MAX 10 - DDR3 Memory Test with NIOS II Getting Started Guide

Design Overview

As MAX 10 DDR3 UniPHY controller is not support EMIF v16.0 toolkit. This design example is introduced to demonstrate how to run memory test on particular memory address using NIOS II eclipse memory test template. The purpose of this design example is to ease user to determine which memory address is fail on DDR3 read/write transaction.

Running the memory test

1) Run full compilation on testddr3_nios_ddr3.qar with Quartus 16.0

2) Launch Quartus Programmer and program testddr3.sof to the MAX 10 FPGA Development Kit

3) Launch NIOS II 16.0 Software Build Tools for Eclipse

4) Go to File Tab and click NIOS II Application and BSP from Template

5) Set as below and click finish:

- SOPC Information File name : q_sys.sopcinfo
- Project name : Memory_Test_MAX10_DDR3
- Project Template: Memory Test

emplate	ooard support package based on a software example	
Target hardware information		
SOPC Information File name:	\software\software\Test_2017\q_sys.sopcinfo	
CPU name:	nios2_qsys_0 v	
Application project		
Project name: Memory_Test	_Max10_DDR3	
Line defends in entire		
Project location: C:\Users	s\boonchie\software\software\Test_2017\software	
Project template		
Templates	Template description	
Hello Freestanding	Memory Test allows you to test the RAM and flash memory on your board. The application presents a menu to choose which memory to test.	
Hello World Small		
Helio World Small Memory Test Memory Test Small Simple Societ Societ	Because the RAM test is destructive, do not run the RAM test on any memory being used by	

6) Under Project Explorer, right click *Memory_Test_MAX10_DDR3_bsp*. Move to *Nios II* and click *Generate BSP*

7) Under Project Explorer, right click *Memory_Test_MAX10_DDR3*. Move to *Run AS* and click *3 Nios II Hardware*

8) Under Nios II Console Tab, type 'a' then 'enter' to select 'Test RAM'

9) Follow the instruction by enter start and end address range to test the RAM. For this Qsys design, the DDR3 address range is 0x0000_0000 to 0X07ff_ffff

Downloads

- Qsys_sopcinfo.zip q_sys.qsys and q_sys.sopcinfo
- Output_files.zip Compilation output files including *testddr3.sof*