



BOOST Lite™

Bluetooth™ baseband processor core for integration into programmable logic platforms. Complemented with BOOST Lite™ software, to implement a complete baseband system.

Product Features

- BQB qualified to Bluetooth specification v1.1
- Optimized interface to BOOST Lite™ software
- Interface to SiliconWave Bluetooth radio
- Direct voice bus from CVSD encoder (available as an optional block)
- Data encryption realized as hardware
- Bluetooth clock and multiple offset management for scatternet operation in master and slave devices
- Master/slave switching supported
- TDMA / TDD frames formatting and synchronization
- Support of Bluetooth low power modes (sniff, hold and park)
- Support of Bluetooth optional and mandatory paging modes
- Support of all packet types:
 - Control packets
 - Voice packets
 - Mixed voice-data packets
 - Single-slot data packets
 - Multi-slot data packets
- ARM processor interface
- Available for Altera APEX™ and Xilinx Virtex™

Applications

Any application which needs a Bluetooth baseband processor. A lower level protocol stack (to HCI level) is supplied permitting easy interface to NewLogic or third party protocol stacks and software development tools.

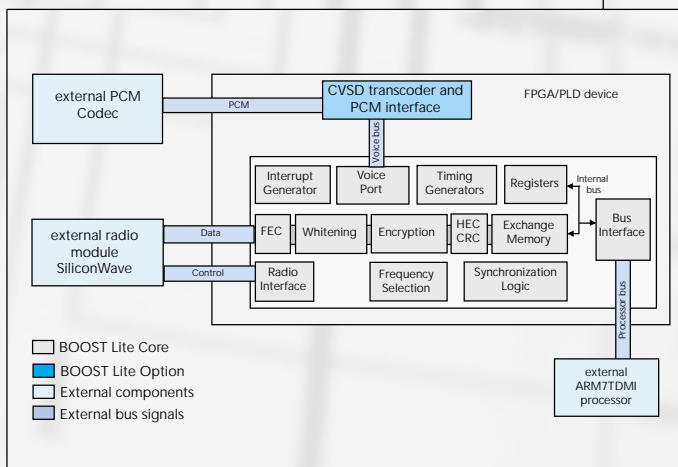
Verification Methods

The BOOST Lite™ core and software have been validated on a development board. For simulation behavioral model for NCSim (Cadence) is available.

General Description

The BOOST Lite™ core has been designed for easy integration into (and specifically optimized for) programmable logic platforms. Some external RAM and ROM (could also be EPROM, EEPROM, etc.) are necessary to host the BOOST Lite™ software. The CVSD encoder (available as an option) and a voice coder are necessary to support voice operation. For data applications, it is possible to input/output a data stream from a UART. The BOOST Lite™ core interfaces to a fast processor bus. This bus ensures that data can be moved quickly between the processor and the exchange memory, which is accommodated internally on the FPGA/PLD. The bus interface has been designed for an external ARM™ processor.

A proprietary interface is provided to link the BOOST Lite™ core to a CVSD encoder for voice applications, in order to be able to process a continuous voice stream without the need for processor intervention. In addition PCM format is supported.



Processor Bus

The processor bus interfaces the BOOST Lite™ core with the external ARM microprocessor. The bus interface block is supplied as source code for convenient adaption to different processors.

Radio Interface

The BOOST Lite™ radio interface has the following features:

- Master SPI Interface, accessible via software controlled buffers for initialization
- Data and received clock resynchronization
- Clock extraction from digital data input
- Correlation
- Optimized for SiliconWave radio module

Voice Port

The optional voice port is only used for voice applications. It directly links the core to an external CVSD encoder (available as an option to the BOOST Lite™ core), in order to accept a continuous voice sampling stream. The samples are buffered in the exchange memory before transmission and after reception. The voice port supports one single voice channel.

Exchange Memory

The exchange memory is a static 8 KByte RAM located on the FPGA/PLD and linked internally to the BOOST Lite™ core. It contains control structures and data buffers. The external processor and the BOOST Lite™ core both access the exchange memory. A synchronization and prioritization mechanism is implemented to ensure a clean handshaking between the hardware and the software thus avoiding any real-time issues.

The exchange memory and registers are memory mapped on the core's address range (17-bit addressing range).

Link with BOOST Lite™ software

The BOOST Lite™ software has been developed with the BOOST Lite™ core in order to optimize the hardware-software interface, and to fully exploit the performance of the block.

Available Support Products

The following modules can be purchased separately:

- CVSD transcoder and PCM interface
- Development board for FPGA prototyping and software development
- Other radio interfaces on request
- BOOST Software™ Bluetooth upper level protocol stack

About NewLogic

NewLogic is an independently owned and operated company based in Lustenau, Austria. Founded in 1997, NewLogic provides System-On-Chip (SoC) design services and silicon IP development for leading semiconductor and systems companies. NewLogic's com-

prehensive IP portfolio includes embedded non-volatile memory, DSP, mixed signal and RF cores for the communications, information and automotive electronics markets.