

SATA-IP Device Demo Instruction on ZC706

Rev1.0 21-Nov-13

This document describes SATA-IP Device evaluation procedure on ZC706 using SATA-IP Device reference design bit-file.

1 Environment

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

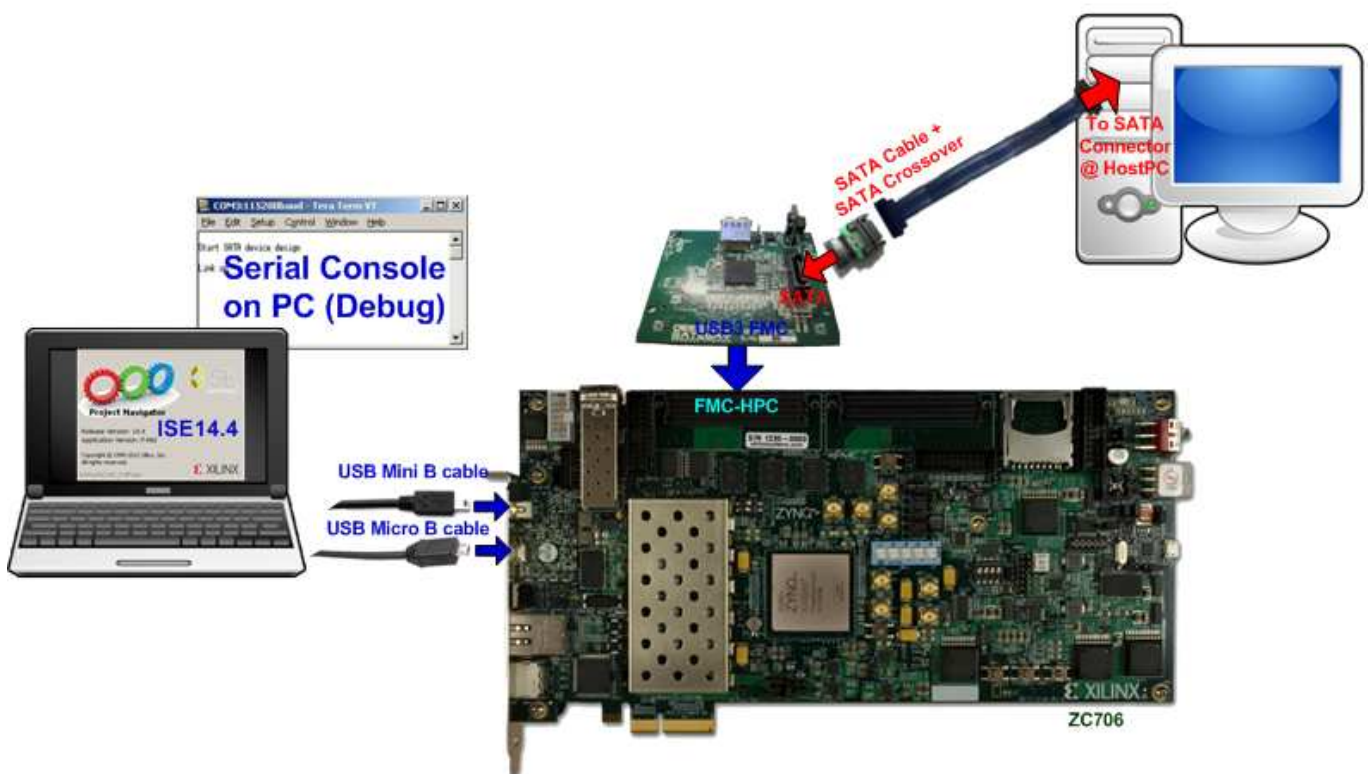


Figure 1-1 Device Evaluation environment using reference design bit-file

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
- Connect AB07-USB3FMC board, provided by Design Gateway to FMC-HPC connector (J37) to use SATA connector on the board
- Connect SATA cross cable or SATA standard cable with AB02-CROSSOVER, provided by Design Gateway, between SATA3 connector on Host PC and on USB3FMC.
- Connect USB mini B cable from J21 on ZC706 to USB Port on PC for Serial Console
- Connect USB micro B cable on U30 of ZC706 to USB Port on PC for JTAG programming
- Connect Power cable to ZC706 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).
- Copy “ready_for_download” folder to PC for programming configuration and firmware.
- Open “ISE Design Suite Command Prompt” and change working directory to “ready_for_download” folder.



Figure 2-1 ISE Design Suite Command Prompt

- Type “zc706_device.bat” to start downloading configuration file and the firmware. On the console, “Successfully downloaded bit file” is displayed when configuration finish, and “Download Progress .10.20 ... 90.Done” is displayed when firmware downloading finish, as shown in Figure 2-2 and Figure 2-3 consecutively



Figure 2-2 Configuration File Downloading

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ISE Design Suite Command Prompt

CortexA9 Processor Configuration
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Version.....0x00000003
User ID.....0x00000000
No of PC Breakpoints.....6
No of Addr/Data Watchpoints.....1

Connected to "arm" target. id = 64
Starting GDB server for "arm" target (id = 64) at TCP port no 1234
Target reset successfully

Info: Enabling level shifters and clearing fabric port resets
Downloading Program -- sata_device.elf
  section, .text: 0x00000000-0x000047e3
  section, .init: 0x000047e4-0x000047fb
  section, .fini: 0x000047fc-0x00004813
  section, .rodata: 0x00004814-0x000049d7
  section, .data: 0x000049d8-0x0000532b
  section, .eh_frame: 0x0000532c-0x0000532f
  section, .bss: 0x00005330-0x000053bf
  section, .mmu_tbl: 0x000053c0-0x0000bfff
  section, .init_array: 0x0000c000-0x0000c007
  section, .fini_array: 0x0000c008-0x0000c00b
  section, .heap: 0x0000c00c-0x0000c40f
  section, .stack: 0x0000c410-0x0000d80f
Download Progress 10.20.30.40.50.60.70.80.90.Done
Setting PC with Program Start Address 0x00000000
Processor started. Type "stop" to stop processor

RUNNING> Disconnected from Target 64

Disconnected from Target 352

D:\ready_for_download>
    
```

Figure 2-3 Firmware Downloading

- Check GPIO LEDs status on ZC706 board at LEDL, LEDC, and LEDR are all ON, LED0-LED2 that all ON, as shown in Figure 2-4. Each LED description is described as follows.

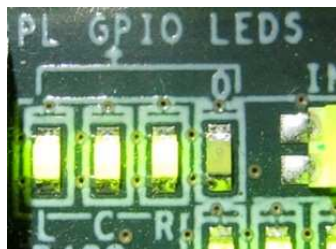


Figure 2-4 LED status after system set up complete

LED	ON	OFF
LEDL	OK	150 MHz of SATA clock on USB3FMC cannot lock. Please check 150 MHz clock source on USB3FMC board.
LEDC	OK	SATA-IP cannot detect SATA device. Please check SATA device and the connection.
LEDR	SATA-III	N/A
LED0	BLINK : 1-hour timeout	

Table 2-1 LED Status of device reference design on ZC706 board

- At serial console on PC, “Start SATA device design” and “Link up” will be displayed as shown in Figure 2-5. Now new disk is ready for Host PC.



Figure 2-5 Main Menu of host demo

3 Operation Test on OS

- Open Device Manager on Windows7. New SATA-Device disk (DG2013 SATA Device) 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.

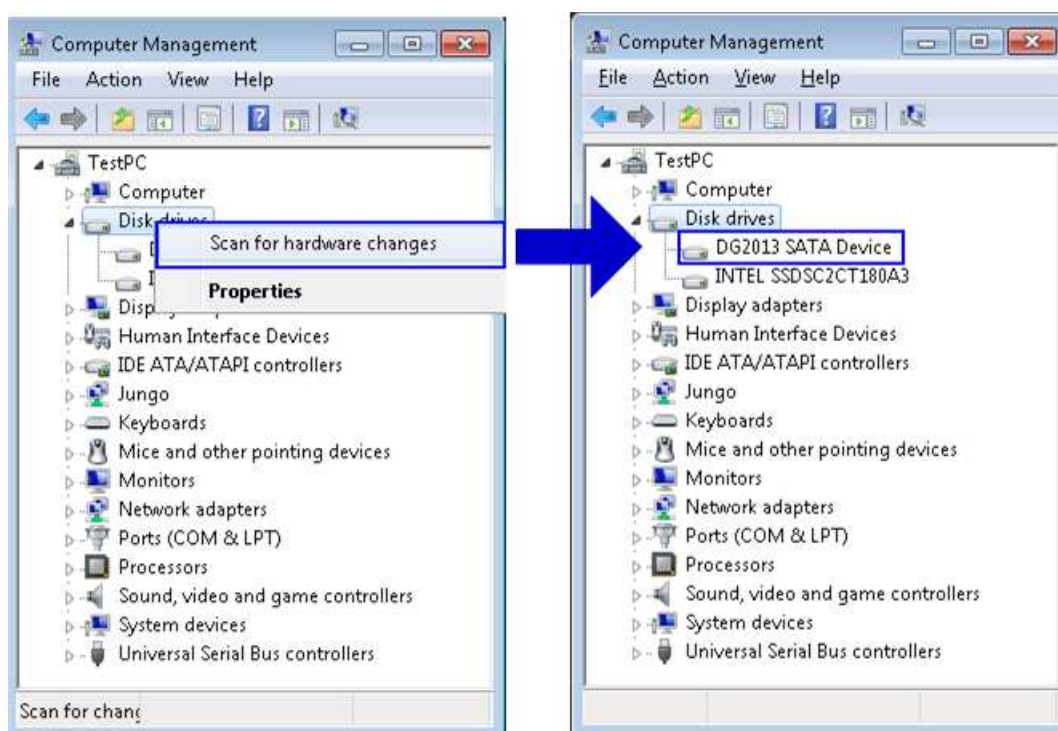


Figure 3-1 New disk detected on Windows7

- 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.

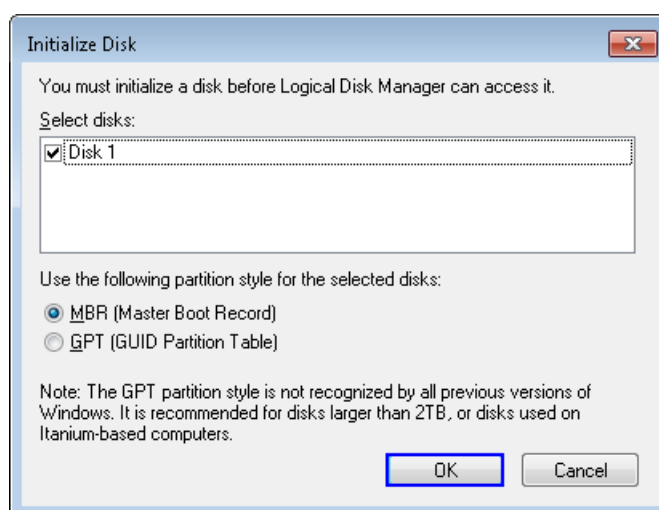


Figure 3-2 Initialize New Disk

- After that, new 255 MB disk which is unallocated will be displayed as shown in Figure 3-3.

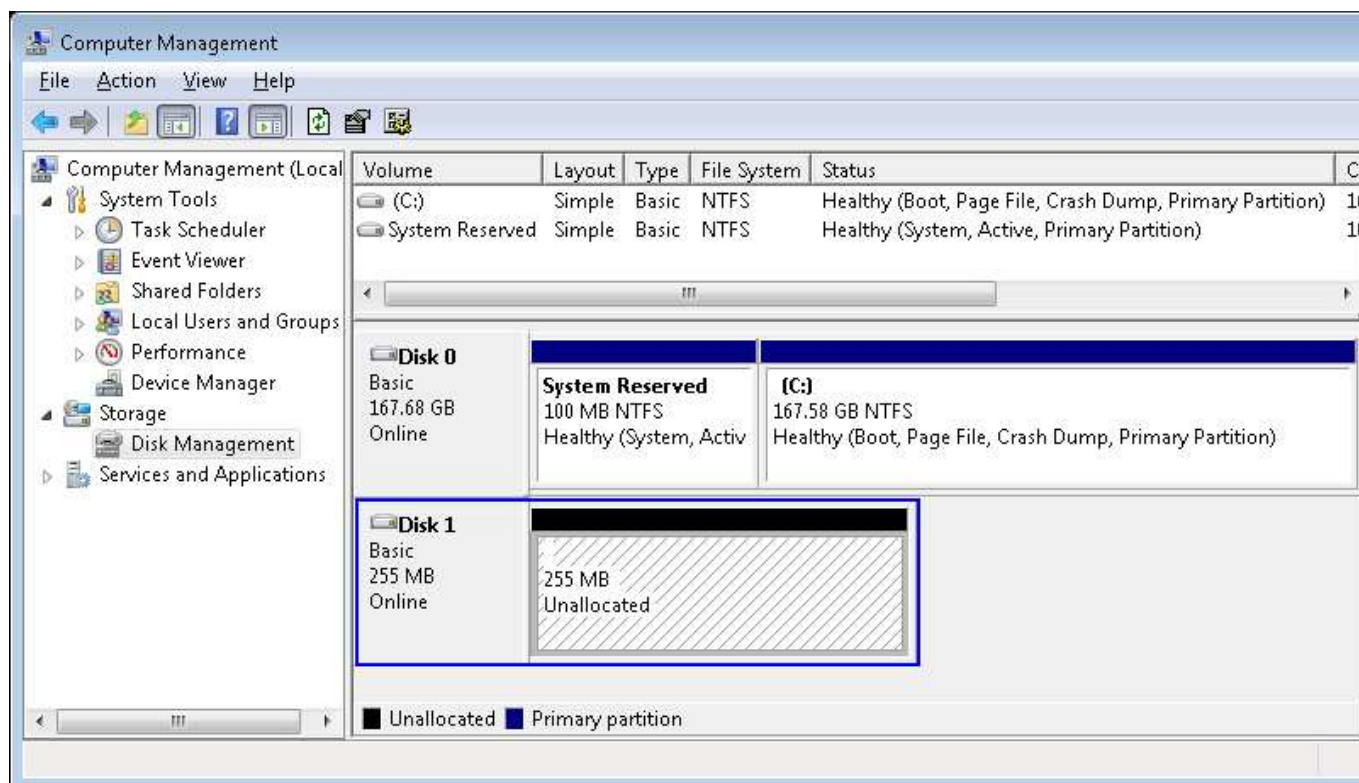


Figure 3-3 Initialize Disk Completed

- Create new partition by right-click mouse at unallocated disk, and select “New Simple Volume...”. After that, “New Simple Volume Wizard” will be displayed. Click “Next” button to continue next step.

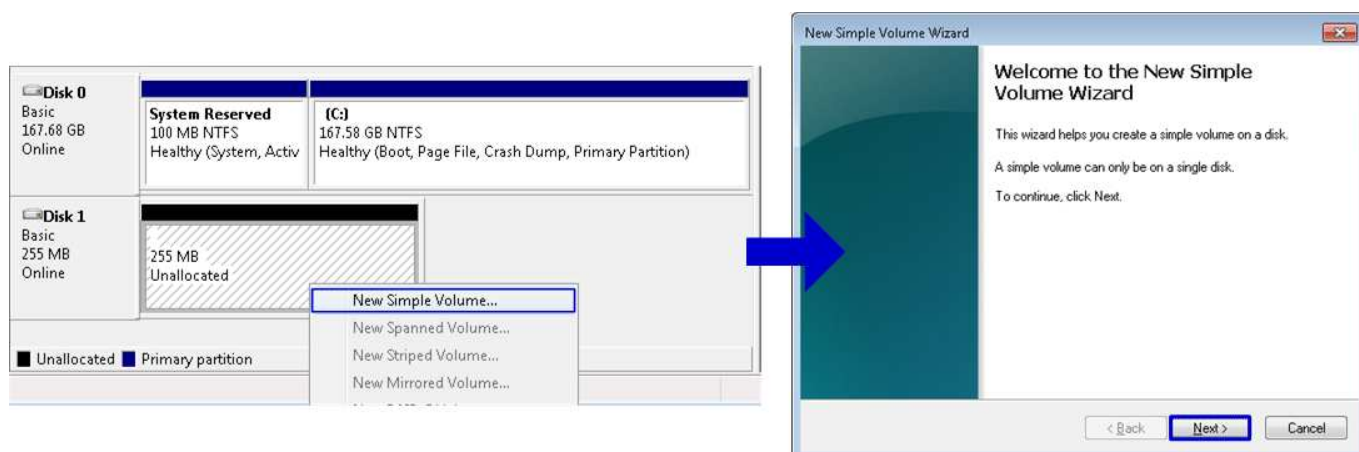


Figure 3-4 Create New Partition on New Disk

- Click “Next” button for 3 times to continue next step, and then click “Finish” button for last step to start Format disk.

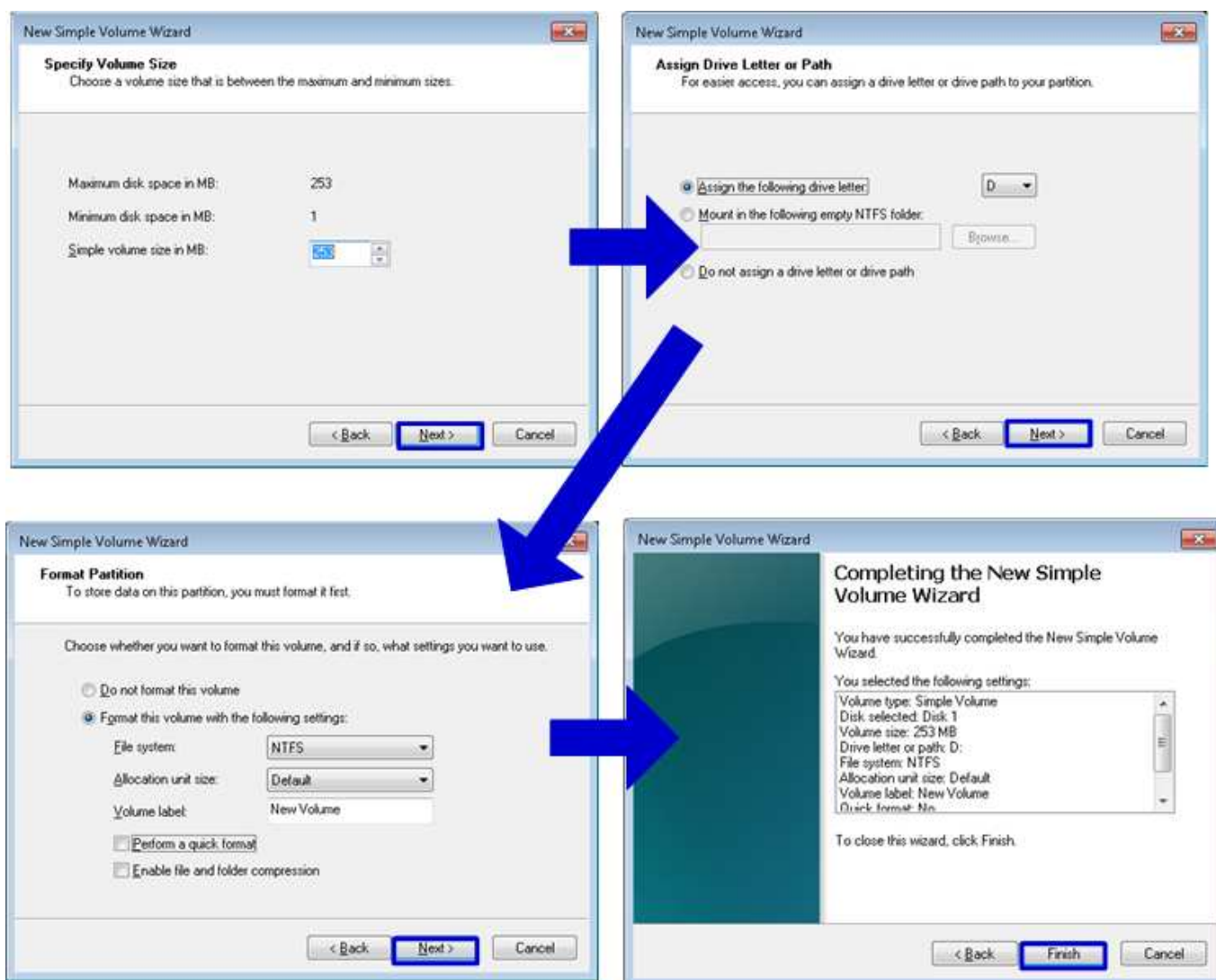


Figure 3-5 Format menu setup

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

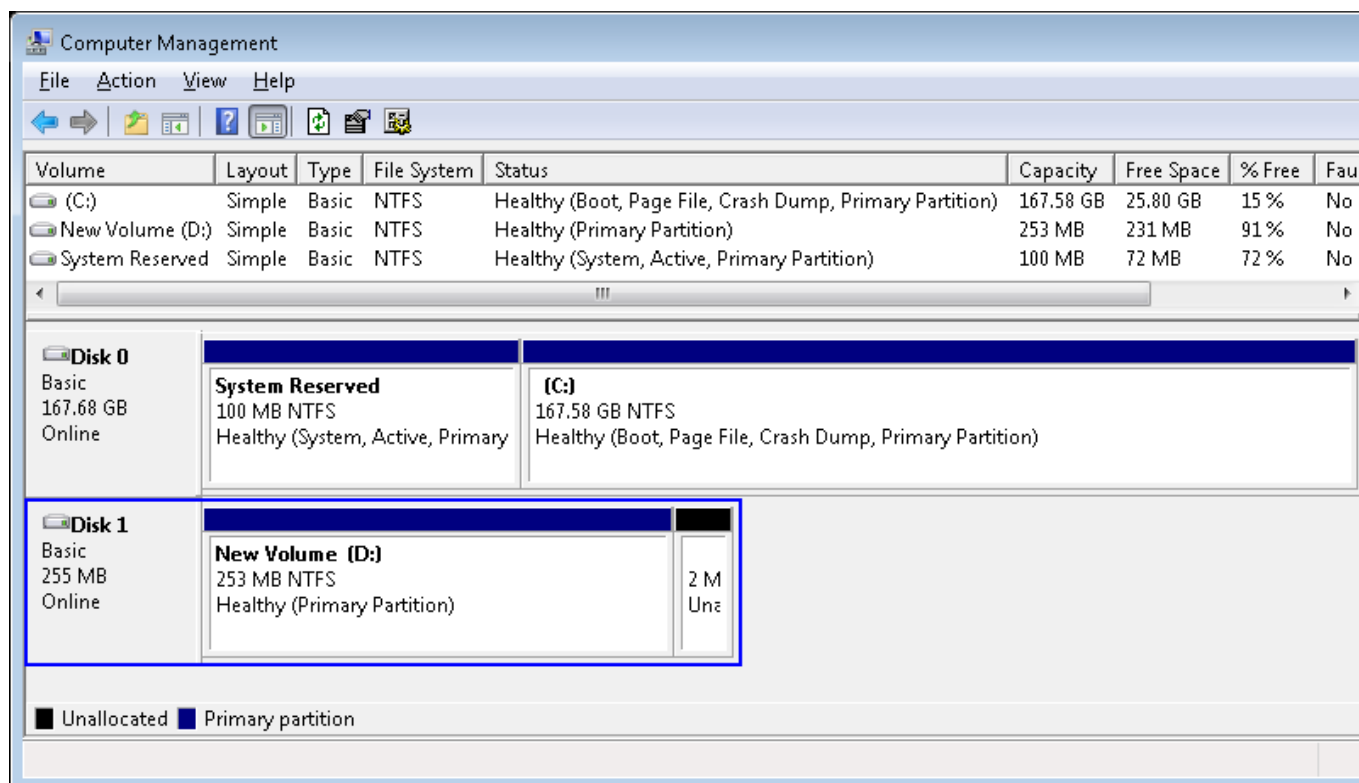


Figure 3-6 Format Complete

- Now disk can be read/write by file system operation. Figure 3-7 shows disk performance by using CrystalDiskMark benchmark.

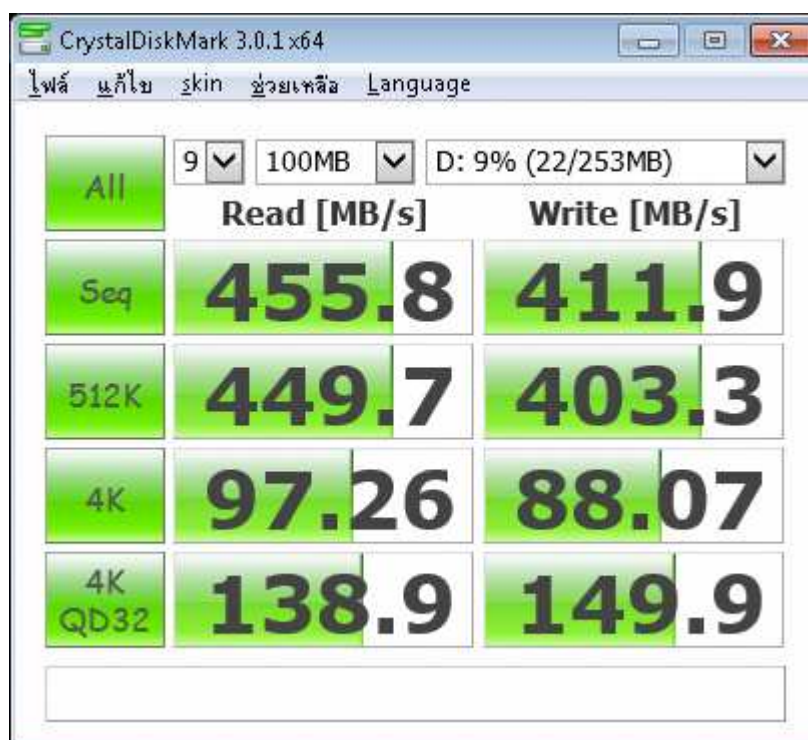


Figure 3-7 Disk performance test by benchmark

4 Revision History

Revision	Date	Description
1.0	21-Nov-10	Initial version release