

### Bluetooth Baseband Controller OVA Checker AIP



Bluetooth 1.1 Baseband Controller Checker OVA IP is fully documented, off the shelf component for the Developers of the Bluetooth 1.1 Baseband Controller.

Bluetooth 1.1 Baseband controller OpenVera Assertions based Checker IP provides a concise, declarative mechanism to code the specification of sequences of events and activities of Bluetooth 1.1 Baseband controller Protocol.

Bluetooth 1.1 Baseband controller OVA protocol rule Checker can work in a standalone mode i.e., can be plugged in any design verification environment, which uses the standard Protocol without disturbing the structure.

Bluetooth 1.1 Baseband controller OVA AIP Checker is developed using the abstraction in OVA syntax that is used in dynamic simulation of Bluetooth 1.1 Baseband controller based design.

OpenVera and OpenVera Assertions (OVA) verification IPs are reusable verification. It provides fast and accurate way to simplify and speed up the device verification task. In a complex design process, verification may take up to 70% of the development time. OVA Checker AIP accelerates the development of a comprehensive verification environment, thereby optimizing cost and time to market.

#### Product Specifications

- The AIP can be adapted to test a standard Bluetooth Baseband device in Synopsys Magellan Formal Verification environment
- Separate set of Checkers provided for AMBA Interface
- Supports Correlator Functionality
- Supports checking of Access Code

#### Product Highlights

- ☑ Fully compliant with the Bluetooth version 1.1 specification. It accurately verifies the Bluetooth protocol stack
- ☑ The Checker AIP follows the OpenVera™ unified flow for formal tools
- ☑ The assertions are checked with the Generic Microcontroller Interface on Microcontroller side
- ☑ The Checker AIP incorporates layered approach
- ☑ Full programmability and versatility of the AIP allows connection to any standard Bluetooth device
- ☑ The Checker allows the verification in both the Master and Slave modes
- ☑ The Checker monitors both the ACL and SCO links
- ☑ The Checker provides verification on 1/3 and 2/3 FEC
- ☑ Provides various error notifications based on the part of the protocol that gets violated such as CRC and HEC errors
- ☑ The Checker verifies the hop selection process
- ☑ Provides monitoring of control signals and timings during enquiry and paging operations
- ☑ The Checker verifies the security operations such as data whitening, authentication, encryption and decryption

## Layered Approach:

A layered approach has been implemented in Bluetooth 1.1 OVA model to create a verification environment that allows sophisticated test scenarios.

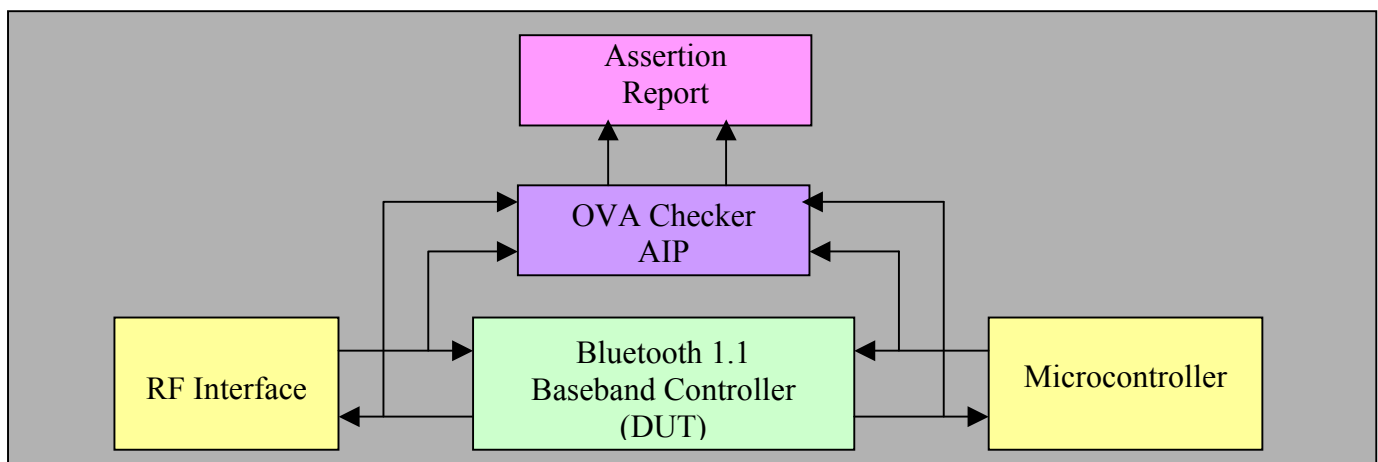
**Layer 0:** Logic and Events definitions - Booleans, events and variable definitions that are common to all Bluetooth 1.1 compliant devices are specified here.

**Layer 1:** Individual templates for each of the Property corresponding to Bluetooth devices are located in this layer.

**Layer 2:** The common template from Layer 0 and individual templates from Layer 1 are instantiated here.

**Layer 3:** This layer contains the 'bind' constructs meant for the OVA AIP Units and customized OVA AIP Header declarations.

## Bluetooth 1.1 Baseband Controller OVA Checker Block Schematic:



### Block Diagram Description:

The Bluetooth 1.1 Baseband Controller is connected between the Microcontroller and physical interface (RF interface). The Microcontroller runs the Bluetooth software stack stored in memory and controls the RF/host interfaces. The Bluetooth software and data are stored in ROM/RAM. The ERICSSON PBA 313 01 radio module is used as RF interface. The OVA Checker IP resides on the RF and Microcontroller Interface. It monitors the interfaces and provides the assertions for certain rules which Baseband Controller must obey. Thus, just by looking for success or failure of the assertions, the function of Bluetooth Baseband Controller is verified.

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