

Simulation VIP for BLE 4.2, 5

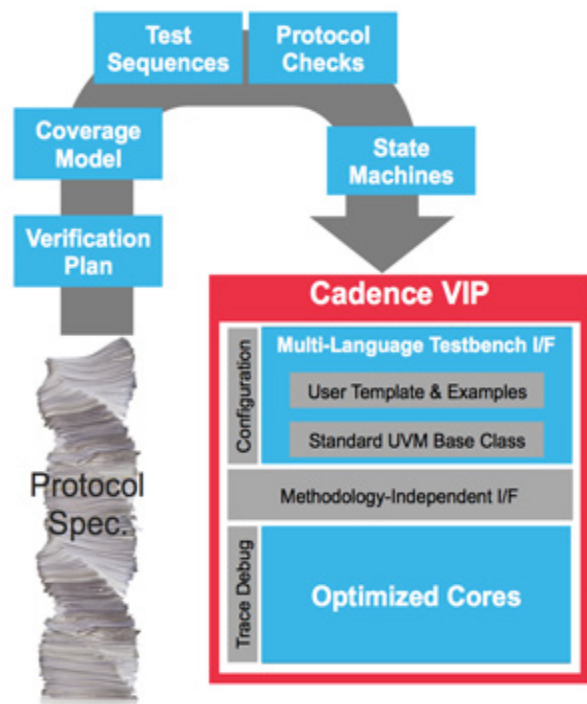
For short-range wireless connectivity in mobile applications

Overview

Cadence® Simulation Verification IP (VIP) is the world’s most widely used VIP for digital simulation. A pioneer in the VIP market segment, Cadence supports hundreds of customers verifying thousands of designs, from IP blocks to full Systems on Chip (SoCs).

Cadence’s Bluetooth Low Energy (BLE) 5 and 4.2 VIP is the newest member of Cadence’s broad mobile interface VIP portfolio. BLE has been the interface of choice for short-range wireless connectivity in mobile applications. The next generation BLE 5 addresses the ease-of-connectivity and increased range and bandwidth requirements due to an increasingly connected world.

Built on top of a flexible architecture designed for performance and easy integration in testbenches at the IP, SoC and system level, the BLE 4.2 and 5 VIP runs on all simulators and supports SystemVerilog along with the widely adopted Universal Verification Methodology (UVM). This enables verification teams to reduce time spent on environment development, and redirect the saved time to cover a larger verification space, accelerate verification closure and ensure end product quality.



Specification Support

The Simulation VIP for BLE 4.2 and 5 supports [Bluetooth 5](#) and [Bluetooth 4.2](#)

Benefits

- Increased verification confidence with 3rd party validation
- Simplified verification with a single model for BLE as well as BR/EDR
- More comprehensive coverage with support for full specification

Supported Design-Under-Test Configurations

- Controller
- PHY
- Adaptor

Key Verification Capabilities

Cadence BLE Simulation VIP delivers

- Complete Active and Passive State machine models incorporating support for power-saving modes
- Full timing configurability
- Pre-programmed assertions that continuously watch simulation traffic to check for protocol violations
- Verification plans, test suites
- Pre-programmed coverage models used to verify exercising of various modes of operation of an interface
- Predefined and user defined error injection capability available at each protocol layer

Key Features

- Supports HCI commands/events to verify 2 Mb/s LE including 2 Ms/s packets transmission and reception capability and transition between 1 Ms/s and 2 Ms/s with support of additional link layer PDUs
- Supports LE Long Range including configurable coded PHY for FEC2 Block with S=2/S=8, changes in LL Packets (PDU) related to FEC
- Supports LE advertising extensions with advertisement/connection on primary/secondary channels using EXT/AUX PDUs, periodic advertisement and fragmented advertising data using AUX_CHAIN PDUs
- Supports LE channel selection #2 including counter based channel selection algorithm for secondary channels
- Supports limited high duty cycle non-connectable advertising
- Supports full compliance with Bluetooth Test Specification provided by SIG (Host Controller Interface, Link Layer, etc.)
- Supports emulation of multiple devices (each can be configured to different profiles) simultaneously that can dynamically connect/disconnect to create scatter net topology
- Supports LE PHY for full functional PHY (1M/2M/Coded) verification, GFSK Modulation-Demodulation, direct test mode MSCs (HCI/UART-2wire)
- Supports Controller-PHY interface to I2C/SPI and custom interface
- Supports Host/Controller transport layer (HCI) with interface to USB/UART, AHB/AMBA, custom interface
- Supports host layer control to generate specific command/event sequences for link layer which are not possible using an RTOS/Host API combination
- Supports rich set of callbacks at each layer to verify the DUT's behavior in erroneous scenarios and to dynamically modify the data in the sequence queue based on event
- Supports HCI commands/events/data

Supported Tools

This VIP includes a basic test suite capability that includes:

- Triple Check
- Indago Protocol Debug App

Related Products



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