

Bodega Wireless PCMCIA Reference Design

Description

The Cirrus Bodega PCMCIA reference design provides a home-optimized, multimedia-capable wireless network interface card for mobile devices such as PC notebooks, mobile pads, handheld devices, and other remote applications. The design is based on the Cirrus CS22220 Wireless PCMCIA Controller and Whitecap™2 Network Protocol, providing Wi-Fi (802.11b) compliance as well as home-optimized features, including multimedia and quality of service (QoS) support, interference immunity, superior range, and ease of use. The design also takes advantage of Cirrus' Cresta3 low cost, highly integrated 802.11b radio.

Use Model

The Bodega PCMCIA reference design enables PCMCIA adapter cards for a wide variety of mobile products delivering wireless connectivity throughout the home, particularly for environments with multimedia content. The design is Wi-Fi certified, allowing users to seamlessly connect to other third party Wi-Fi devices and networks.

The Bodega PCI reference design makes an ideal "bundle" offering with other products based on Cirrus Logic's family of network controllers. Typical applications include:

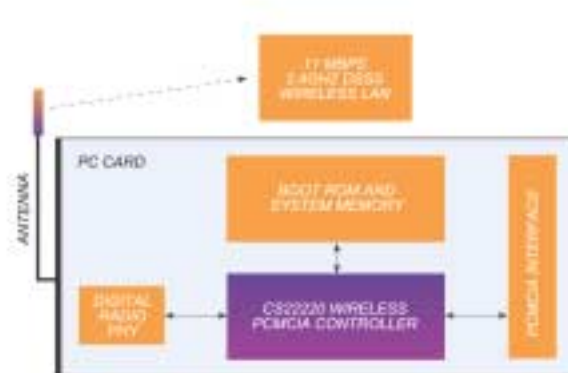
- *High speed (11 Mbps) wireless LANs for multi-PC households.* Enables print sharing, file sharing, and shared access to dial-up Internet and broadband connections between multiple PCs located throughout the home.
- *Pervasive access of broadband content.* Enables PCs and other client devices throughout the home to access broadband content and services from a central connection point, such as a wireless bridge, access point, broadband modem, residential gateway, or broadband-enabled set-top box.
- *Pervasive access to digital multimedia content.* Enables PCs and other client devices to access local digital multimedia content—such as MP3 audio files and digital videos—residing on other devices within the home, such as remote PCs, media servers, personal video recorders (PVRs), and set-top boxes.

Key Advantages

The Cirrus PCMCIA reference design offers the following key advantages:

- **Whitecap2 Network Software**—The latest version of Cirrus' wireless protocol providing industry-standard Wi-Fi (802.11b) certification plus unique, home-oriented differentiators, including multimedia and quality of service (QoS) support, interference immunity, superior range, and ease of use.
- **Low cost solution**—Utilizes the highly integrated Cirrus CS22220 Wireless PCMCIA Controller, enabling low part-count, glueless implementations. Host downloadable network protocol and firmware eliminates the need for flash memory.
- **Cresta3R 802.11b compliant radio**—Utilizes a high-performance, small footprint integrated radio solution. Combined with dual diversity antenna, this radio provides full 11Mbps performance at up to a 150ft range through multiple walls, floors, ceilings, and doors.
- **Rapid time to market**—Complete reference design with a focus on reduced parts count and standard components.

Wireless PCMCIA Diagram:





Features

System and System Interfaces

- Windows 98, Me, Win2000, and other embedded OS driver support
- PC Card 95 / JEIDA 8-1A compliant (3.3V)
- Plug and Play (PnP) compliant
- ACPI compliant
- Host downloadable design
- Current consumption (typical)
 - 575mA max. continuous transmit
 - 405mA max. continuous receive

Wireless Link

- Cresta3R low cost, 802.11b radio
- 2.4 GHz Direct Sequence Spread Spectrum
- 1, 2, 5.5, & 11Mbps transmission rates
- Up to 150' indoor range through multiple floors, doors, and walls
- Multiple radio channels (14 distinct channels / 3 non-overlapping channels - 1, 6, & 11 - in multimedia modes)
- Dual diversity antenna
- Power output: 18dBm typical
- Receive Sensitivity: -80dBm typical (5E-5 BER)

Whitecap™2 Network Protocol Services

- Wi-Fi (802.11b) compliance including:
 - Multiple rate support
 - Infrastructure and ad-hoc operation
- Complete Multimedia Support
 - Dynamic Stream Support
 - Contention-free access for deterministic behavior and predictable latency
 - Support for multiple simultaneous streams
 - Dynamic allocation of resources to streams
 - Parameterized Quality of Service (QoS)
 - Resource allocation to each stream based on bandwidth, latency, and jitter
 - Deterministic allocation of resources
 - Peer-to-Peer (Mesh) Topology to maximize bandwidth utilization
 - Delayed Acknowledgements (Delayed Acks) to minimize networking overhead
- Ease of Use
 - Coordinator Redundancy to eliminate single point of network failure
 - Open enrollment for managing and updating standalone devices
 - Protocol/Firmware Update to add new features and migrate as standards evolve
 - Wi-Fi (802.11b) certified and interoperable
 - Backward compatible with previous versions of Whitecap

- Interference Immunity and Reliable Wireless Delivery
 - Forward Error Correction (FEC) for interference immunity and improved multimedia performance
 - Channel Agility for automatic operation on the channel with the least interference
 - Security
 - Password protected network and device authentication
 - 40-bit encryption

User Interfaces

- Status and diagnostic LEDs:
 - Power (PCMCIA configuration complete)
 - Radio Link status
- GUI interface for link quality indicator
- Web server based Network Management Suite with easy to use graphical user interface
 - Profile creation and management
 - Device configuration
 - Install/Uninstall
 - Firmware update
 - Network monitoring

Physical Specifications

- PCMCIA Extended Type II design

Major Components

- CS22220 Wireless PCMCIA Controller
- Cresta3R Radio
- 2MB SDRAM (16bit)
- 128KB ROM (OTP)

Certifications and Testing

- Wi-Fi certification
- FCC compliant

Related Products:

- Whitecap2 Network Protocol
- CS22200 Series of Wireless Network Controllers
 - CS22210 Wireless PCI/USB Controller
 - CS22220 Wireless PCMCIA Controller
 - CS22230 Wireless Mini PCI Controller
 - CS22250 Wireless 10BT Controller
- Bodega Platform System Reference Design Kits
 - Bridge/Access Point
 - PCMCIA
 - PCI
 - USB
 - Mini PCI
- Bodega Platform Evaluation Units