

## Overview

Arm® Cordio®-C50 is a Bluetooth 5 modem, a 802.15.4-2006 modem, protocol processing engine delivered as soft IP, with power intent and implementation IP, associated test-benches and link layer and MAC firmware. Cordio-C50 supports changes for the Bluetooth 5 radio including the 2 Mbps mode, long range, and advertising extensions. The 802.15.4 MAC also has features to support both Thread and Zigbee Pro upper layer stacks.

The design is optimized for low-power with support for Bluetooth 5 and 802.15.4 standards, ideal for designers who want to implement the latest features with a qualified solution for reduced risk and reduced time to market.

### Product Features

- Bluetooth 5 modem and protocol processing engine
- 802.15.4 modem and protocol processing engine
- 802.15.4-2006 MAC and link layer firmware
- Optional AES-128 encryption engine

### Operating Modes

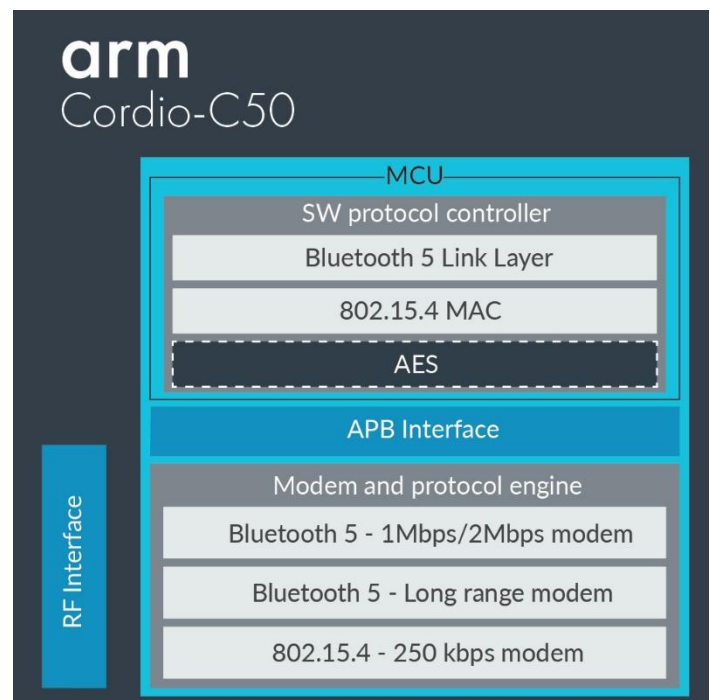
- Bluetooth 5 only or 802.15.4 only
- Simultaneous operation, supporting dynamic switching between two WPANs

### IP Implementation

- RTL for modem and protocol processing logic
- Optimized for energy and memory efficiency
- Flexible architecture to support different memories for firmware
- Narrow digital interface to RF front end (RF interface)
- Supports single processor or dual-processor solutions
- Enables flexibility to support geometries and foundries
- Arm AMBA® APB peripheral device

### Cordio software

- Bluetooth qualified link-layer firmware up to the HCI and 802.15.4 MAC layer firmware (delivered as source code)
- Zigbee/Thread compliant platform through third party stacks
- Bluetooth Qualified Design ID (QDID) software subsystems
- Separately licensable Cordio stack and profile



### Bluetooth standard features

- 1Mbps/2Mbps support
- Coded PHY for longer range: 125 Kbps and 500 Kbps support
- Advertising extensions
- LE channel selection

### 802.15.4 features

- Baseline features:
  - FFD/RFD (nonbeacon-enabled)
  - Scan
  - Association
  - Data transmit and receive
  - Data poll

### Standard features

- MAC support for:
  - OpenThread
  - Zigbee 3.0 and Green Power Proxy
  - Zigbee RF4CE
- Compatible with third party Zigbee and OpenThread stacks

### Design Deliverables

- RTL for modem and protocol processing logic
- Link Layer and MAC firmware delivered as source code
- 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-C50
- Bluetooth qualified controller sub-system (QDID) to ease Bluetooth listing of OEM products
- Thread/Zigbee qualification/certification and regulatory guides

PPA	TSMC 40nm ULP
RX Sensitivity <sup>1</sup> (dBm) BLE (1Mbps)/802.15.4	-95.5/-102.5
Power Active <sup>2</sup> (mW) Rx/Tx	~280/~190
Bluetooth Throughput [Mbps]	1.4
Power Sleep <sup>2</sup> (μW)	~50
Area <sup>3</sup> (mm <sup>2</sup> )	0.13
1) Estimated with Arm radio front end Gen II 2) Estimated power consumption numbers at 1-volt 3) Digital gates only	

For more information: <http://www.arm.com/Cordio>



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