RivieraWaves

RivieraWaves RiCow Bluetooth® sub-system

Complete Bluetooth low energy or Bluetooth dual mode compliant sub-system Intellectual Property composed of hardware baseband controller, software protocol stack, profiles, radio, CPU and platform for full SoC design.

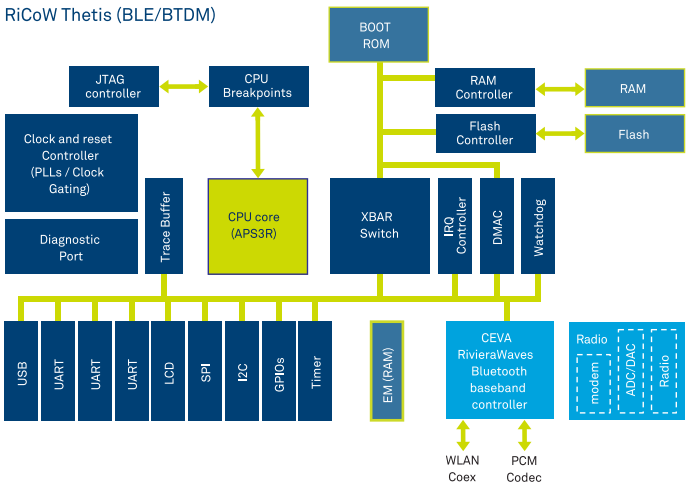
As part of its RivieraWaves Bluetooth IP offering, CEVA offers a fully integrated solution for Bluetooth SoC composed of hardware baseband controller, software protocol stack, profiles, radio, Cortus CPU and platform.
This comprehensive platform IP provides a low risk, rapid time-to-market solution, enabling customers to focus on their own product differentiation.

Supported Bluetooth features

- Qualified for Bluetooth 4.2 (low energy and Bluetooth dual mode), Bluetooth 5 coming soon
- Supports all packet types
- Supports master, slave, peripheral, central, broadcaster, scanner modes
- Supports all states: standby, advertising, scanning, initiating and connection
- Supported protocol layers:
  - Bluetooth low energy: LL, HCI, L2CAP, ATT, SMP, GAP, GATT, services and profiles
  - Bluetooth dual mode: LC, LM, LL, HCI
- Hardware AES128-CCM encryption engine
- Security and Privacy
- Frequency Hopping with channel assessment for higher link robustness and improved coexistence with interferers such as WLAN devices
- Wi-Fi coex interface

Key product features

- Full digital SoC platform delivered in synthesizable RTL form
- Embedded Cortus APS3R 32-bit CPU
- RF portion targeted for TSMC 40nm LP CMOS full digital process. Porting to other process and node can be proposed
- Small area
- Supply voltage: 1.2V
- Low power consumption
- Sensitivity: -97dBm (BLE mode)
- Programmable transmit power level up to +4 dBm
- Wide temperature range from -20°C to +85°C
- Support of 32KHz and 32.768KHz low power clocks
- Hooks for RF and regulatory body testing (FCC, ETSI, JRL)
- DFT ready, accepted by major ATPG tools
- Full software delivered in C code, already optimized for the platform
- minimal external components: only 48/52MHz crystal and decoupling capacitors



Maturity

The full system has been proven on CEVA Bubble FPGA development board mounted with a radio daughter board containing the RF portion of the system. Used for validation and IOT, it has successfully been Qualified for Bluetooth 4.2 specification

Supported Bluetooth low energy profiles / Services

- Proximity
- Find Me
- Health Thermometer
- Heart rate
- Glucose Monitor
- Blood Pressure
- HID
- Time
- Device Identification Service
- Alert Notification
- Phone Alert Status
- Running Speed and Cadence
- Cycling Speed and Cadence
- Weight Scale
- Scan Parameter
- Internet Protocol Support
- Location and Navigation

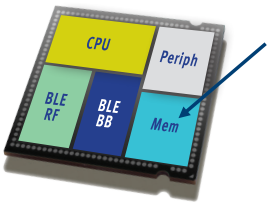
Applications

- Sport & fitness
- Medical
- Mobile accessories
- PC peripherals
- Remote controller

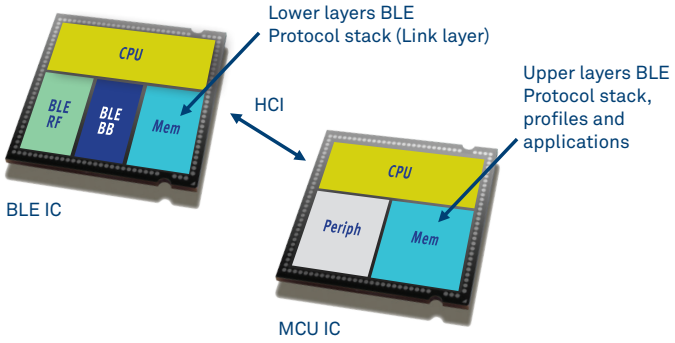
Innovative software architecture

The provided Bluetooth low energy software protocol stack is highly flexible. Several configurations are supported including:

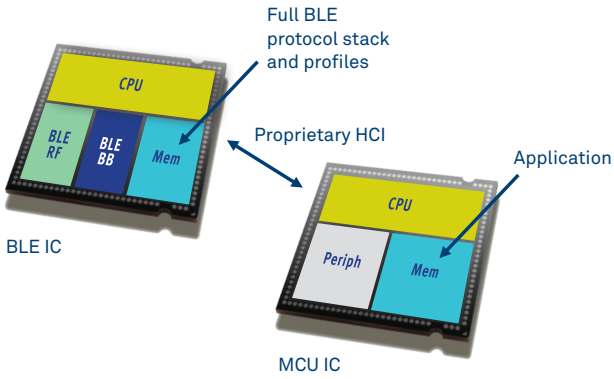
- Fully hosted configuration: all protocol stack, services, profiles and applications are running on the same embedded processor.



- Split configuration: lower layers below HCI are running on the embedded processor while the upper layers above HCI are running on the host/application processor of an external microcontroller. This architecture is applicable to both Bluetooth low energy and dual mode.



- Fully embedded configuration: all software protocol stack up to GAP is running on the embedded processor, while the application is running on the host/application processor of an external microcontroller.



The CEVA RivieraWaves Bluetooth low energy software architecture is such that most of the components can be put in ROM, with GATT service database and profiles sitting in SRAM. This allows the implementation of low cost solution while maintaining full scalability and upgradability for future services/profiles support.

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