arm

Arm Cordio-B50 radio IP

Complete Bluetooth 5

- 2.4 GHz RF Transceiver
- Modem, protocol processing logic
- Link layer firmware

IP Implementation

- TSMC 55 nm LP/ULP process
- TSMC 40 nm LP/ULP process
- UMC 55 nm ULP process
- Native sub-1 Volt solution

Bluetooth Core Specification 5

- 2400 – 2484 MHz
- GFSK modulation, FHSS
- Master and slave mode support
- Optional AES-128 encryption engine, ECC support

Full featured link layer firmware

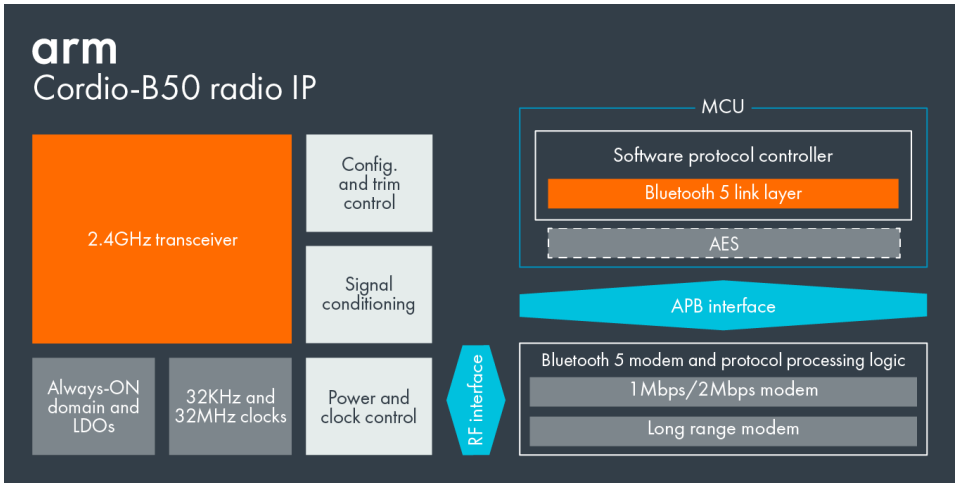
- Delivered as source code
- Optimized for energy and memory efficiency
- Supports single processor or dual-processor solutions
- Arm AMBA® APB peripheral device

System clock and power

- Low power 32 MHz and 32.768 KHz XTAL oscillators with internal RC modes
- Bypass option for 32 KHz clock available

Overview

The Arm® Cordio®-B50 radio IP is a complete self-contained radio sub-system supporting Bluetooth 5 protocol available at TSMC 55nm LP/ULP, TSMC 40nm LP/ULP and UMC 55nm ULP process nodes. The solution consists of the RF 2.4GHz transceiver, modem, protocol processing logic along with link layer firmware. The RF front end is delivered as a hard-macro, the digital bits delivered as RTL, and link layer firmware as source code. The design is optimized for low-power end node IoT devices and enables designers who want a silicon proven and qualified/certified solution for reduced risk and reduced time to market.



Implementation highlights

- RTL for modem and protocol processing logic
- Designed as an AMBA peripheral
- Link layer firmware available as source code
- Bluetooth Qualified components

Low external BOM count

- 11 external components
- Single antenna pin with integrated PA, LNA and RX/TX switch
- Integrated crystal oscillator load capacitors and integrated PLL filter

Standard Features

- Bluetooth 5 2 Mbps support
- Coded PHY for longer range
- Bluetooth 5 Advertising extensions
- LE channel selection

Cordio software

- Bluetooth qualified link-layer Firmware up to the HCI
- Flexible architecture to support different memories for firmware
- Separately licensable stack and profiles

Design deliverables

- GDSII files for the RF Front End
- RF transceiver integrated with pad ring for ease of integration and floor-planning
- RTL for modem and protocol processing logic
- Test vectors, timing and physical abstraction models
- Scripts for simulation and synthesis with Cadence tools
- Integration manual and release notes

Support deliverables

- Evaluation kit – An Arm mbed™-enabled platform with a demonstration chip containing the Cordio-B50 radio IP, sample
- Bluetooth qualified controller subsystem to ease Bluetooth listing of OEM products
- Reference design, PCB layout and antenna guidance
- Radio control tool, RF test guidance
- Production test & radio calibration algorithm

Arm Cordio-C50 specification	
Radio standard	2.4 GHz standard-compliant Bluetooth 5 platform
Native voltage	950 mV (nominal)
TX power	-21 dBm up to 5 dBm
Sensitivity	-95 dBm
Power consumption	Active RX: 6.7mW @1V Active TX: 7.2mW @1V Sleep mode: 500nW @1V
Temperature range	-40˚C TO 90˚C

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For more information
Web: www.arm.com/Cordio