SATA-IP Bridge Demo Instruction on KC705

Rev1.0   27-Feb-14

This document describes SATA-IP Bridge evaluation procedure using bit file from Bridge reference design.

1   Environment

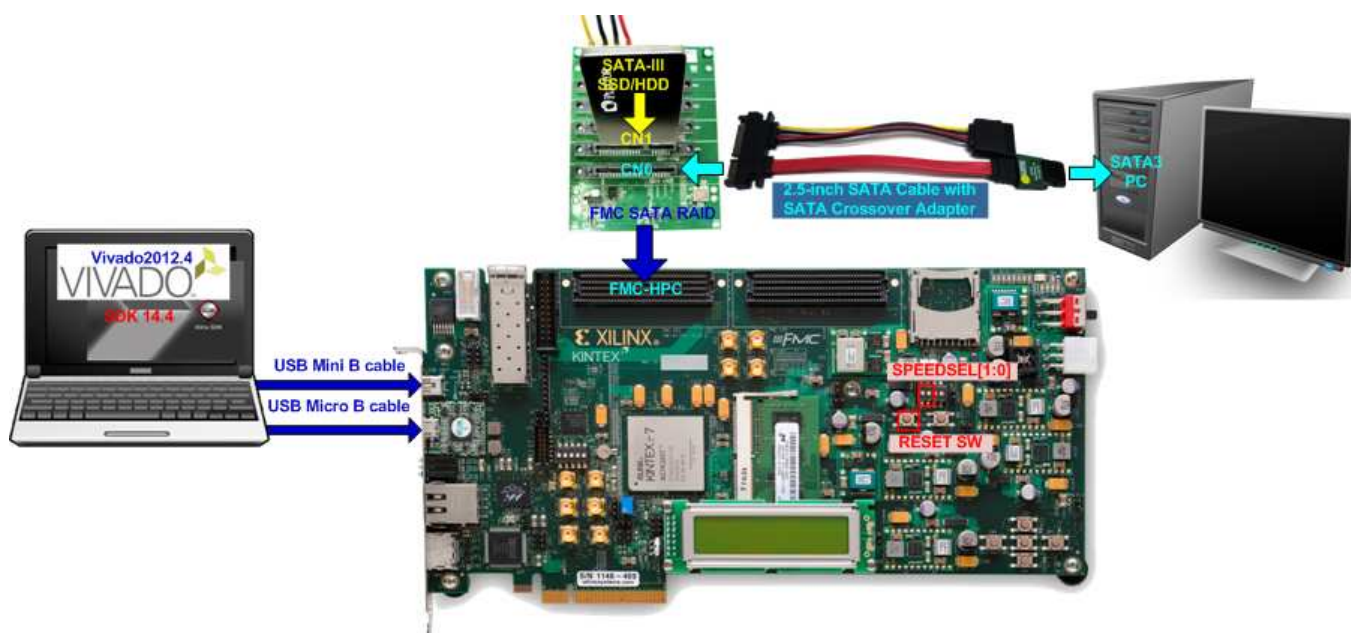For real board evaluation of Bridge reference design, environment as shown in Figure 1-1 is required.

Figure 1-1 Evaluation environment using reference design bit-file

2   Evaluation procedure

● Check all system is power off
● Connect AB09-FMCRAID board to FMC-HPC connector (J22)
  Note: AB09-FMCRAID board is provided by Design Gateway.
● Connect power to power connector on FMCRAID board
● Connect SATA3 Device to CN1 on FMCRAID board
● Connect 2.5-inch SATA Cable with AB02-CROSSOVER board to change SATA cable to be cross-over SATA cable
  Note: AB02-CROSSOVER board is provided by Design Gateway.
● (Optional) Connect USB mini B cable from J6 on KC705 to USB Port on PC for Serial Console
● Connect USB micro B cable on U29 of KC705 to USB Port on PC for JTAG programming
● Connect Power cable to KC705 board and then power up.
● Power up for supply to FMCRAID board
● (Optional) 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 KC705 by using iMPACT Software.
● After FPGA start operation, check GPIO LEDs status on KC705 board at LED0-LED2 and LED4-LED6 that are all ON, as shown in Figure 2-1. Each LED description is described as follows.

Figure 2-1 LED status after system set up complete

LED	ON	OFF
LED0	OK	150 MHz of SATA clock on FMC SATA RAID cannot lock. Please check 150 MHz clock source on FMC SATA RAID board.
LED1	OK	SATA-IP cannot detect SATA-III host (PC). Please check SATA-III host, cross-over adapter, and SATA cable.
LED2	SATA-III	Not support
LED3	Always OFF	
LED4	OK	150 MHz of SATA clock on FMC SATA RAID cannot lock. Please check 150 MHz clock source on FMC SATA RAID board.
LED5	OK	SATA-IP cannot detect SATA-II/III device (HDD/SSD). Please check SATA-III/II device connection.
LED6	SATA-III	Not support
LED7	Always OFF	

Table 2-1 LED Status of bridge reference design

● At serial console on PC, Boot message to show SATA status for both SATA sides will be displayed as shown in Figure 2-2. Now user can access the SATA device through Bridge design like typical disk.
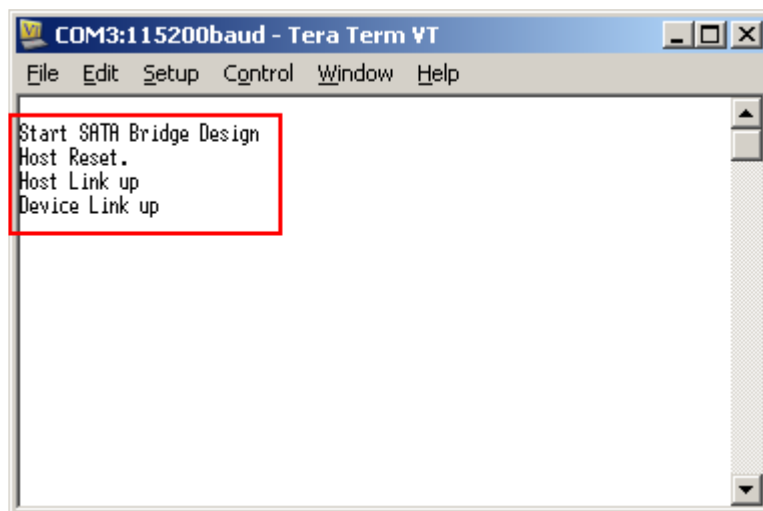

Figure 2-2 Boot message of bridge demo

3 Operation Test on OS

3.1 Disk Detect

- Open Device Manager on Windows7. New SATA-Device disk will be shown in "Disk drives" if the Motherboard enables Hot-plug support.
- In case Motherboard does not support auto-detect device from Hot-plug, right-click mouse at Disk drives icon and then select "Scan for hardware changes" to start new disk detection.
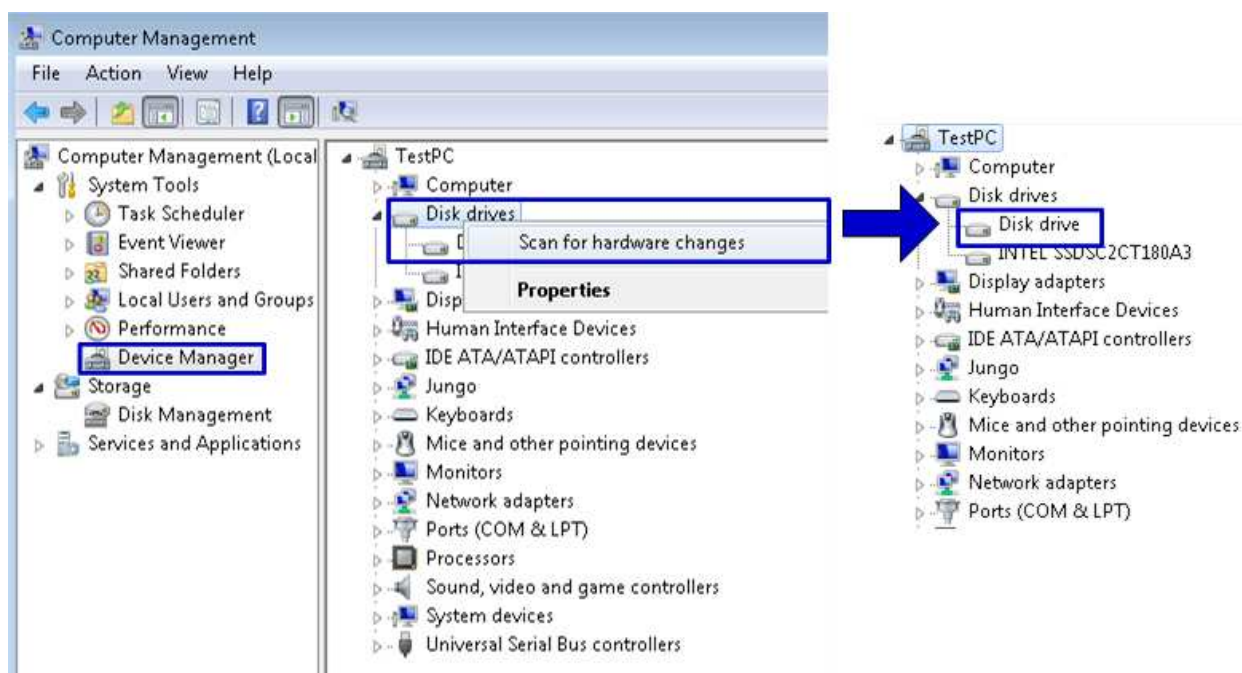

Figure 3-1 New disk detected on Windows7

- After that, you can use any disk benchmark to test disk performance. Some disk benchmark such as CrystalDiskMark needs to use the disk which has already formatted. Next topic describes the brief step to format to disk.

3.2   Disk Format

● Select Computer Management -> Disk Management and Pop-up menu will be displayed as shown in Figure 3-2. Click "OK" button to start initialize disk.
Note: If this pop-up menu is not displayed, please try to close and reopen Disk Management again.
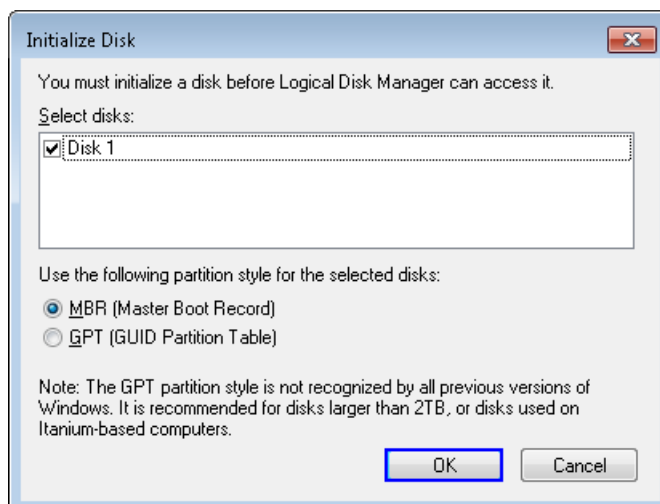

Figure 3-2 Initialize New Disk

● In Disk Management, right-click at the new disk area and select "New Simple Volume" menu to start disk format, as shown in Figure 3-3.
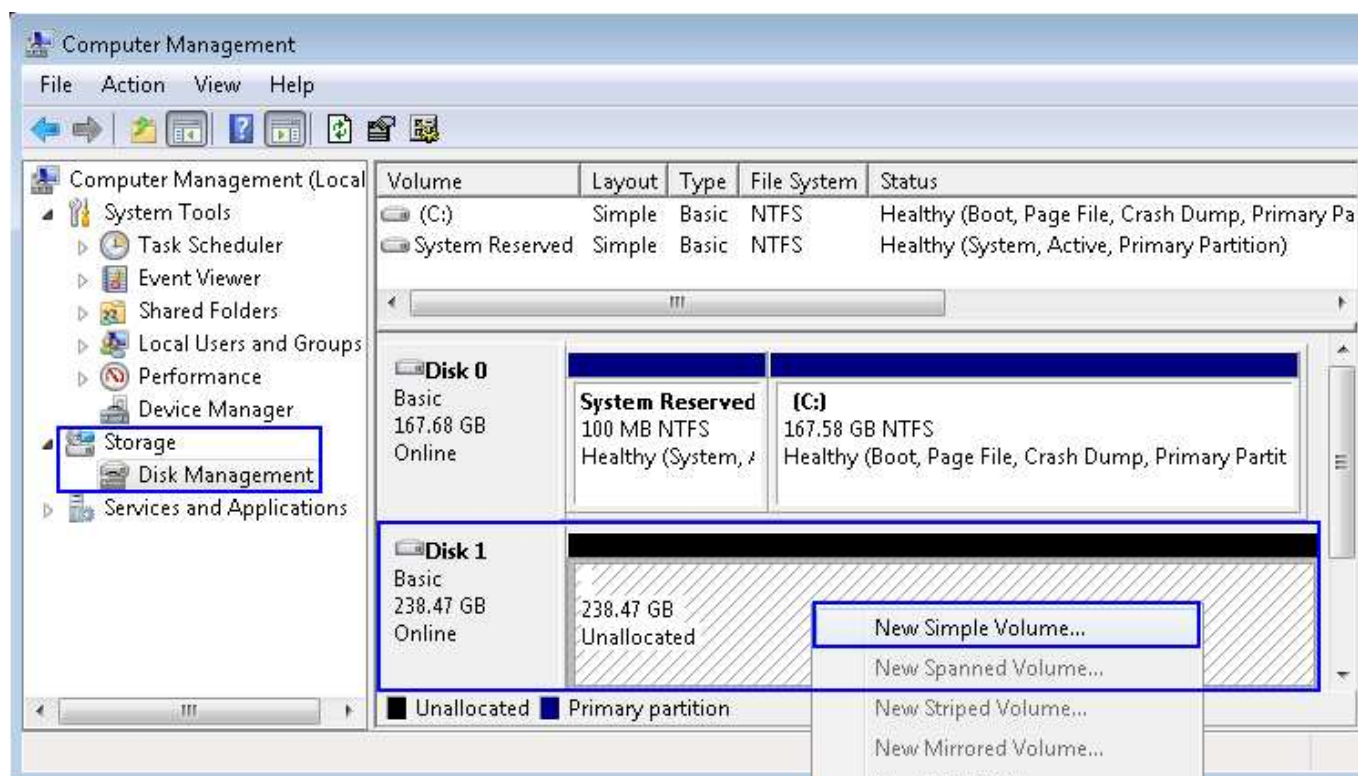

Figure 3-3 Start disk format

● "New Simple Volume Wizard" window will be displayed. Click "Next" button until completing window, as shown in Figure 3-4 and Figure 3-5.

Figure 3-4 New Volume Wizard

Figure 3-5 Completing New Volume Wizard

● Wait until format completed, new drive is ready to use, as shown in Figure 3-6.
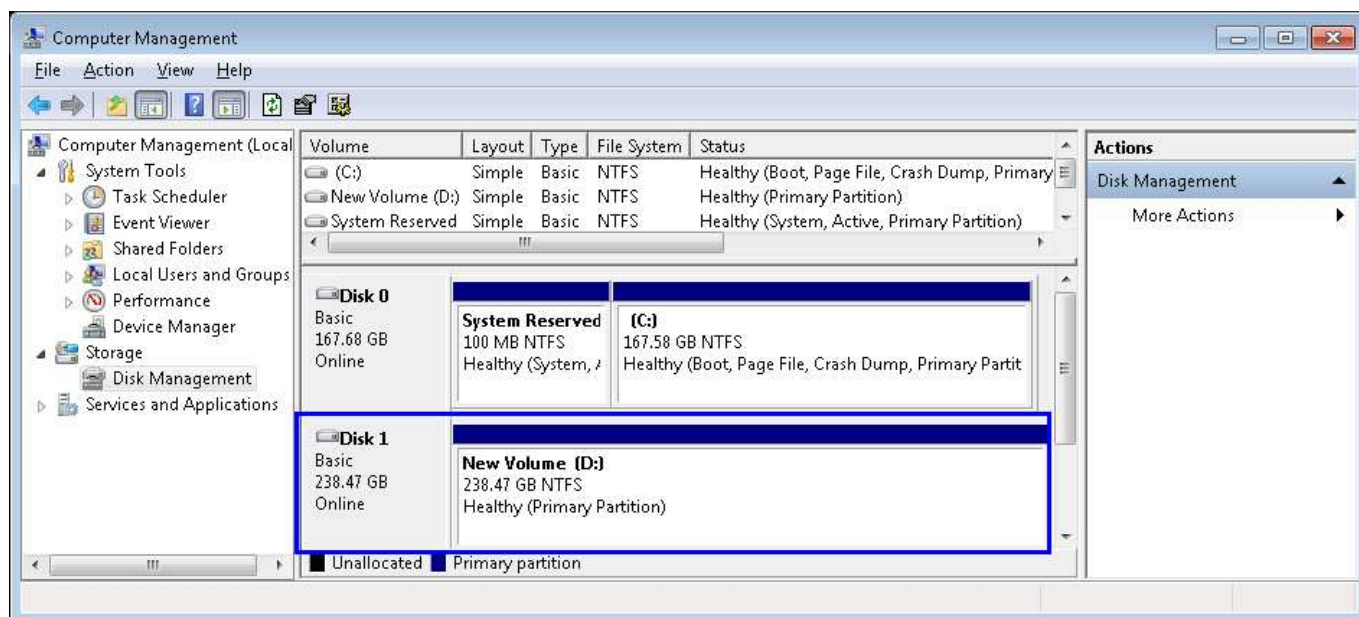

Figure 3-6 Format Complete

3.3   Disk Benchmark

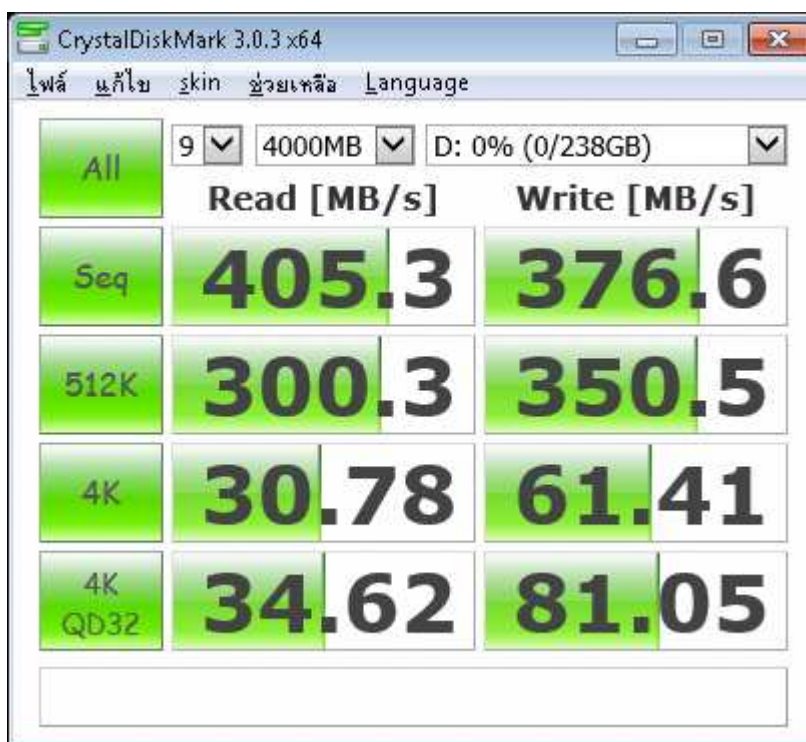● This document shows the example test result from CrystalDiskMark when connecting system to Samsung 840 Pro SSD.

Figure 3-7 Disk perfornance test by benchmark

4 Revision History

Revision	Date	Description
1.0	03-Mar-14	Initial version release