**<Project Name>**

**“<Project One Liner>”**

Functional Verification Plan

Revision 0.1

Contents

[1 Document Details 4](#_Toc419795954)

[1.1 Revision History 4](#_Toc419795955)

[1.2 Definition, Acronyms, and Abbreviations 5](#_Toc419795956)

[1.3 References 6](#_Toc419795957)

[1.4 Open Items 6](#_Toc419795958)

[2 Overview 7](#_Toc419795959)

[2.1 Scope 7](#_Toc419795960)

[2.2 Verification Flow 7](#_Toc419795961)

[2.3 Verification Objectives 7](#_Toc419795962)

[2.4 Verification Methodology 7](#_Toc419795963)

[2.5 Verification Strategy 7](#_Toc419795964)

[3 Verification Environment Architecture 8](#_Toc419795965)

[3.1 Overview of <Project Name> Verification Architecture 8](#_Toc419795966)

[4 DUV Considerations Relevant To Verification 9](#_Toc419795967)

[5 Verification component 10](#_Toc419795968)

[6 Verification setup 11](#_Toc419795969)

[6.1 Tool Versions 11](#_Toc419795970)

[6.2 VIP Versions 11](#_Toc419795971)

[6.3 Directory Structure 11](#_Toc419795972)

[6.4 Project Setup 11](#_Toc419795973)

[6.5 Simulation Script Usage 11](#_Toc419795974)

[6.5.1 Running Single Testcase 11](#_Toc419795975)

[6.5.1 Running Regressions 12](#_Toc419795976)

[6.5.2 Compilation define and Simulation Argument Switch 12](#_Toc419795977)

[7 Coverage & Regression 12](#_Toc419795978)

[7.1 Running Regression 12](#_Toc419795979)

[7.2 Code coverage 12](#_Toc419795980)

[7.3 Assertion coverage 12](#_Toc419795981)

[7.4 Functional coverage 12](#_Toc419795982)

[7.4.1 Directed-Random Testing 12](#_Toc419795983)

[7.4.1.1 Objectives of Directed Random Testing 12](#_Toc419795984)

[7.4.1.2 Why Functional Coverage? 12](#_Toc419795985)

[7.4.2 How do we decided functional coverage bins / What to randomize ? 12](#_Toc419795986)

[7.4.2.1 When / Where /How to sample data to be covered? 12](#_Toc419795987)

[7.4.3 Regression with Functional Coverage 13](#_Toc419795988)

[7.4.3.1 To achieve functional coverage 13](#_Toc419795989)

[7.4.4 Directed-Random Testing : Self Checking 13](#_Toc419795990)

[7.4.4.1 How to check correctness of test with directed-random testing 13](#_Toc419795991)

[8 Assumptions and Limitation 13](#_Toc419795992)

[9 Final Release checklist 13](#_Toc419795993)

[10 Appendix A: References 13](#_Toc419795994)

[10.1 Revision History 13](#_Toc419795995)

[10.2 Items Out Of Scope of Verification 13](#_Toc419795996)

**Figures**

**No table of figures entries found.**

**Tables**

[Table 1‑1 Revision History 4](#_Toc419796106)

[Table 1-2 Definition, Acronyms and Abbreviations 5](#_Toc419796107)

[Table 1-3 References 6](#_Toc419796108)

[Table 10‑1 References 13](#_Toc419796109)

[Table 10‑2 Revision History 13](#_Toc419796110)

# Document Details

## Revision History

Table 1‑1 Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Revision | Author | Description |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Definition, Acronyms, and Abbreviations

Table 1-2 Definition, Acronyms and Abbreviations

|  |  |
| --- | --- |
| Term | Description |
| DS | **D**esign **S**pecification document |
| DUV | **D**esign **U**nder **V**erification |
| DUT | **D**esign Under **T**est |
| UVM | **U**niversal **V**erification **M**ethodology |
| VE | **V**erification **E**nvironment |
| TB | **T**est **B**ench |
| Expected | The word “Expected” is used to indicate that the transaction value under consideration is prepared by VE or is reference value. The transaction received from RTL is then compared with this expected transaction for data integrity checks. |
| Actual | The word “Actual” is used to indicate that transaction value under consideration is driven by DUV. This driven transaction is sampled by VE and then compared with the expected transaction for data integrity checks. |

## References

Table 1-3 References

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Document | Version Date | Remarks |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 10 |  |  |  |

## Open Items

# Overview

## Scope

This document specifies the plan for verifying the front-end design of <Project Name> for functional accuracy using simulations. It describes the flow, objectives, methodology, and strategy of execution for functional verification.

## Verification Flow

Brief Description

<Figure/Diagram showing Verification Flow>

## Verification Objectives

## Verification Methodology

## Verification Strategy

Wherever applicable, add brief/detailed description, diagram, flow chart, tables, etc.

# Verification Environment Architecture

## Overview of <Project Name> Verification Architecture

Brief Description

<Figure/Diagram showing Verification Flow>

Detailed description of each component/object of verification environment. Explain with as much details possible. If require, then add multiple figures to demonstrate better.

Wherever applicable, add brief/detailed description, diagram, flow chart, tables, etc.

Cover following points per block/IP:

* Verification architecture diagram and description
* Verification component list and description
* Test Plan link
* Test Flow
* Features (To Be) Verified
* Functional Coverage Plan and Details
* Test case execution

# DUV Considerations Relevant To Verification

Brief description of design

List down block/feature list to be verified

# Verification component

Multiple tables containing information per class:

* Instance Name
* Verification Component Name & Description
* Method/Member Name & Description

Also add brief information about each component/object of environment.

Coverage, Assertions, Checkers, Scoreboard strategy/plan to be described in detail.

Wherever applicable, add brief/detailed description, diagram, flow chart, tables, etc.

# Verification setup

This section shall provide details of about the verification environment requirements. It describes the requirements on tools and their versions, the directory structure used, steps to set up the project independently, and how to execute the tests.

## Tool Versions

Table to list details of all tools required/used

* Tool name
* Source
* Tool Revision Used
* Comment

## VIP Versions

Table to list details of all VIPs required/used

* VIP name
* Source
* VIP Revision Used
* Comment

## Directory Structure

For directory structure along with file details

Also mention details about files/directories created after compiling/running tests

## Project Setup

The setup step for the above tool configuration will be as follows.

The following are the steps required to setup the verification environment.

* Set Environment Variables
* Source various files to setup tools

## Simulation Script Usage

Simulation will be run in simulation run directory already setup. Details of the simulation run script can be obtained with the help option of the run script. The simulation script is available at $PRJ\_ROOT/<path\_to\_simulation\_script>.

### Running Single Testcase

Provide use model and details of each switch used while sourcing simulation script.

### Running Regressions

The regression command for a specific test list file.

Provide use model and details of each switch used while sourcing simulation script.

### Compilation define and Simulation Argument Switch

Provide details of each compilation define and simulation argument

# Coverage & Regression

This section identifies different strategies for running regression, regression analysis and coverage collection and closure.

## Running Regression

Following strategy will be used for regression ……………

## Code coverage

## Assertion coverage

## Functional coverage

### Directed-Random Testing

#### Objectives of Directed Random Testing

#### Why Functional Coverage?

### How do we decided functional coverage bins / What to randomize ?

#### When / Where /How to sample data to be covered?

### Regression with Functional Coverage

#### To achieve functional coverage

### Directed-Random Testing : Self Checking

#### How to check correctness of test with directed-random testing

# Assumptions and Limitation

# Final Release checklist

# Appendix A: References

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. No. | Document | Version | Remarks |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |

Table ‑ References

## Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Version No. | Date | Owner | Changes |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Table ‑ Revision History

## Items Out Of Scope of Verification