Final Project

Project (2)-RAM:

1. Verification plan
2. Asynchronous Reset functionality.
3. Testing writing operation in All Addresses of the memory by checking the waveform and compare to the golden model
4. Testing reading operation From All Addresses of the memory by checking dout in the waveform and compare to the golden model
5. Testing if rx\_valid is low No operation is done the dout and the memory stayed stable or not.
6. Checking when Read the Functionality of tx\_valid and if it still high or when read only.

Note:

-Reset randomization is closed during the first two loops to check all places in the memory and make sure every address in the memory wrote and read from it.

-addr\_wr is not assigned a reset value which may cause a problem if the master started with the writing data operation.

1. A screenshot of a computer

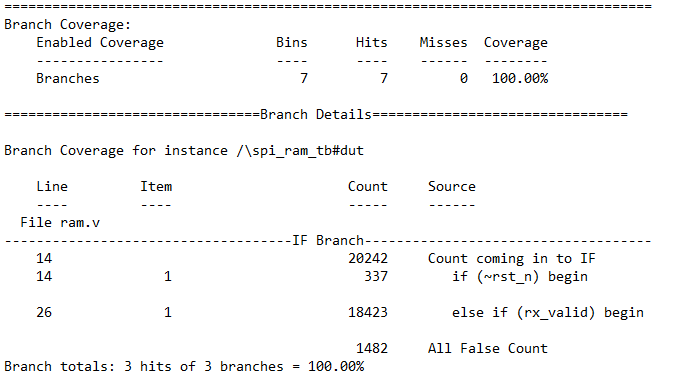
   Description automatically generatedVerification Document
2. Coverage reports:

**Toggle Coverage** is 100%

A screenshot of a computer

Description automatically generated

**Branch Coverage** is 87.5% as All values were handled no wrong branch in the design.



**Statement Coverage** is 100%

A screenshot of a computer program

Description automatically generated

**Function Coverage** For din is 100% All values were reached

A screenshot of a computer screen

Description automatically generated

**Some Questa Pic** to Verify the RAM:

When rst\_n =0 All ram values and dout = 0.

A computer screen shot of a program

Description automatically generated

Writing in All Memory values.

A computer screen shot of a computer

Description automatically generated

Example For checking Read:

A computer screen shot of a black and green screen

Description automatically generated

Din [9:8] is 10 so we will save 10100 in add\_rd so we will check place 40 in memory.

A computer screen shot of a black and green screen

Description automatically generated

After the Din[9:8] is 11 so it will go to address 40 to read and dout must = the value in memory [40].

A screenshot of a computer

Description automatically generated

In memory the address of 40 is = 8’h47 .

A computer screen shot of a black and green grid

Description automatically generated

Dout is equal to the memory address 40 so read is true.

**After examining the wave form and check all possible values for dout there is NO BUGS in the RAM memory.**