SATA-IP Bridge Demo Instruction on AC701

Rev1.0   9-May-14

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This document describes SATA-IP Bridge evaluation procedure using bit file from Bridge reference design on AC701 board.

1   Environment

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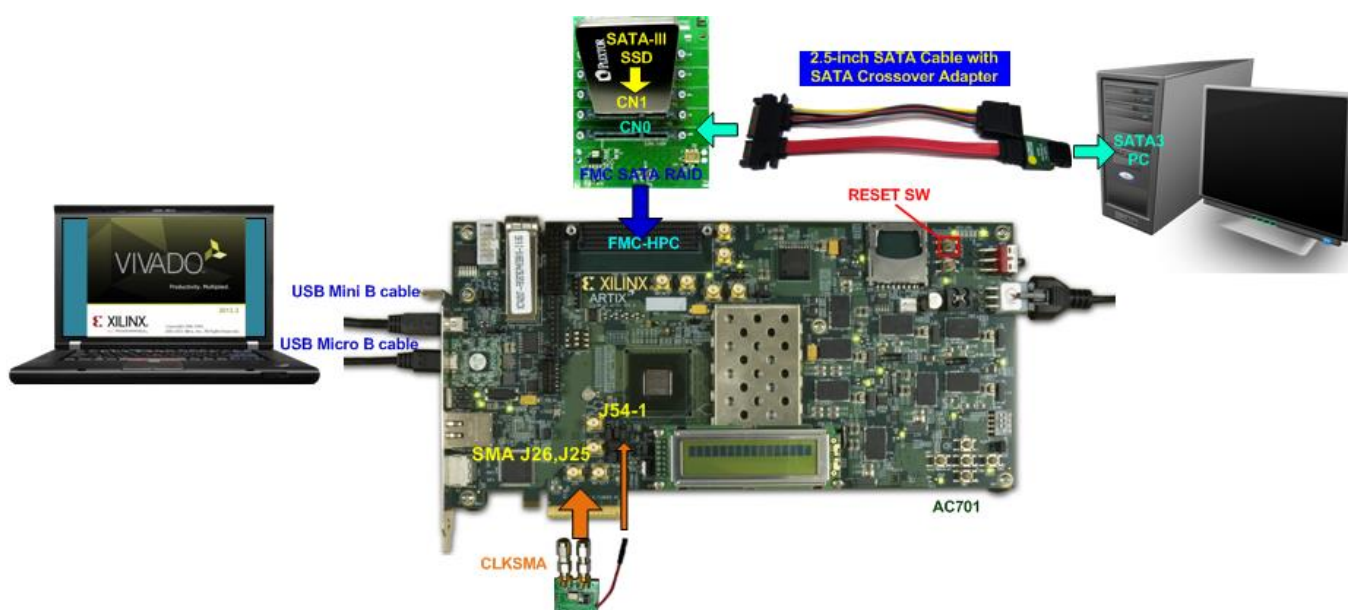

Figure 1-1 Evaluation environment using reference design bit-file

2   Evaluation procedure

- Check all system is power off
- Connect CLKSMA board to AC701 via SMA connector at J1, J2 on CLKSMA board to J25, J26 on AC701 board sequentially as shown in Figure 2-1.
  Note: CLKSMA board is provided by Design Gateway.
- Connect power (Red cable) on CLKSMA board to J54-1 on AC701 board as shown in Figure 2-1.
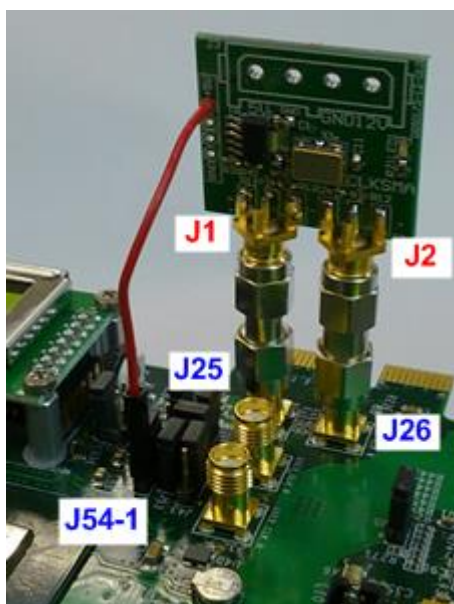

Figure 2-1 CLKSMA board connecting to AC701 board

- Connect FMC SATA RAID board to FMC-HPC connector (J30)
  Note: FMC SATA RAID board is provided by Design Gateway.
- Connect SATA cross cable or SATA standard cable with AB02-CROSSOVER, between SATA3 connector on Host PC and on FMC SATA RAID board (CN0).
  Note: AB02-CROSSOVER is provided by Design Gateway.
- Connect power to power connector on FMC SATA RAID board
- Connect SATA3 Device to CN1 on FMC SATA RAID board
- Connect USB mini B cable from J17 on AC701 to USB Port on PC for Serial Console (optional).
- Connect USB micro B cable on U26 of AC701 to USB Port on PC for JTAG programming
- Connect Power cable to AC701 board and then power up.
- 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 AC701 by using iMPACT Software.
- After FPGA start operation, check GPIO LEDs status on AC701 board at LED0-LED3 that all ON, as shown in Figure 2-2. Each LED description is described as follows.

Figure 2-2 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	OK	150 MHz of SATA clock on FMC SATA RAID cannot lock. Please check 150 MHz clock source on FMC SATA RAID board.
LED3	OK	SATA-IP cannot detect SATA-III device (HDD/SSD). Please check SATA-III device connection.

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 2-3. Now user can access the SATA device through Bridge design like typical disk.
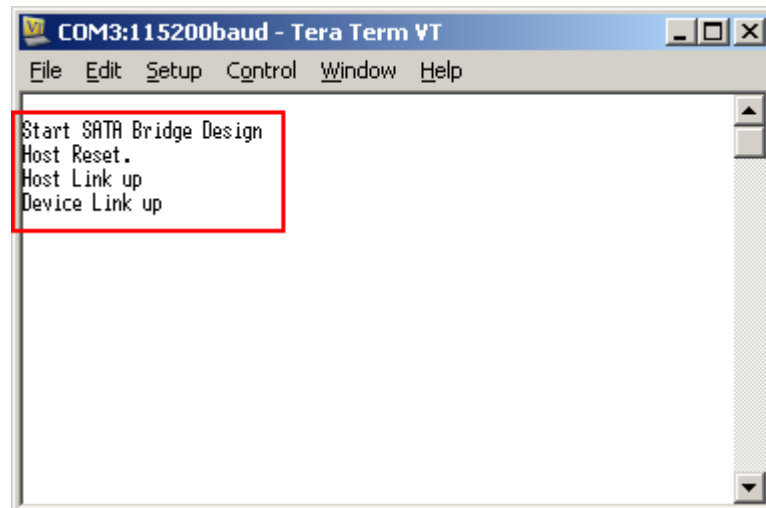

Figure 2-3 Boot message of bridge demo

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.
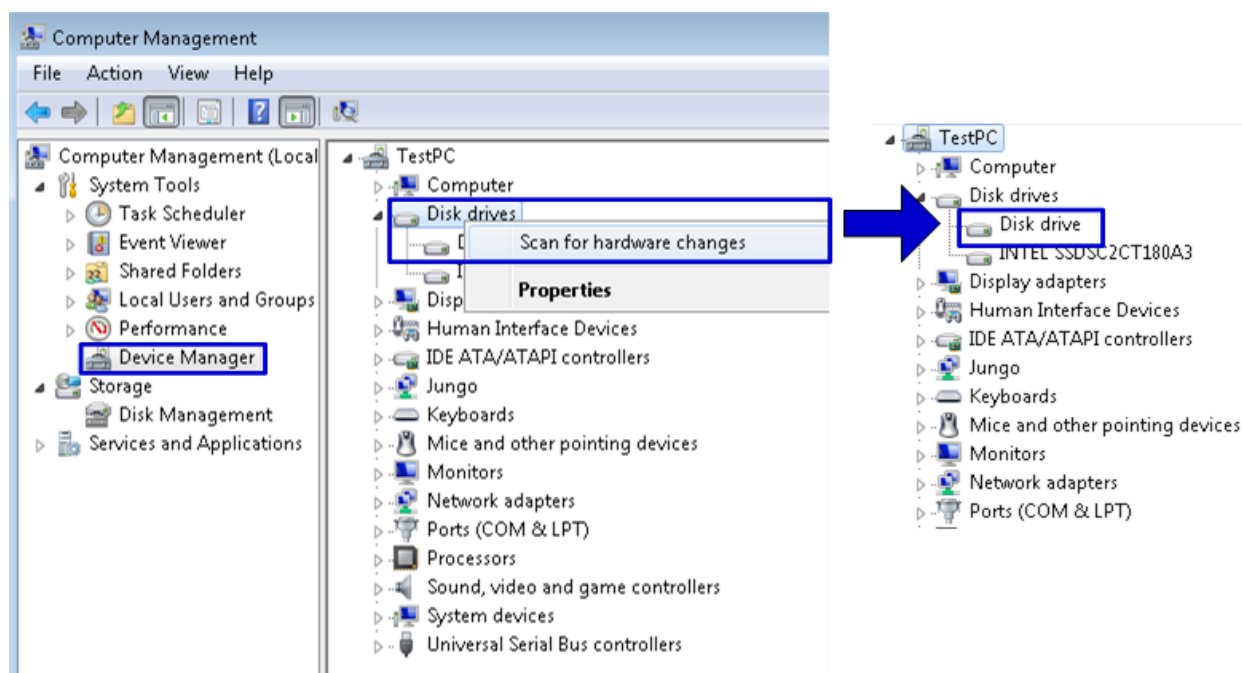

Figure 3-1 New disk detected on Windows7

- 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.
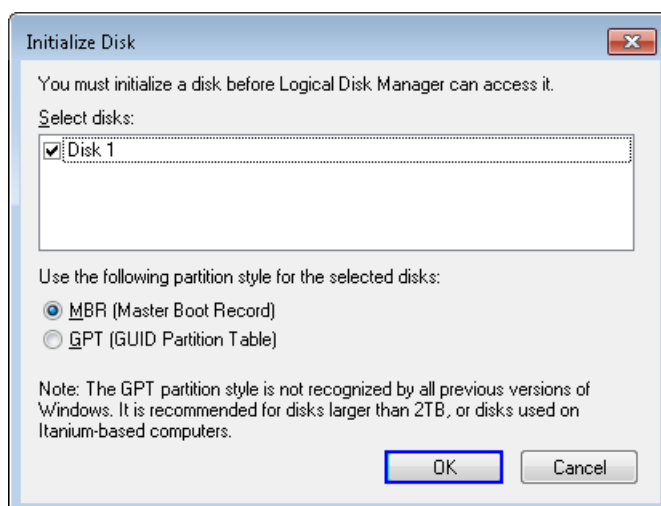

Figure 3-2 Initialize New Disk

● 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.
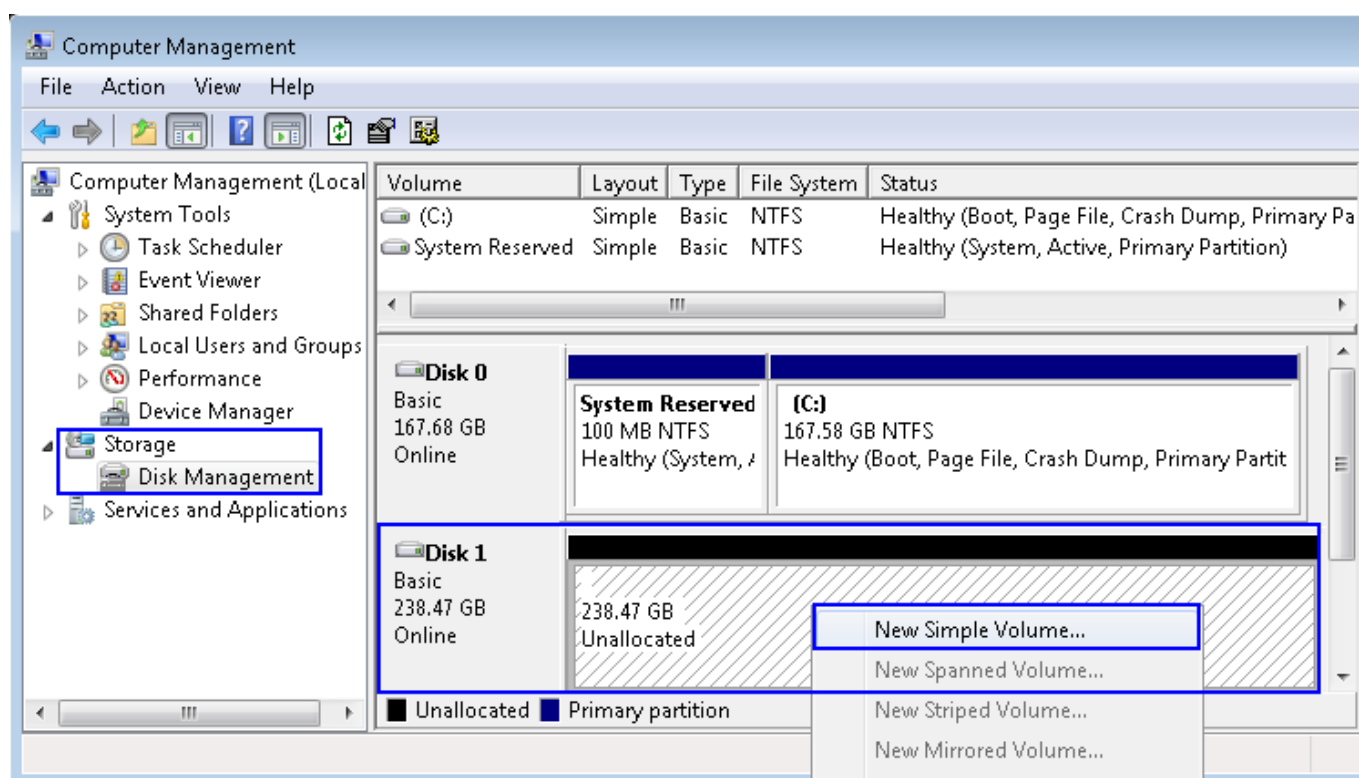

Figure 3-3 Start disk format

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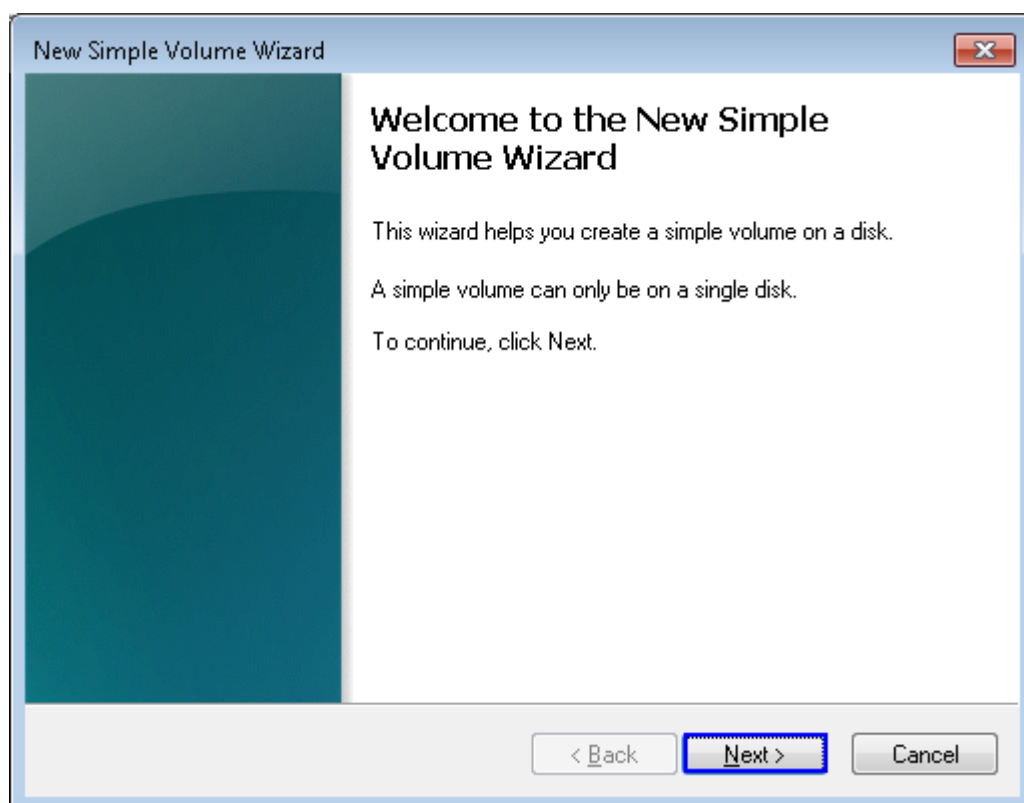

Figure 3-4 New Volume Wizard
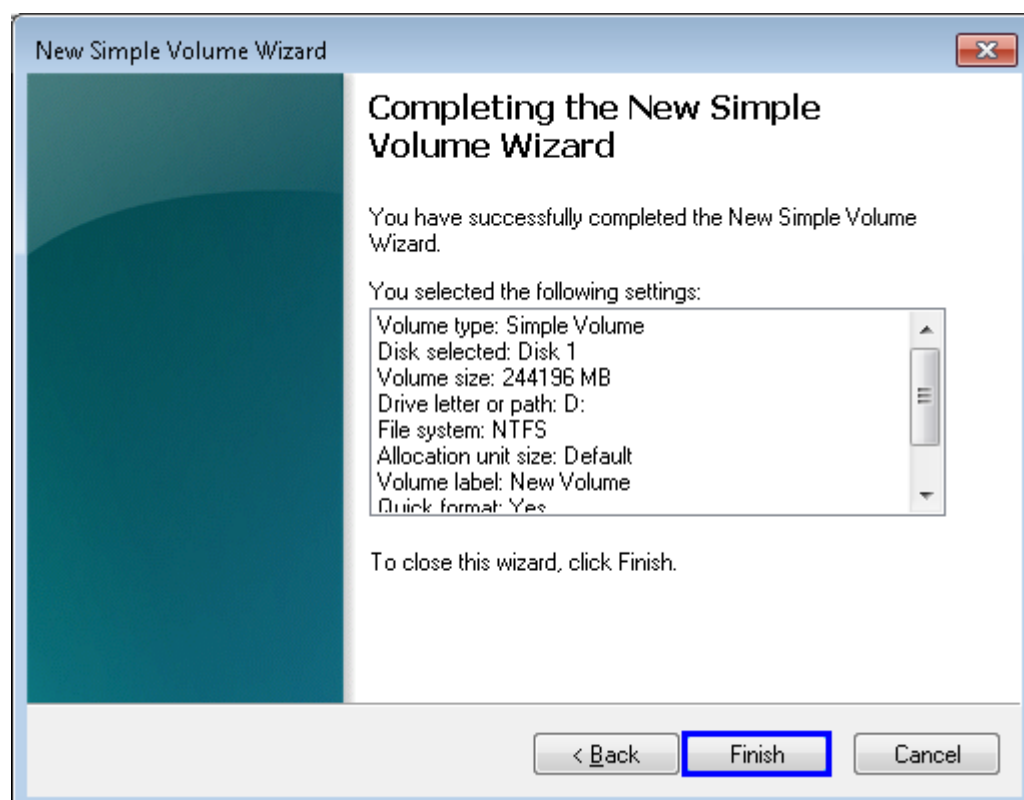

Figure 3-5 Completing New Volume Wizard

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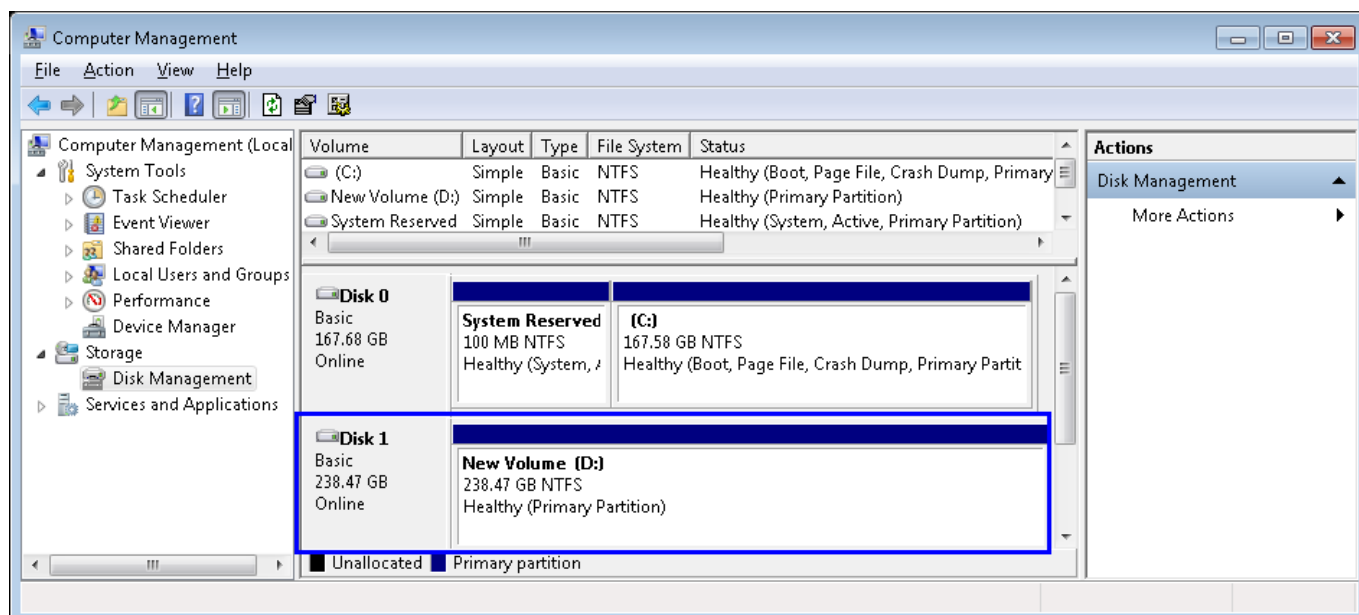

Figure 3-6 Format Complete

3.3   Disk Benchmark

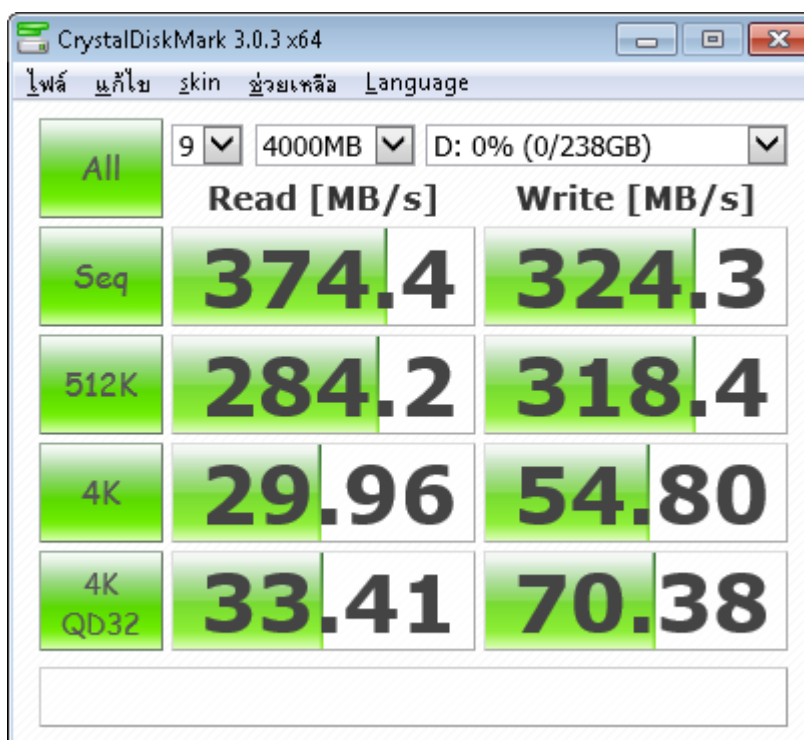● This document shows the example test result from CrystalDiskMark when connecting system to Samsung 840 Pro SSD.

Figure 3-7 Disk perfornance test by benchmark

4 Revision History

Revision	Date	Description
1.0	9-May-14	Initial version release