Arm Cordio-E154

Overview
The Arm® Cordio®-E154 is an 802.15.4-2006 modem, protocol processing logic delivered as soft IP, with power intent and implementation IP, associated test-benches and MAC firmware. The 802.15.4 MAC has features to support both Thread and Zigbee Pro upper layer stacks.

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

Product features
• 802.15.4 modem, protocol processing logic
• 802.15.4-2006 MAC
• Optional AES encryption engine

Implementation
• RTL for modem and protocol processing logic
• Narrow digital interface to RF front end (RF interface)
• Designed as an AMBA peripheral
• MAC layer firmware delivered as source code
• Zigbee/Thread compliant platform through third party stacks
• Enables flexibility to support different geometries and foundries

Design deliverables
• RTL for modem and protocol processing logic
• 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-E154 IP
• Thread/Zigbee qualification/certification and regulatory guides

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Standard features
• MAC features for Thread and Zigbee PRO support
• Support for Zigbee PRO, Zigbee IP and RF4CE
• Third party upper layer stacks, each stack a Zigbee certified product
• Arm Thread stack will be one of the first to go through the certification program
• Compatible with third party Thread stack

802.15.4-2006 MAC features
• Baseline features:
  • Scan
  • Data send and receive
  • Data poll
• Features for Zigbee:
  • Association and disassociation
  • Features for Zigbee:
    • MAC security

<table>
<thead>
<tr>
<th>PPA</th>
<th>TSMC 55LP/ULP</th>
<th>TSMC 40LP/ULP</th>
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<tbody>
<tr>
<td>Performance/Sensitivity (dBm)</td>
<td>-101</td>
<td>-101</td>
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<tr>
<td>Power active (RX/TX) (mW)*</td>
<td>&lt; 1</td>
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<tr>
<td>Power sleep (nW)*</td>
<td>&lt; 200</td>
<td>&lt; 200</td>
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<tr>
<td>Area ** (mm²)</td>
<td>&lt; 0.32/0.28</td>
<td>&lt; 0.12</td>
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* Power consumption numbers at 1-volt, preliminary estimates
** Digital gates only, memory requirements would be additional