EE-599B: SoC Verification in System-Verilog

Assignment: Verification Plan for AHB Lite Memory

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Verification Plan for AMBA AHB-Lite Compliant Memory

No.	Feature	Test Description	Ref.	Type	Result	Comments
1	Write transfers at random locations	HWRITE signal will be high and Master will broadcast the data packets on the HWDATA [31:0] bus.	3.1	TR		Successful write transfers at random locations. Then Slave must give OKAY response by low HRESP signal.
2	Read Transfers at random locations	HWRITE is low then the slave must generate the data packets on the HRDATA [31:0] bus.	3.1	TR		Successful read transfers at random locations. Then Slave must give OKAY response by low HRESP signal.
3	Write-Read Transfer at same address	Write transfer followed by Read transfer at an address.	3.1	TR		When HRESP is low, HREADY is high then particular address location must have the updated value which will be read in next transfer.
4	Transfer Type HTRANS [1:0]: IDLE	IDLE transfer is inserted	3.2	TR		IDLE transfer must be ignored by the slave and must provide zero wait state OKAY response.
5	Burst Termination with BUSY transfer	Burst Termination with BUSY Transfer for fixed length burst. *(It must terminate with SEQ transfer.)*	3.5.1	A		Slave must give an ERROR response.
6	BUSY transfer after SINGLE Burst	BUSY transfer immediately after SINGLE Burst *(It must followed by IDLE or NONSEQ transfer)*	3.5.1	A		Slave must give an ERROR response.
7	Waited states: Transfer type and Address change	Transfer type and address changed from IDLE to NONSEQ during waited states. These will be held constant untill HREADY is high	3.6.1	A		Successfully transfer type and address changed. Slave must give OKAY response.
8	Waited States`: Transfer type changed for fixed length burst.	Transfer type changes from BUSY to SEQ during waited states for fixed length bursts. The HTRANS signal must be kept constant until HREADY is high	3.6.1	A		Successfully transfer type changed. Slave must give OKAY response.

9	Transfer type changed during waited states	Transfer type changes from BUSY to any other type during waited states for undefined length burst. The burst continues if a SEQ transfer is performed but terminates if and IDLE or NONSEQ transfer is performed.	3.6.1	A		Successfully transfer type changed. Slave must give OKAY response.
10	Transfer type changed during waited states	Transfer type changed from IDLE to SEQ.				Slave will give an ERROR response.
11	Address change after an ERROR response by slave	Master can change the address if slave responds with an ERROR during waited states	3.6.2	TR		Successfully address changed. Slave must give OKAY response.
11	Slave Transfer response: Transfer done	Transfer is successfully completed by the Slave	5.1.1	TR		HREADY will be high whereas HRESP will be low
12	Slave Transfer response: Transfer pending	Slave inserted waited states to enable time to complete the transfer	5.1.2	TR		Both signals HREADY & HRESP will be low
13	Slave Transfer response: Transfer failed	Slave signal an ERROR to indicate the transfer failure	5.1.3	TR		Slave give an ERROR response in two cycles Cycle I: HREADY will be low whereas HRESP will be high Cycle II: HREADY will be high whereas HRESP will also be high
14	Transfer attempted to non-existential address location	NONSEQ or SEQ transfer attempted at non-existential address location	4.1.1	TR		Slave must give an ERROR response.
15	Global Signal: HRESTn (Active Low Signal)	Reset all bus elements. Slaves will have HREADYOUT signal high while transfer type HTRANS [1:0] must be IDLE.	7.1.2	TR		All bus element must be resetted.

Explanation of Different Fields

No. The serial number of the test.

Feature The feature which the current test is verifying in full or partially. The feature is usually on the abstraction level of a user.

Test Description A detailed description of the test case being performed. You can be as verbose as you want.

Ref. Reference to the section in the related standard document. The section number as well as page numbers should be described here.

Type Type of the test. Whether the test is an assertion (A) or a transaction (T) type.

Result Pass (P) or Fail (F).

Comments Any other comments about the test or its results that you want to mention.