BluePass™

- Bluetooth™ Wireless Technology made simple, efficient and reliable -

Document history

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Legal notice

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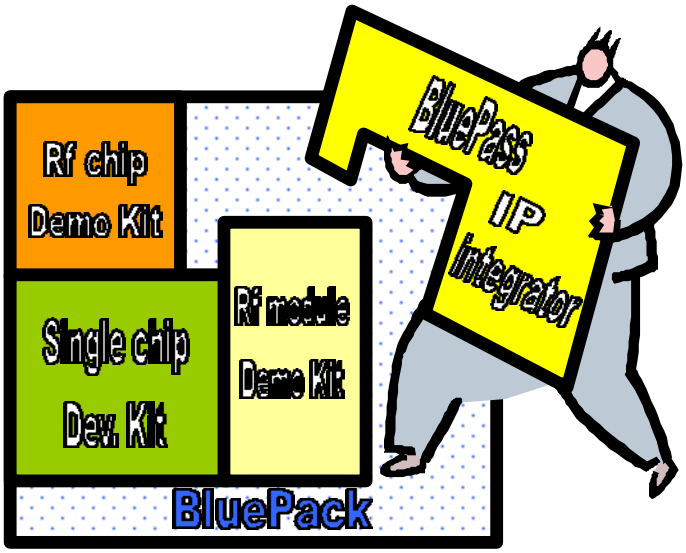
1 - Introduction

1.1 Challenge

Although the interest for the Bluetooth wireless technology is high, there are very few companies that actually provide professional software suite and hardware platforms to allow fast and reliable product development. The complexity that is inherent to the Bluetooth technology has delayed the release of products. As the market is now waiting for Bluetooth products, STMicroelectronics introduces the BluePass™ package that will allow you to design, develop and test your product to be in business in no time !

1.2 What is BluePass™ ?

BluePass is the IP integration part of STMicroelectronics' global Bluetooth offering called BluePack™.



BluePass is your key for an easy access to a full validated and certified Bluetooth solution. This comprehensive platform let you evaluate your concept, experiment software architectures and test your final application in real time. Basically you will be able to integrate Bluetooth in your current product through few simple steps:

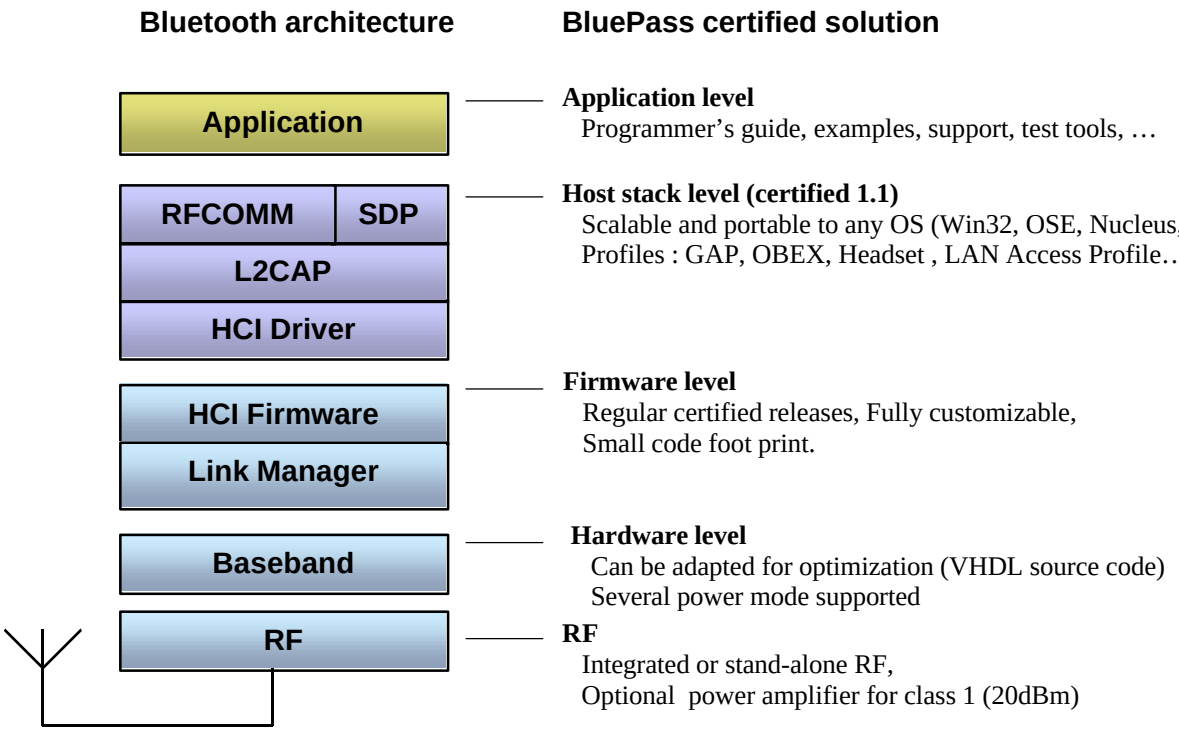
1. Parameterization of your Bluetooth baseband (in VHDL).
2. Customization of your Bluetooth software stack.
3. Application integration on prototyping board.
4. Silicon design and manufacturing.
5. Silicon verification and qualification.
6. Bluetooth certification.
7. **Sale your new Bluetooth enabled product.**

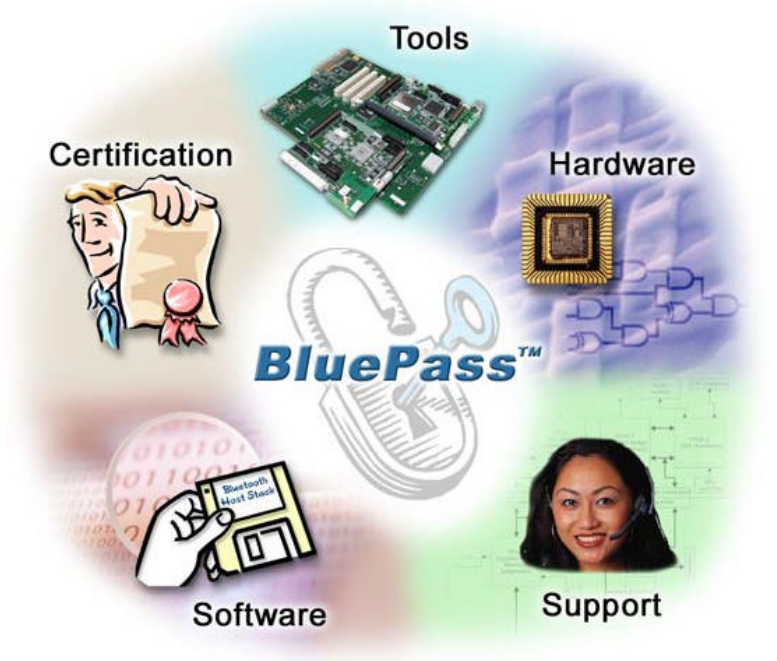
Additional sample codes and applications are provided in order to show you how quick it goes to move an idea to a product.

1.3 The BluePass benefits

You get a definitive advantage in using BluePass due to its end-to-end Bluetooth coverage. You have access to a full-qualified software stack, high performance base band hardware IP, first class support as well as an approved and certified solution.

Our Bluetooth expert team will help you to customize each block to fit your specific needs regardless of CPU, OS and performances requirements.





2 - Development Platform

The Bluetooth Development Platform (BDP) will allow you to validate a complete design before building a specific ASIC from its VHDL. You can customize a baseband, a host stack and HCI-LM, a processor (and operating system) and your specific interfaces. This platform allows to accurately model custom Bluetooth devices and to test communications between them.

The Platform enables the integration of both software and hardware IP, allowing the early prototyping of an environment similar to the final system, reduces developments times and increase levels of confidence in the first silicon.

It is an ARM Integrator-based development system designed to provide a flexible environment and enable rapid development of Bluetooth devices.

- Less exposure to additional costs imposed by design errors, incompatibilities or missing functions
- Continuous adaptation to the latest Bluetooth v1.1 technology
- Fast start to design a SoC ASIC by using pre-configured peripheral components
- High confidence of ensuring a working system by starting from a known working FPGA
- Reduced learning curve (system architecture, SoC design, board design, embedded software, host software, applications, test, etc.) by supplying the same development system to everyone
- Compliance to Bluetooth v1.1 Specification (including piconet and scatternet configurations for both data and voice as well as encryption/decryption)
- Scalable solution (no voice, low speed data, point-to-point only, full functionality)

3 - Available Software & Firmware

This section describe the BluePass software delivery, from the application layer to the HCI-LM firmware.

3.1 The Host Stack

- **Certified 1.1**
  The host stack has already been certified 1.1 so you know that your application will pass the tests.
- **Porting to a specific OS**
  The host stack can easily be ported to the operating system of your choice.
- **Scalable**
  Thanks to its modular structure, you can choose to include or reject some of the modules in order to optimize the code size for your specific application and therefore, minimize the required memory.
- **Profiles**
  The host stack supports all existing profiles. BluePass provides the following: GAP, SDP, Serial Port and Headset. They are provided with sample applications.
- **Source code**
  Access to the source code of the Bluetooth stack is restricted to licensees.

3.2 HCI - LM firmware

- **Certified 1.1**
  The HCI-LM has already been certified 1.1 so you know that your application will pass the tests.

- **Porting to a specific OS**
  The host stack can easily be ported to the operating system of your choice.

- **Scalable**
  Thanks to its modular structure, you can choose to include or reject some of the modules in order to optimize the code size for your specific application and therefore, minimize the required memory.

- **Source code**
  Access to the source code of the HCI-LM is restricted to licensees.

3.3 Application level software

3.3.1 Sample applications

A set of sample applications address the most common Bluetooth functions such as
- Running an inquiry (scan for other devices)
- Pairing devices
- Setup a voice or data connection at RFCOMM or L2CAP level

Commented ANSI source code is provided. You can use it as a framework as you start building your application.

3.3.2 Programmer's guide

Building an application from scratch is not very obvious when you develop a Bluetooth application for the first time. The programmer's guide will quickly become your reference manual: it describes all the procedure that you will have to use, and refers to various sample application to make the job easier.

A step by step procedure will help you to:
- **Identify the platform you need** for your specific application
- **Choose a software strategy** in term of Operating System, portability, functions… (Programming for PC hosted, or fully embedded applications)

3.4 Tools

The IP is delivered with a minimum set of software tools, such as a Windows™ application that sends and receives HCI commands to/from a Bluetooth module.
It consists of a user friendly interface that allows to test a very wide range of HCI commands (described in the SIG documentation) and use standard services such as inquiries, connect, send data…

This tool will allow you to :
- getting started with Bluetooth concepts
- making simple tests on Bluetooth modules
- making tests of a remote device

4 - Certification

BluePass includes the documentation that will guide you through the qualification process and get you product on the market with minimum testing thanks to our pre-qualified Bluetooth IP.

- **Radio**
  ST proposes a pre-qualified radio (STw5288). Using this radio in an end product will avoid you to perform all RF tests. For end products radiated spurious emissions have to be renewed and for antennas with more than +1.9 dBi antenna gain RF power out have to be rechecked.

- **Baseband**
  If our pre-qualified baseband is integrated in an end product, only a few tests have to be performed again.