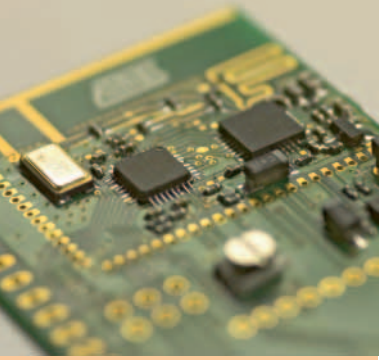
ATMEL SMART RF

Reference Design Based on ATR2406 and ATmega88



Atmel's reference design addresses the need for cost-effective and flexible cable-replacement solutions, and offers a complete solution allowing fast time-to-market cycles. It features Atmel's ATR2406 2.4-GHz Smart RF transceiver and the ATmega88 AVR® microcontroller. The proprietary Smart RF firmware implements an adaptive frequency-hopping protocol, enabling robust and reliable data transmission even in a noisy RF environment with interfering signals from WLAN, Bluetooth®, WDCT systems and microwave ovens. The reference design is especially designed to meet the performance and cost requirements of wireless game controllers, but also addresses other wire-replacement applications in the consumer area, such as wireless audio links, interactive intelligent toys and remote controls.



Reference Design Benefits

Maximum Flexibility

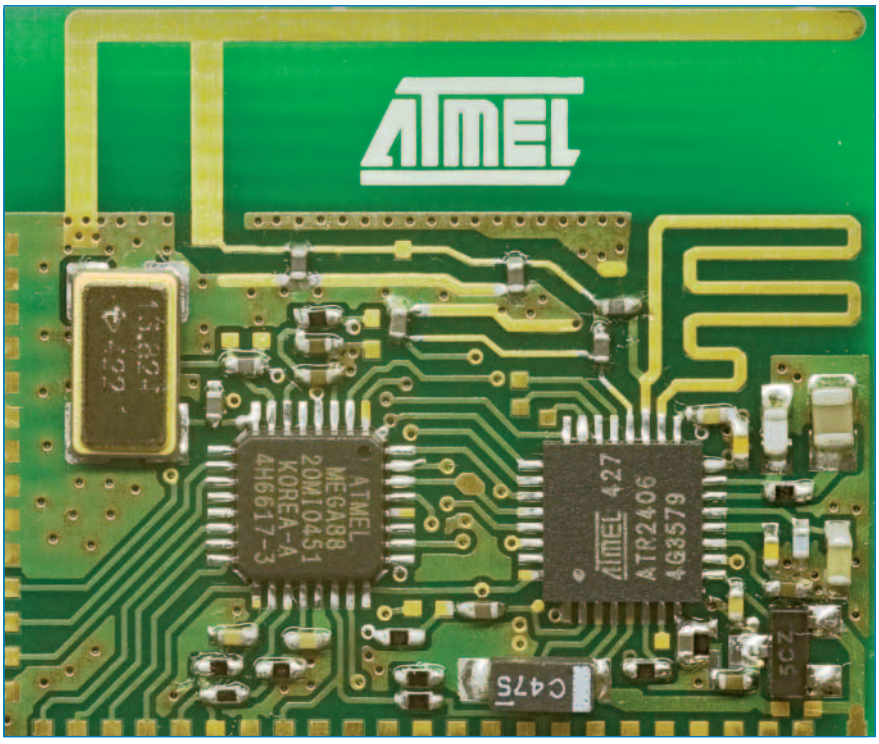
- Operates in the Worldwide-available License-free 2.4-GHz ISM Band
- Two-chip Solution Allows the User to Select the Appropriate ATmega48/88/168 AVR According to the Application Firmware Needs





High Performance

- Link Ranges of up to 150 m in Free Space and 30 m Indoor Without External Power Amplifier or LNA
- Maximum Data Throughput and Short Transmission Burst for Low-power Applications, Thanks to the High Over-the-air Data Transmission Rate of 1.152 Mbit/s



ISM Reference Design

Low Manufacturing Costs

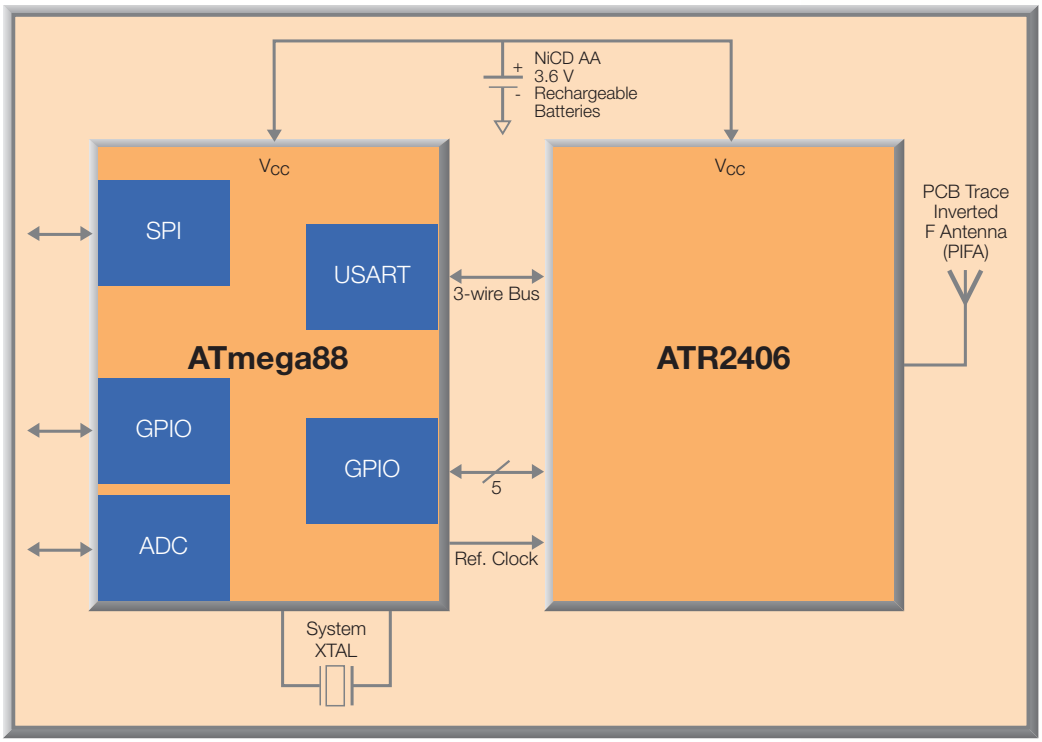
- Standard 2-layer Circuit Board with Minimal Number of External Components
- Low Bill of Material (BOM) Costs Since Printed F Antenna, Balun and Filter are Included
- Single Crystal for AVR and Smart RF Transceiver





Fast Time-to-market

- Complete Smart RF Firmware with Adaptive Frequency-hopping Scheme in C Code, Easily Adaptable to the Applications' Needs
- The ATmega48/88/168 AVR Is Supported with a Full Suite of Program and System Development Tools Including C Compilers, Macro Assemblers, Program Debugger/Simulators, and In-Circuit Emulators
- Complete Manufacturing Data Available



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Literature Requests
www.atmel.com/literature

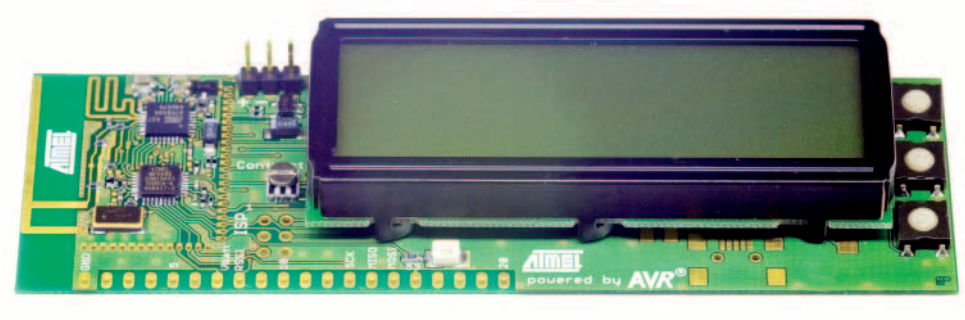
Web Site
www.atmel.com

Technical Parameters

Link Range	Up to 30 m indoor, up to 150 m outdoor
Average Data Rate	0 – 704 Kbit/s
Over-the-air Data Rate	1.152 Mbit/s
Channels	89 channels
Free Application Ports	SPI interface 15 configurable user pins: 13 free I/O + 2 free ADC or 8 free I/O + 7 free ADC
Board Size	17 mm x 28 mm, 2 layer FR4
Applicable Standards	ETSI EN300 328, EN 300 440 FCC CFR 47 Part15 ARIB STD-T-66

Availability and Ordering Information

The Reference Design is part of the ATR2406 Evaluation Kit, which also includes a large LCD display and other firmware with demonstration and testing capabilities.



Product Overview

Part Number	Description	Package
ATR2406-DEV-KIT2	ATR2406 Evaluation Kit	
ATR2406-PNSG	2.4-GHz Smart RF Transceiver	QFN 32
ATmega48-20MI	AVR 8-bit Microcontroller, 4k Flash	QFN 32
ATmega88-20MI	AVR 8-bit Microcontroller, 8k Flash	QFN 32
ATmega168-20MI	AVR 8-bit Microcontroller, 16k Flash	QFN 32

For detailed information, please visit http://www.atmel.com/products/smartrf/ or http://www.atmel.com/products/avr/, or contact your local Atmel Sales offices.

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