CEVA™
The DSP Powerhouse

CEVA Bluetooth

Highlights

- Bluetooth baseband hardware with selection of software stacks for 1.2, 2.0, 2.0+EDR and 2.1+EDR operation
- Offers flexibility and freedom of choice in Radio, embedded processor, Host software stack and operating system
- Available as stand-alone IP
- Also available along with the widely adopted CEVA-Teaklite II core and related portfolio of Audio and Voice codecs
- The most comprehensive solution for Bluetooth Portable Audio for consumer and automotive markets

Introduction

Active in Bluetooth since 1999, Ceva has a long and successful history in licensing Bluetooth IP, with multiple customers in production.

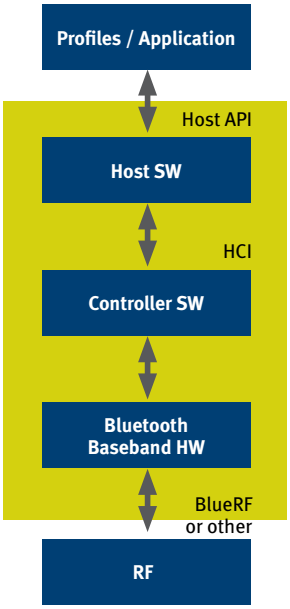
CEVA-Bluetooth consists of the Baseband hardware RTL along with an ANSI C Controller software stack and an example Host software stack.

In answer to customer desire for flexibility, the IP has been designed to give freedom of choice regarding Radio, embedded processor, Host software stack and operating system.

The underlying Bluetooth 2.0+EDR baseband hardware can be deployed with software stacks for various flavors of Bluetooth such as 1.2, 2.0, 2.0+EDR, 2.1+EDR.

The software centric architecture allows for customization of the RF interface and generous support for the suite of Bluetooth features. Reflecting the varied nature of embedded deployments, the software may be run with or without an RTOS.

With a standard HCI presented from the Controller software stack, the customer is free to choose from a wide variety of Host software stacks. In addition, the Ceva Host software stack provides an excellent reference point for customers looking to take full control over this layer.

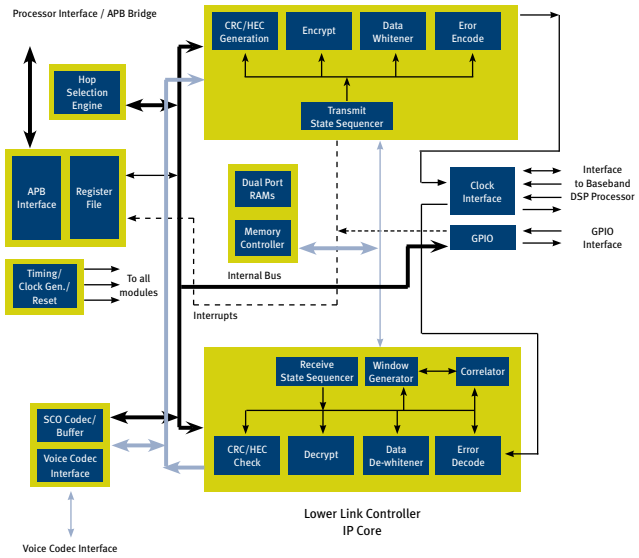


The software has been deployed on a wide variety of embedded processors. Further, the Controller software has been ported to the popular and mature CEVA-Teaklite II DSP core, allowing customers to leverage the extensive CEVA audio/voice algorithm portfolio along with the CEVA-Bluetooth IP.

IP Deliverables

- Verilog RTL package for CEVA-Bluetooth baseband hardware
- ANSI C code package for CEVA-Bluetooth software

CEVA Bluetooth Hardware



- Bluetooth v2.0+EDR Compliant
- Direct support for all Bluetooth modes
- Autonomous Tx/Rx sequence engines
- Bit processing functions in hardware engines ((HEC/CRC, FEC, whitening, encryption)
- Accelerator engines for hop index calculations, with support for AFH
- Bluetooth-centric interrupt structure
- Timer for Sniff, Hold & Park modes
- SCO & eSCO voice conversion, with dedicated hardware, supporting CVSD, A/u law
- Fully gated clock operation for low power
- Sleep mode with either 3.2kHz or 32kHz reference
- Software controlled flexible RF interface, supporting BlueRF and other type interfaces, with 3-wire / 4-wire SPI and DBus
- AMBA Peripheral Bus v2.0 Interface

CEVA Bluetooth Controller Software

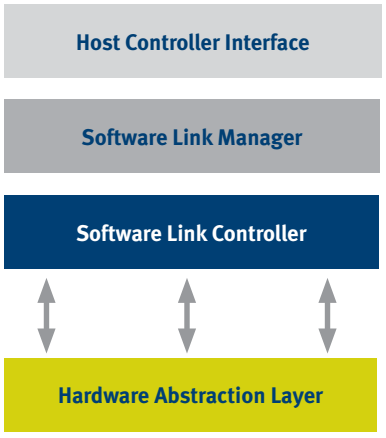
The software Link Controller (LC) represents Layer 1 of the Bluetooth protocol stack. This layer is responsible for the baseband protocols (e.g. Page and Inquiry), low-level link control routines (e.g. ARQ scheme) and packet generation and reception.

The Link Manager (LM) encompasses layer 2 of the Bluetooth system. This layer encompasses all the functionality as required by Part C (Link Manager Protocol) of the Bluetooth specification.

The Host Controller Interface implementation allows easy integration with HCI-compliant Host software stacks.

The Hardware Abstraction Layer (HAL) is intended to abstract the implementation specific details of the hardware / software interaction from the core Controller software stack. The five main points of abstraction are:

- Abstraction of Hardware Link Controller Interface (LC)
- Abstraction of the RF PHY Interface
- Abstraction of the microcontroller, system platform, operating system
- Abstraction of the HCI Transport
- Abstraction of the codec



The Controller Offboard Tester (also known as Abstract Test Suite – ATS) is a special build of the controller software designed to test and debug the Ceva Bluetooth core controller software. This is an “off-board” tester, i.e. it emulates the basic operation of the Bluetooth hardware in order to test the operation of the software. The tester consists of approximately 1500+ individual test routines. The tester runs on Microsoft Visual Studio .Net 2003 (Windows XP).

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