Arm Cordio-B50

Overview

The Cordio-B50 is a Bluetooth 5 modem, protocol processing logic delivered as soft IP, with power intent and implementation IP, associated test-benches and link layer firmware. Cordio-B50 supports changes necessary for the Bluetooth 5 radio including the 2 Mbps mode, Long range, and advertising extensions.

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

Implementation highlights

- Narrow digital interface to RF front end (RF interface)
- Flexible architecture to support different memories for firmware
- Designed as an AMBA peripheral
- Bluetooth Qualified components

Standard Features

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

Product features

- Bluetooth 5 modem and protocol processing logic
- Link layer firmware
- Optional AES-128 encryption engine

IP implementation

- Full featured link layer firmware delivered as source code
- Narrow digital interface to RF front end (RF interface)
- Supports single processor or dual-processor solutions
- Enables flexibility to support different geometries and foundries
- Arm AMBA® APB peripheral device

Bluetooth Cordio software

- Bluetooth qualified link-layer Firmware up to the HCI
- Bluetooth Qualified software subsystems
- Separately licensable Cordio Stack and Profile

Cordio software

- Link layer firmware available as source code
- Bluetooth Qualified Design ID (QDID) for controller subsystem
- Separately licensable Cordio Stack and Profile
Design deliverables

- RTL for modem and protocol processing logic
- Link layer 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-B50 radio IP
- Bluetooth qualified controller sub-system (QDID) to ease Bluetooth listing of OEM products
- Bluetooth qualification/certification and regulatory guides

<table>
<thead>
<tr>
<th>PPA</th>
<th>TSMC 55LP/ULP</th>
<th>TSMC 40LP/ULP</th>
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</thead>
<tbody>
<tr>
<td>Performance/Sensitivity (dBm)</td>
<td>-95</td>
<td>-95</td>
</tr>
<tr>
<td>Performance/Throughput [Mbps]</td>
<td>1.4'</td>
<td>1.4'</td>
</tr>
<tr>
<td>Power Active (RX/TX) (mW)**</td>
<td>&lt; 1</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Power Sleep (nW)**</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Area *** (mm²)</td>
<td>&lt; 0.3/0.25</td>
<td>&lt; 0.11</td>
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* Throughput in the 2Mbps mode
** Power consumption numbers at 1V
*** Digital gates only, memory requirements would be additional