

# Bluetooth™ Baseband Controller

## Key Features

- Variable input clock frequency
- Two 16C550 UART interfaces
- Up to 10 bits general purpose IO
- I<sup>2</sup>C interface
- USB 2.0 Full-speed compliant interface
- JTAG Debug & Test interface
- Capability for embedded solutions
- External flexible Flash sizes, 2–16 Mbit
- Point to multipoint, 7 slaves
- Power management, PARK, SNIFF & HOLD
- Qualified for Bluetooth spec. 1.1



## Description

The Bluetooth Baseband PBM 990 90 from Ericsson Microelectronics is a generic baseband controller designed to be suitable for both host and embedded applications. The baseband controller will together with a radio module and a Flash memory form a complete Bluetooth system. As the PBM 990 90 is a generic product, it can be used for many different types of applications that require Bluetooth capability such as:

- Data and Voice access points
- Cable replacement
- Ad hoc networking

The PBM 990 90 is based on the scalable Ericsson Bluetooth Core (EBC) architecture. The system control-

ler is an embedded ARM7TDMI™ microprocessor communicating with the EBC and peripheral interfaces over an AMBA™ system bus. This configuration allows for embedded stand-alone Bluetooth applications where your target application is embedded within the baseband controller, in addition to traditional host-based applications. This possibility is especially useful in accessory type applications like cordless headsets, industrial sensor and actuator devices. Providing a wide range of external interfaces like USB, I<sup>2</sup>C, GPIO, PCM and a pair of UARTS, the PBM 990 90 is ideally suited for access applications in desktop and mobile computing environments, home base stations, and hot spot network access points.

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## System Overview

Our solution has a number of embedded user interfaces:

USB 2.0 full-speed

- The USB interface can be configured both as a self- and bus powered device.
- 7 data and 3 voice connections are supported by the DMA architecture.
- Supporting maximum Bluetooth data throughput.

### UART's

- UART 1 supports data rates up to 921 kb/s.
- UART 2 supports data rates up to 230 kb/s.

### PCM

- Supports one PCM channel to facilitate voice communication.

### I<sup>2</sup>C

- The I<sup>2</sup>C interface facilitates the hook-up to external integrated circuits like PCM codecs or EEPROM.

### GPIO

- The architecture supports up to 16 bit General Purpose I/O's.
- Default is 2 bit GPIO.
- 8 bit GPIO is obtained by reconfiguring the 8 most significant bits of the 16 bit data bus.

### External bus interface

- This configurable interface allows designers to add new peripherals (such as Flash and extended memory) with ease.

### Bluetooth core

- Point to point and multi-point connections with support for up to 7 slaves.
- Built in DMA capabilities.
- PARK, SNIFF & HOLD as well as System power management.
- ACL link support giving data rates up to 721 kbit/s.
- SCO link with support for three voice channels over the air.
- HW support for all packet types.
- Ciphering keys up to 128 bits.
- High quality filtering of voice packets enables excellent audio quality. Flexible voice formats to host and over air (CVSD, PCM, 16/8 bits 1<sup>st</sup> and 2<sup>nd</sup> complement, signed, A-law,  $\mu$ -law).

## System Integration

Our flexible approach offers system designers a high degree of choice.

### Variable input frequency

By combining an input clock, on-chip PLL and a programmable divider this device is able to generate all the necessary clocks

for a Bluetooth link. The divider can operate with a wide variety of input clock frequencies. This feature offers a high degree of flexibility for system designers, as they are not constrained by frequency requirements thus reducing the need for additional discreet components.

Example frequencies supported are:

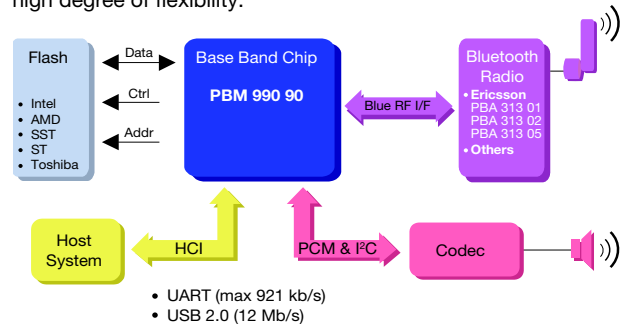
IS136	GSM	PDC			
19.44	13.0	16.8	14.4	12.8	12.6

### Variable System frequency

The system frequency can be adjusted to match the processor performance required for your target application to either reduce power consumption or enhance system performance. The system frequency can be varied from 12-40 MHz.

### Radio and Flash Support

This chip can be combined with a variety of standard Bluetooth radios from Ericsson and a selection of Flash memories to form a complete Bluetooth system. Thus offering system designers a high degree of flexibility.

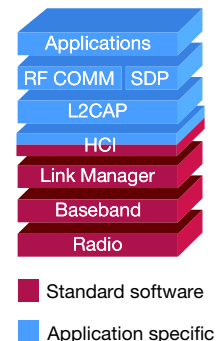


Example: system using the Ericsson Microelectronics baseband

## Software offering

The standard software offering going with the PBM 990 90 Bluetooth Baseband Controller is the Bluetooth protocol layers up to the HCI-layer, i.e. BB (Base Band), LM (Link Manager) and HCI.

In addition, a variety of Bluetooth stacks for host- and embedded applications with different configurations will be offered.



Please note that this is to be considered brief information only. For more detailed information please refer to separate data sheet.

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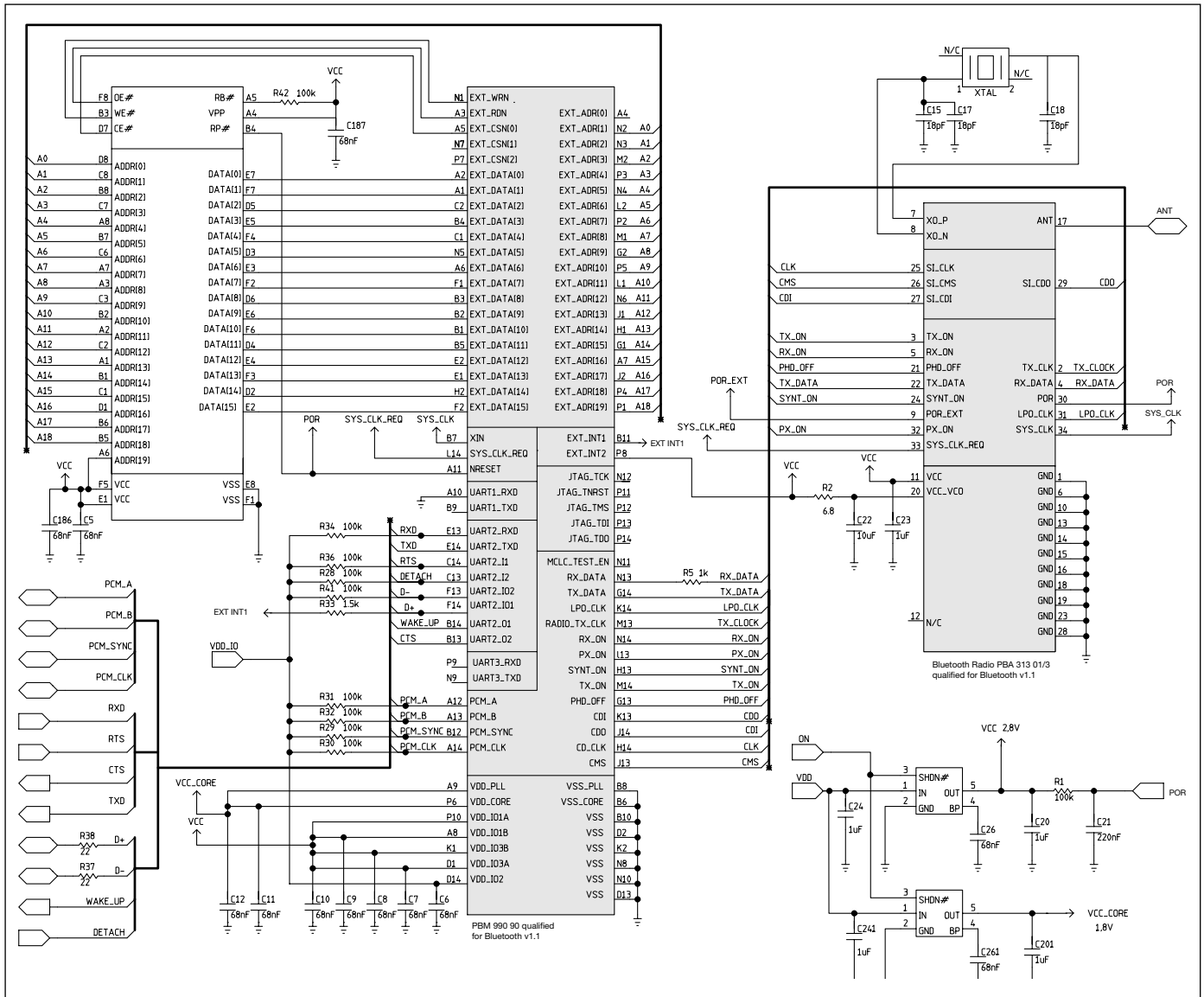
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The latest and most complete information can be found on our website!

Product Brief

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# Application schematic



Example of interface between Ericsson Bluetooth Baseband and Bluetooth Radio.