connectivity between computers and devices. The demonstration kit allows multiple USB devices to communicate wirelessly with the host device as if they were connected directly to the host via a wire. For instance, you can easily stream video wirelessly from a USB-connected hard drive to another device. The evaluation kit contains:

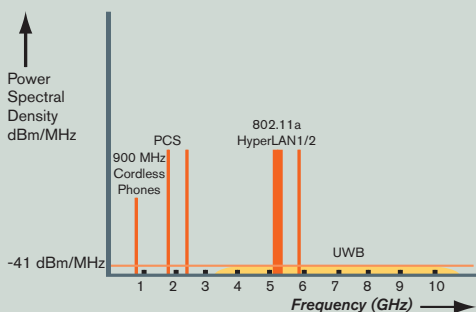
- > USB local extender to attach to the USB host computer
 - Antenna
 - Power supply
- > USB remote extender to attach to the USB remote devices (up to four)
 - Antenna
 - Power supply
- > Documentation
- > PC to local extender cable

The Zero-Install Wireless USB 2.0 Evaluation Kit is specifically designed to support USB 2.0 devices using the XS110 chipset.

This chart describes the USB device compatibility (low speed, full speed, high speed) that exists only with this kit based on the XS110 chipset. Future chipsets will be designed to provide complete high-speed USB 2.0 compatibility.

Isochronous	USB 1.1 and 2.0
Bulk/mass storage	USB 1.1 and 2.0
Control	USB 1.1 and 2.0
Interrupt	USB 1.1 and 2.0
Hub support	Full upstream and limited downstream
Hot swap	Device side supported at remote extender
USB 1.1 device support	Yes
USB 2.0 host support (EHCI)	Full
USB 1.0 host support (UHCI/OHCI)	No

COMPARISON OF SHORT-RANGE COMMUNICATIONS SYSTEMS



About UWB

Ultra-Wideband is a carrier-less communications system that delivers superior system and spectrum performance compared to conventional narrowband systems.

UWB systems have the following characteristics:

- > Low noise
- > High throughput
- > Friendly coexistence with other RF systems
- > Noise resilient
- > Secure

Systems based on the Freescale UWB chipsets enjoy these additional benefits:

- > Lower power consumption than alternatives
- > Range of 10 meters at full speed

USB 2.0 over UWB

In order to implement a high-performance USB solution wirelessly, it must meet the following criteria:

- > Compatibility with USB 2.0 standard with full backward compatibility
- > Security at the same level as wired USB
- > Provide a user experience equivalent to wired systems

How It Works

When implementing USB over a wireless channel, there are factors that must be considered, including:

- > Switching between RF transmit and receive modes
- > Varying characteristics of wireless communications channels
- > The impact of lost and retransmitted packets
- > Additional error correction and detection capability
- > Addition of wireless security algorithms

Freescale enables standard USB hosts, hubs and devices to be used with wireless channels at wired performance levels. Furthermore, users can mix and match different devices with different speeds. Just like standard USB, devices with different speed and transfer type attributes can be attached to and detached from the system at random.

The Freescale system recognizes each device automatically and provides the appropriate protocol handling.

The XS110 Chipset

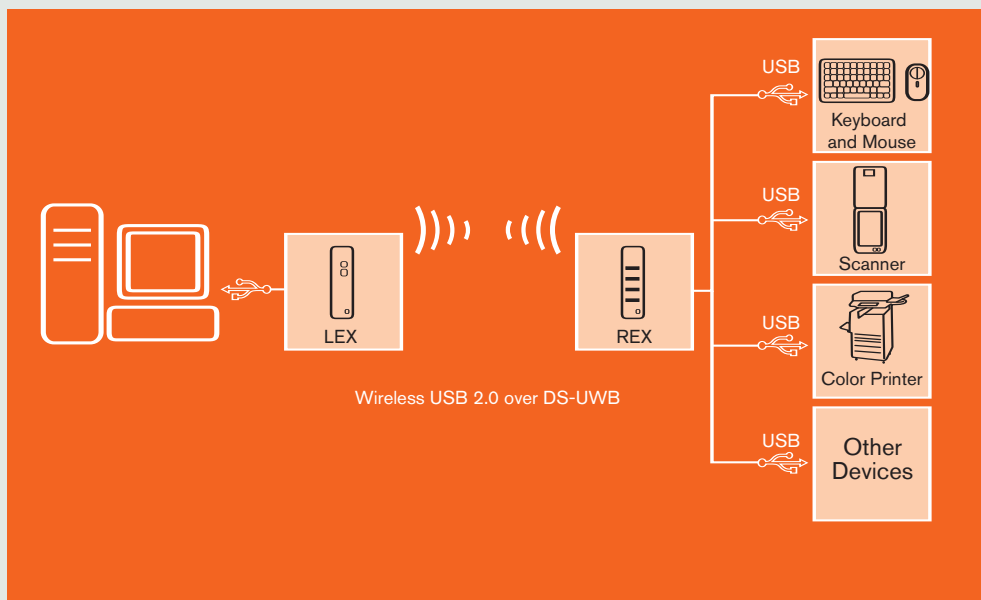
- > 802.15.3 MAC
- > Excellent bandwidth versus power consumption
- > Adjustable data rates for range/distance trade-offs; 114/57/28.5 Mbps
- > Optimal for audio and video streaming in personal area networks

SEMICONDUCTOR PRODUCT DOCUMENTATION

Description:	Order Number:
XS110 Fact Sheet	XS110FS
UWB Technology Overview	BRDSUWBREG
MC270113 RF Transceiver Data Sheet	MC270113/D
MC270123 Baseband Controller Data Sheet	MC270123/D
MC270143 Medium Access Controller Data Sheet	MC270143/D

KIT ORDERING INFORMATION

The Zero-Install Wireless USB 2.0 Evaluation Kit	UWBUSB110KIT
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Learn More: For more information about Freescale products, please visit www.freescale.com/uwb.