SATA-IP Host Demo Instruction

Rev1.4 15-Dec-08

This document describes SATA-IP Host evaluation procedure using SATA-IP Host reference design bit-file

1. Environment

- For real board evaluation of Host reference design, environment shown at figure1 is required.

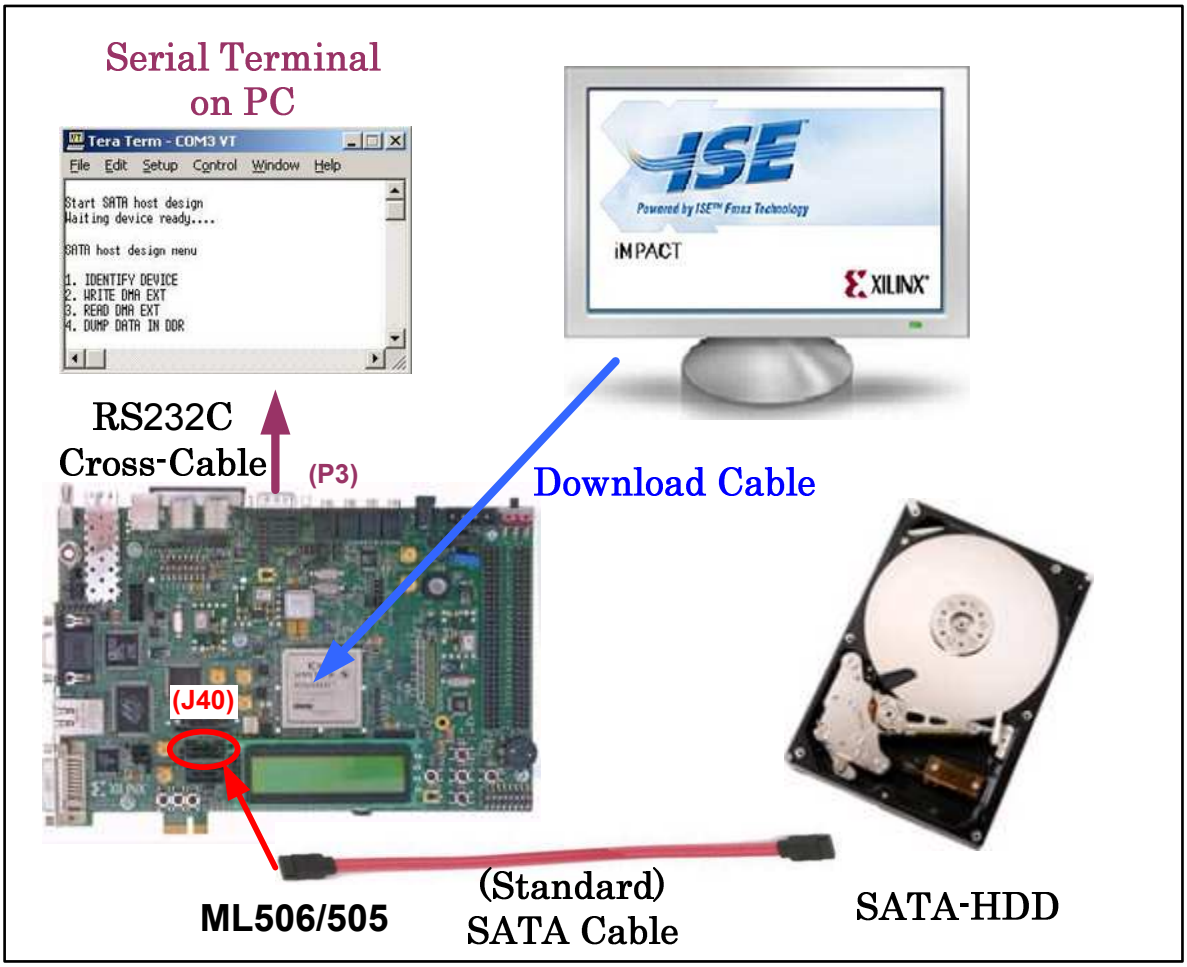
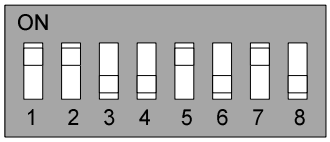


Figure 1 Evaluation environment using reference design bit-file

- （Note）For evaluation version, IP-Core has 1-hour time limitation to use. After 1-hour use, IP-core will stop any data transfer.

2. Evaluation procedure

- Check all system is power off, then connect J40 on ML506/505 and SATA HDD with standard SATA cable.
- （Note）Do not use cross-cable SATA which is included in ML506/505 package.
- Connect JTAG pin (J1) on ML506/505 and PC with download cable (such as Platform Cable USB).
- Connect cross-serial cable to COM1 port on ML506/505 board and PC
- Set SW6 pin 1-8 at the bottom side of ML506/505 board to be “11001010”, as shown following.



- After connection is finished, power up and open serial monitoring software such as HyperTerminal. Terminal settings should be (Baud Rate=115,200 Data=8 bit Non-Parity Stop=1).
- Download bit-file to ML506/505 from iMPACT.
- After FPGA start operation, check LED status on ML506/505 board at LED0-3 (DS13, DS15-17) and ERR1/2 LED which are near SATA connector that are matched with Figure2.

  LED0: Clock in SATA-PHY level is locked. Please check SW6 setting, if this LED is not ON.
  LED1: SATA IP can communicate with HDD. Please check SATA-cable connection, if this LED is not ON.
  LED2: SATA type display (OFF: SATA-I HDD, ON: SATA-II HDD)
  LED3: DDR2 initialization is finished. Please check DDR2, if this LED is not ON.
  ERR1/2: 1-hour timeout. This LED is ON when demo system has run for 1 hour and SATA-IP will not able to use until power-off board.

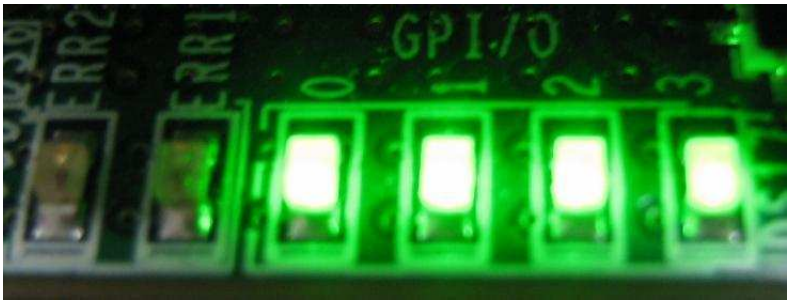


Figure2a LED status if system can be set up with SATA-II HDD

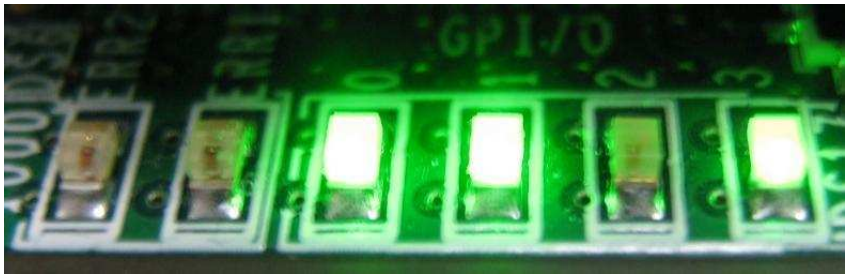


Figure2b LED status if system can be set up with SATA-I HDD


Figure2c LED status if system run more than 1-hour limitation

- At serial console on PC, main menu will be appeared as shown in Figure3. Then, user can execute each command operation. Please check serial-cable connection if this menu is not displayed on console.

Figure3 Main menu

3. IDENTIFY DEVICE

- This menu is used to send “Identify Device” command to HDD.
- Press ‘1’ to select this menu and then HDD information (Model name, 48-bit LBA supported, Capacity) will be shown as below.

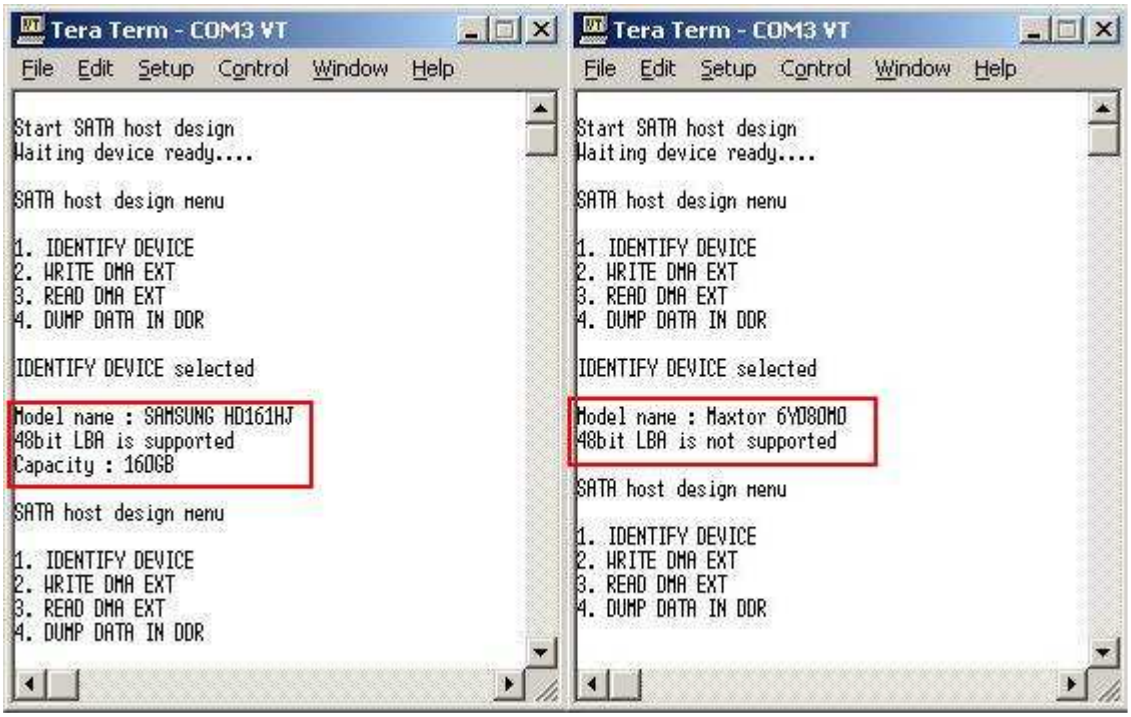


Figure4 Identify Device menu

Note: 48-bit LBA supported HDD is recommended to use in this demo because Menu ‘2’ and ‘3’ cannot only use with supported HDD.

4. WRITE DMA EXT

- This menu is used to send “Write Dma Ext” command to HDD.
- Press ‘2’ to select this menu and then user need to input
  - “Enter Start LBA”- sector number (LBA address) to start write data which is valid from 0 to (HDD LBA size – 1) or less than 4G sectors.
  - “Enter Sector Count”- transfer sector size (Sector count) which is valid from 1 to 65536 sectors
  - “Enter Pattern”- select write pattern : ‘0’ is 32-bit increment pattern, ‘1’ is 32-bit decrement pattern.
- After enter all inputs, wait until transfer finished and write transfer speed will be displayed as shown in figure 5. Write transfer speed will be more reliable when sector count value is larger value.
- Figure 5 shows the example of two pattern generation to HDD.

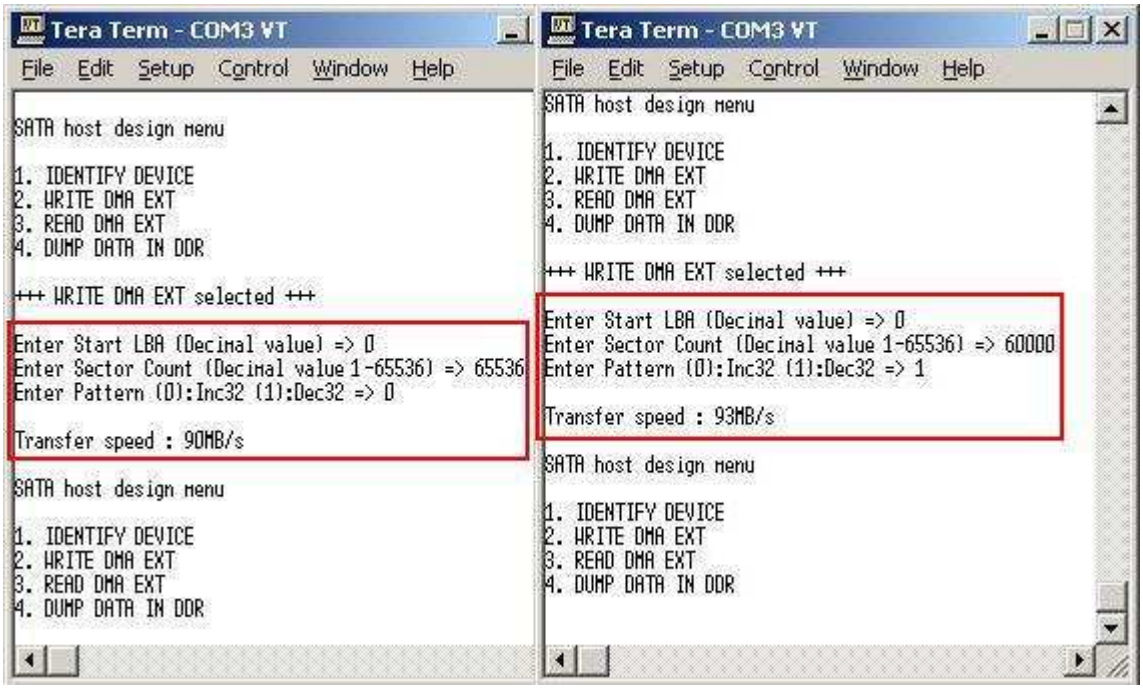


Figure5 Write Dma Ext menu

5. READ DMA EXT

- This menu is used to send “Read Dma Ext” command to HDD.
- Press ‘3’ to select this menu and then user need to input
  - “Enter Start LBA”- sector number (LBA address) to start read data which is valid from 0 to (HDD LBA size – 1) or less than 4G sectors.
  - “Enter Sector Count”- transfer sector size (Sector count) which is valid from 1 to 65536 sectors.
  - “Enter Pattern (0)=>Inc32 (1)=>Dec32 :”- select verify pattern : ‘0’ is 32-bit increment pattern, ‘1’ is 32-bit decrement pattern
  - All these three values should be the same with values in “WRITE DMA EXT” menu. If some values are not equal, verify process may be failed.
- After enter all inputs, wait until transfer finished. Read transfer speed will be displayed as shown in figure 6. “Verify Successed” will be displayed if there is no data error. “Verify Failed !!!” will be displayed with error address and its value if error is detected, as shown in figure6 at the right side.

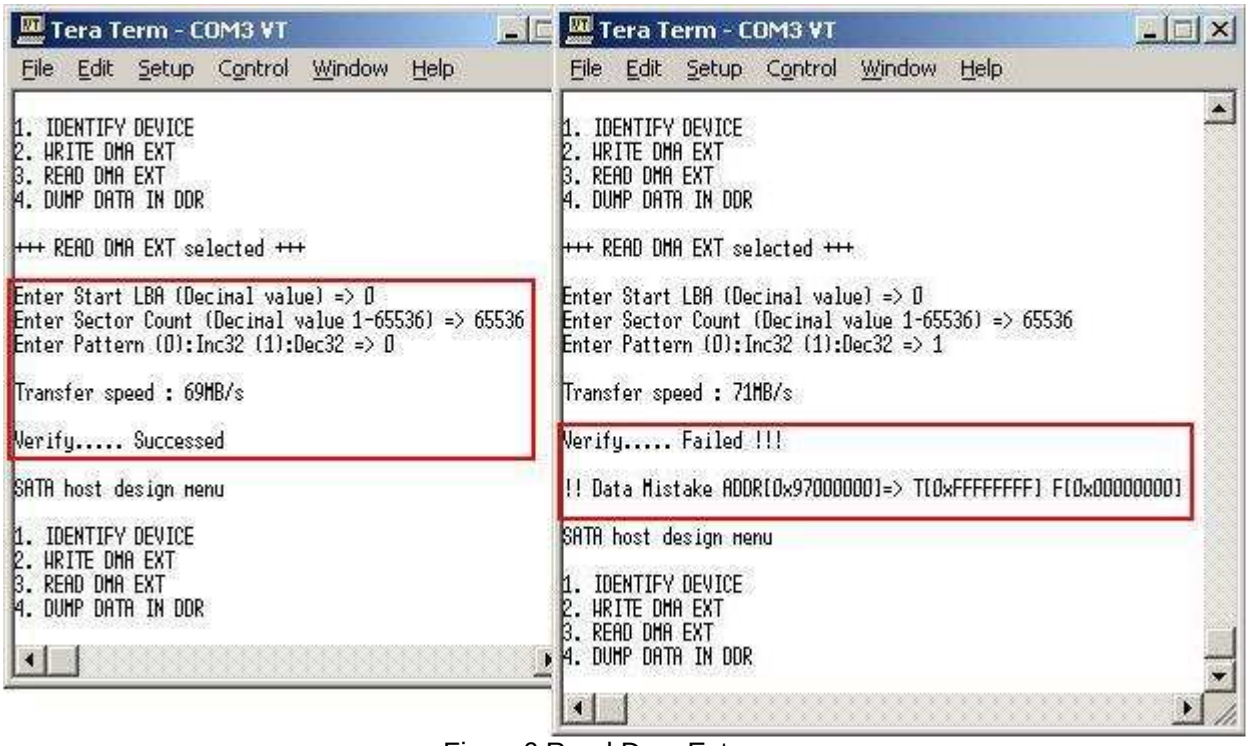


Figure6 Read Dma Ext menu

6. Dump Data

- This menu is used to dump data from DDR2 to display on monitor. DDR2 is used to be data buffer for transfer data from Microblaze to HDD or transfer back from HDD to Microblaze. This menu provides user to easily check data inside buffer that is correct or not.
- Press '4' to select this menu and then user need to input
  - "Dump Write(0) or Read(1) Memory"- '0': DDR area to store write data from Microblaze, '1': DDR area to store read data from DDR.
  - "Enter Start Sector in DDR to Dump"- Start sector number storing in DDR which is valid from 0 to 65535. This value should be less than or equal to transfer sector size in Menu "2" and "3". The data at address which is over transfer sector size will be invalid.

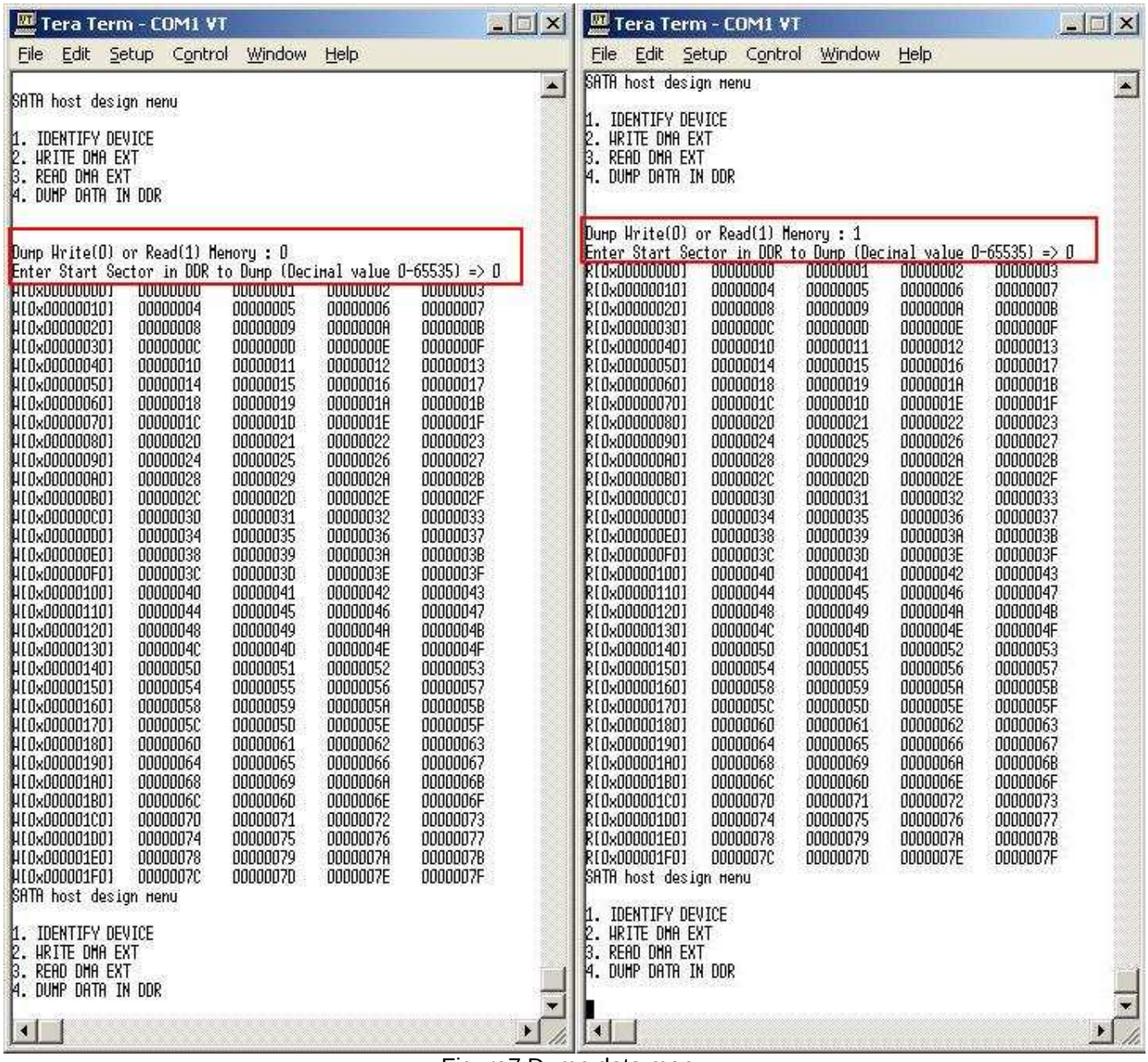


Figure7 Dump data menu

7. Revision History

Revision	Date	Description
1.0	07-Nov-08	Initial version release
1.1	10-Nov-08	Added Environment description
1.2	13-Nov-08	Add SW6, LED status
1.3	09-Dec-08	Update test application menu
1.4	15-Dec-08	Update DDR2 dump menu