

Indilinx MPTool User's Manual

2009 December 10th
Revision 1.1

INDILINX Co, Ltd.

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Inquiry

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Revision History

- Rev 0.5 (2009.3.25): The first revision.
- Rev 1.0 (2009.5.28): The second revision
- Rev 1.1 (2009.12.10): Change for MPTool GUI 1840

Features

- Easy to use Windows GUI
- Simultaneous F/W download to multiple drives
- Save/Load current options for later use
- Status information for each stage of F/W download (SATA test, SDRAM test, Flash test, F/W downloading)
- Error information in detail
- User can enter model name, serial number, F/W revision
- Serial number validity check
- Flash BIST

1. System requirement

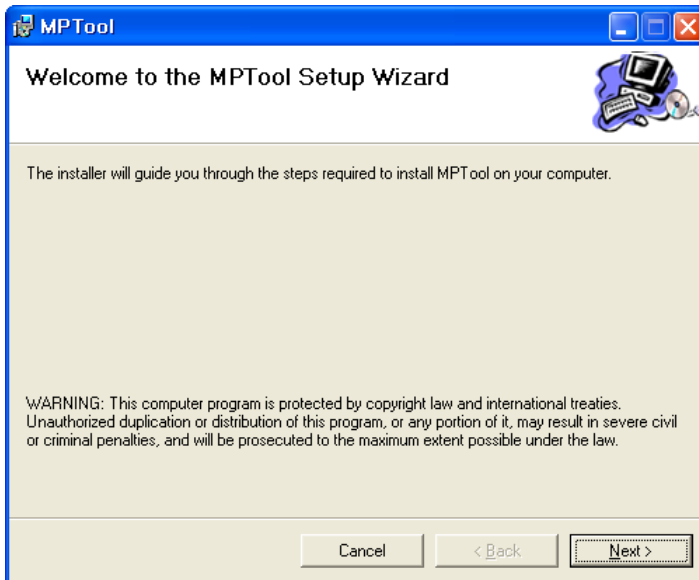
The hardware requirements for Indilinx MPTool software are as follows:

- CPU : Intel Pentium 4 or later
- OS : Windows XP SP2 32 bit or 64 bit or later
- RAM : 512MB or bigger
- SATA port : 1 or more
- Disk : At least 100MB of free space

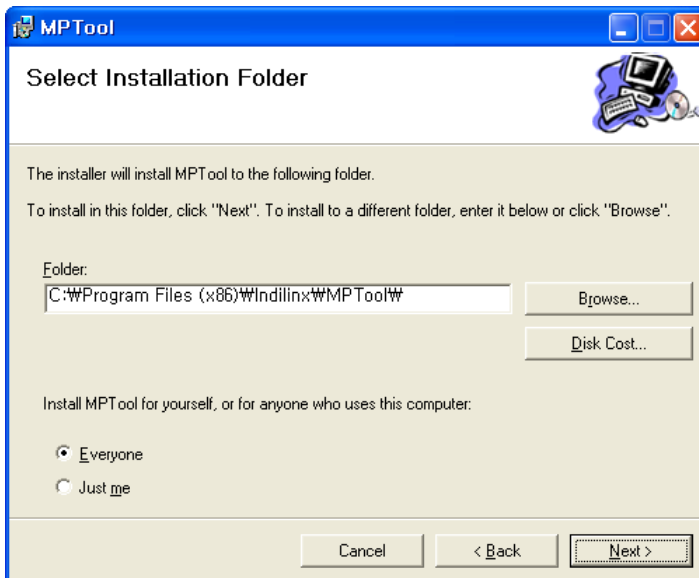
2. Installation

This section explains how to install (or reinstall) Indilinx MPTool software on your host PC for the supported operating systems. Follow these steps if you need to install Indilinx MPTool software on a system running Microsoft Windows XP.

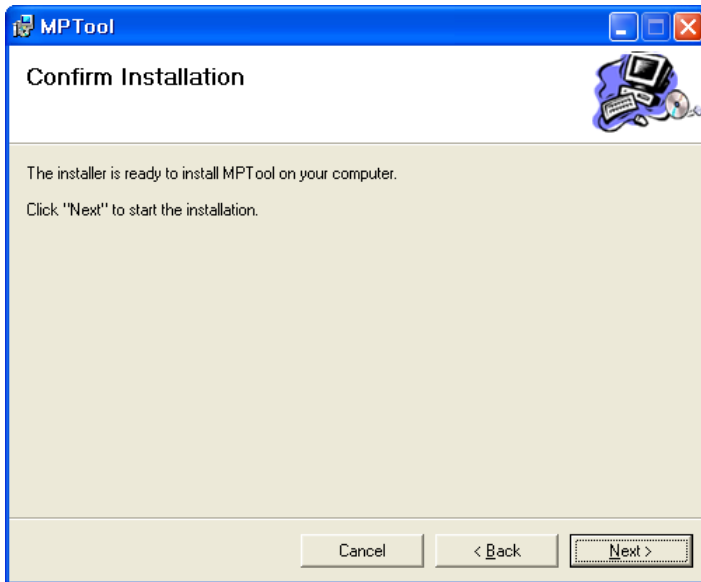
Run Setup.EXE to see following window.



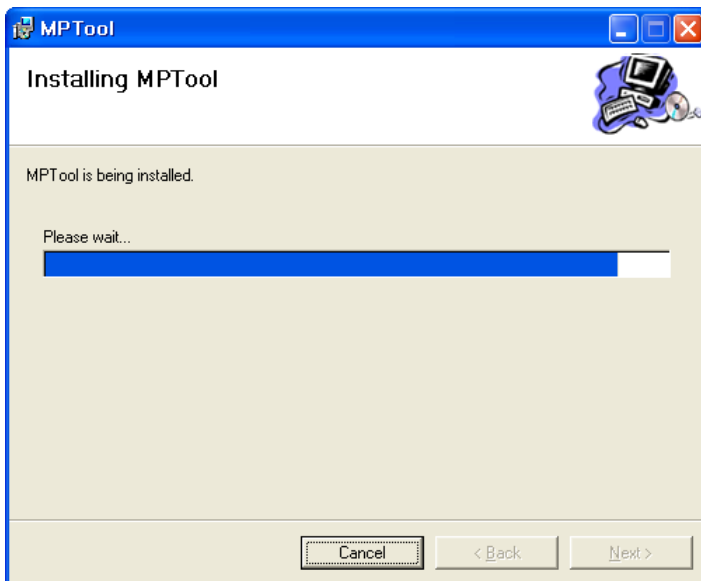
Press "Next" button.



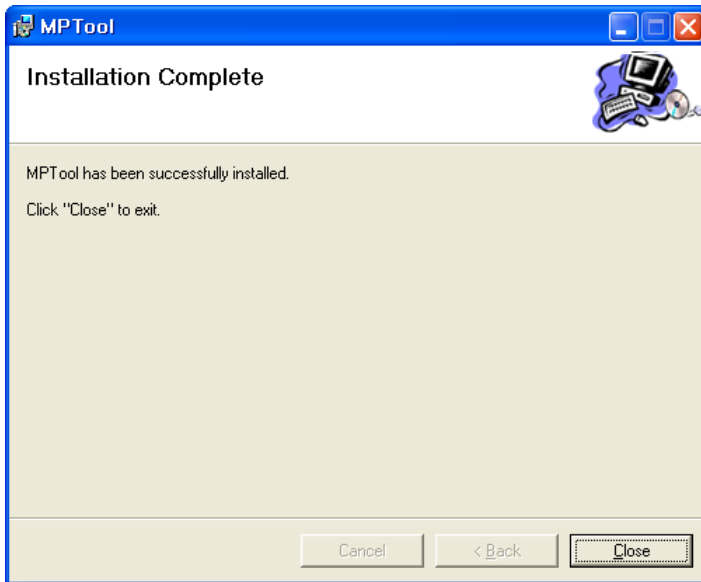
After selecting target folder, press "Next".



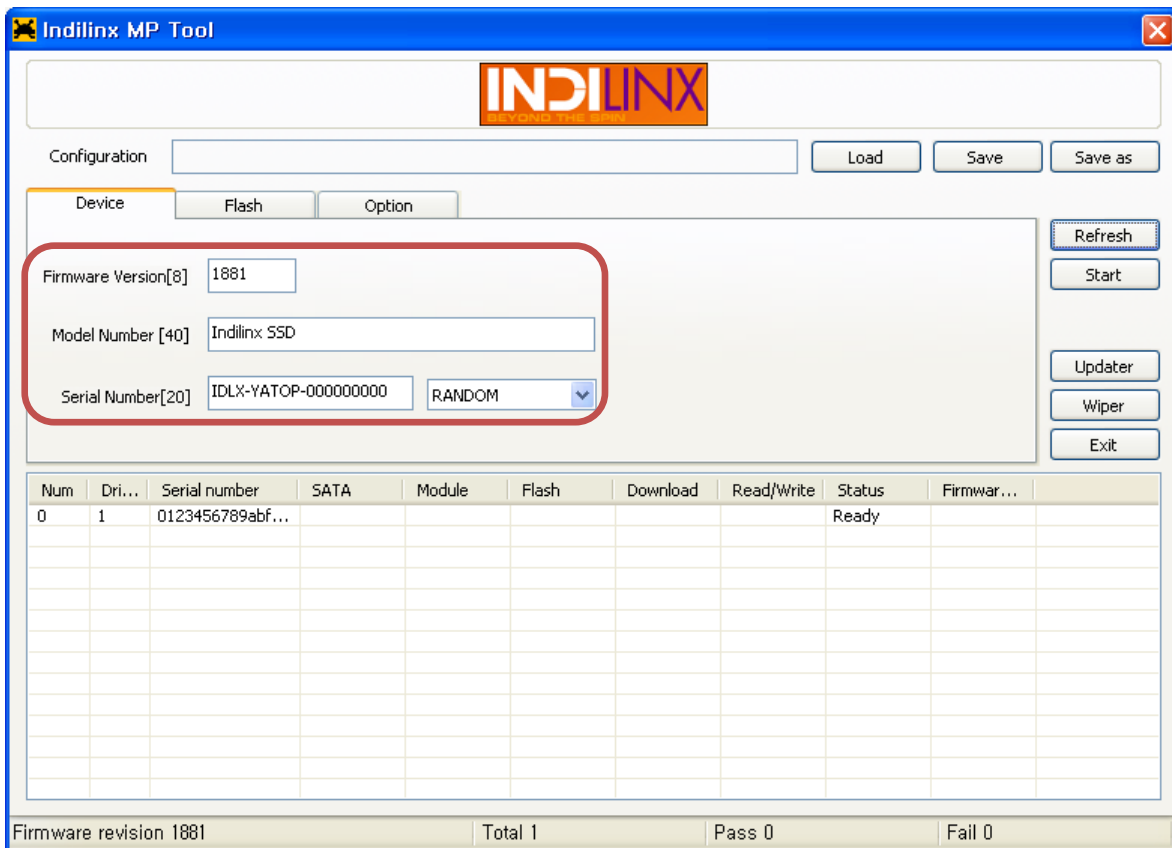
Press "Next" button.



Please wait while installation is running.



Now installation is finished. Press "Close" button to end installation.



Enter appropriate Firmware version, Model number (Drive name) and Serial number.

Firmware version

- Indilinx uses 4 digit revision number for F/W. If you don't have vendor specific F/W version number control, it is recommended to use Indilinx F/W revision number.

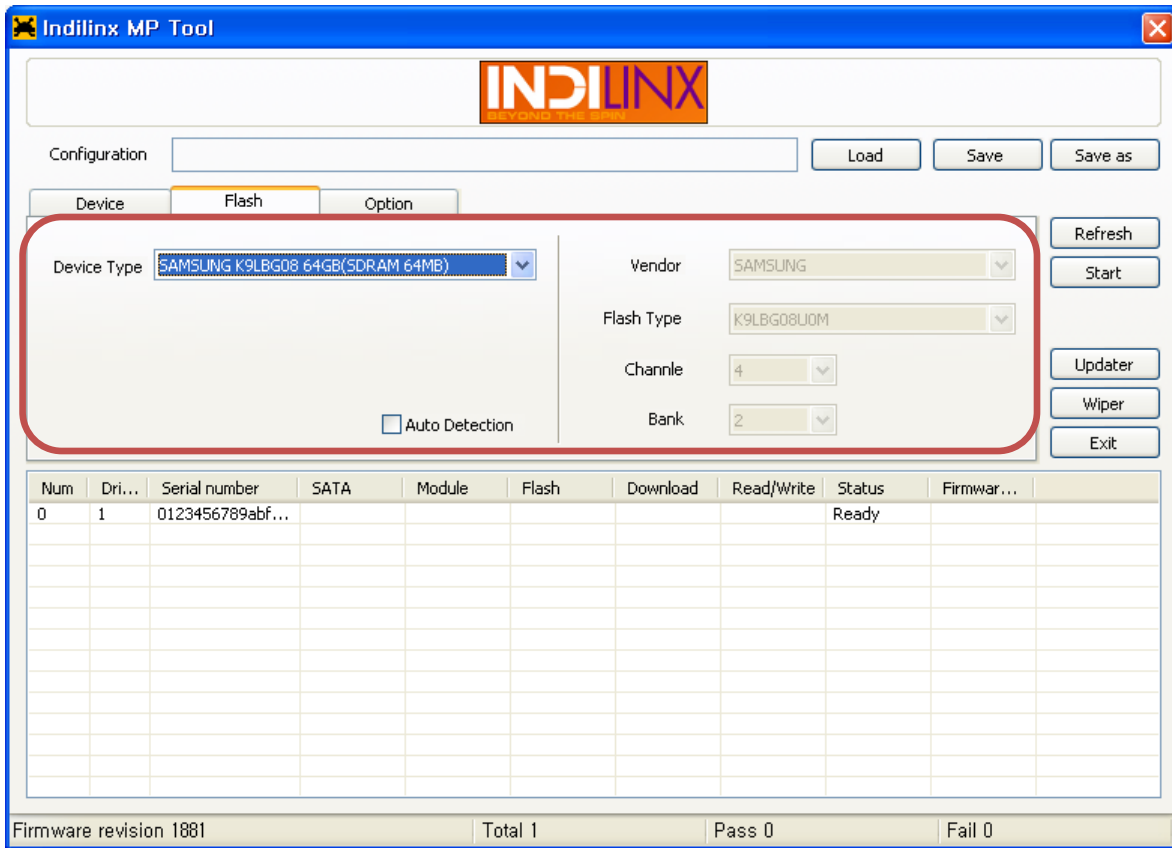
Model number

- This model number will be displayed by BIOS and OS as identification.

Serial number

Serial number has 4 options.

- RANDOM: MPTool will give random serial number to SSD.
- AUTO INCREASE: This option increases serial number for vendor's specific serial number rule. If vendor has specific serial number rules, Indilinx can support it. Please ask to your contacts.
- MANUAL: Operator can write any string to SSD. If multiple devices are downloaded simultaneously, then those devices will have the same serial number.
- MANUAL INCREASE: Operator can write any string to SSD. And MPTool will increase this string from '0'-'9' and 'A'-'Z'.



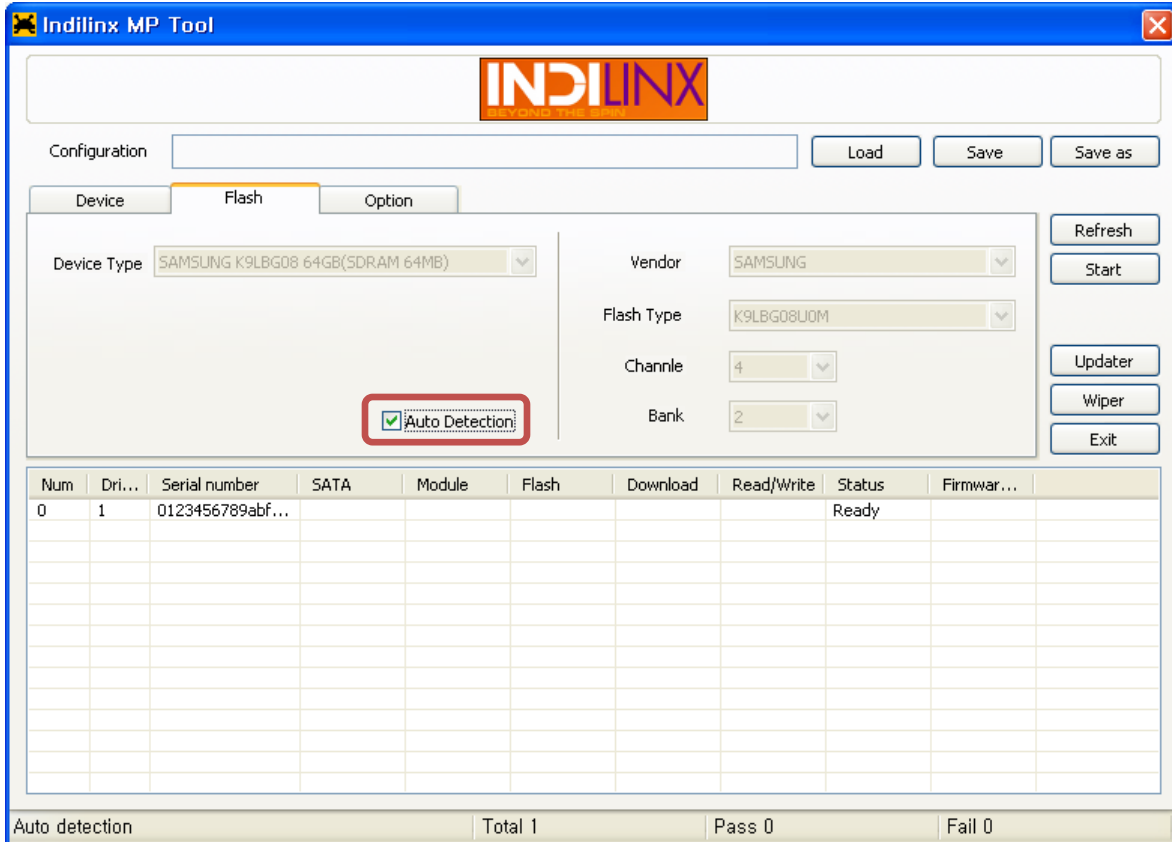
Move to Flash tab.

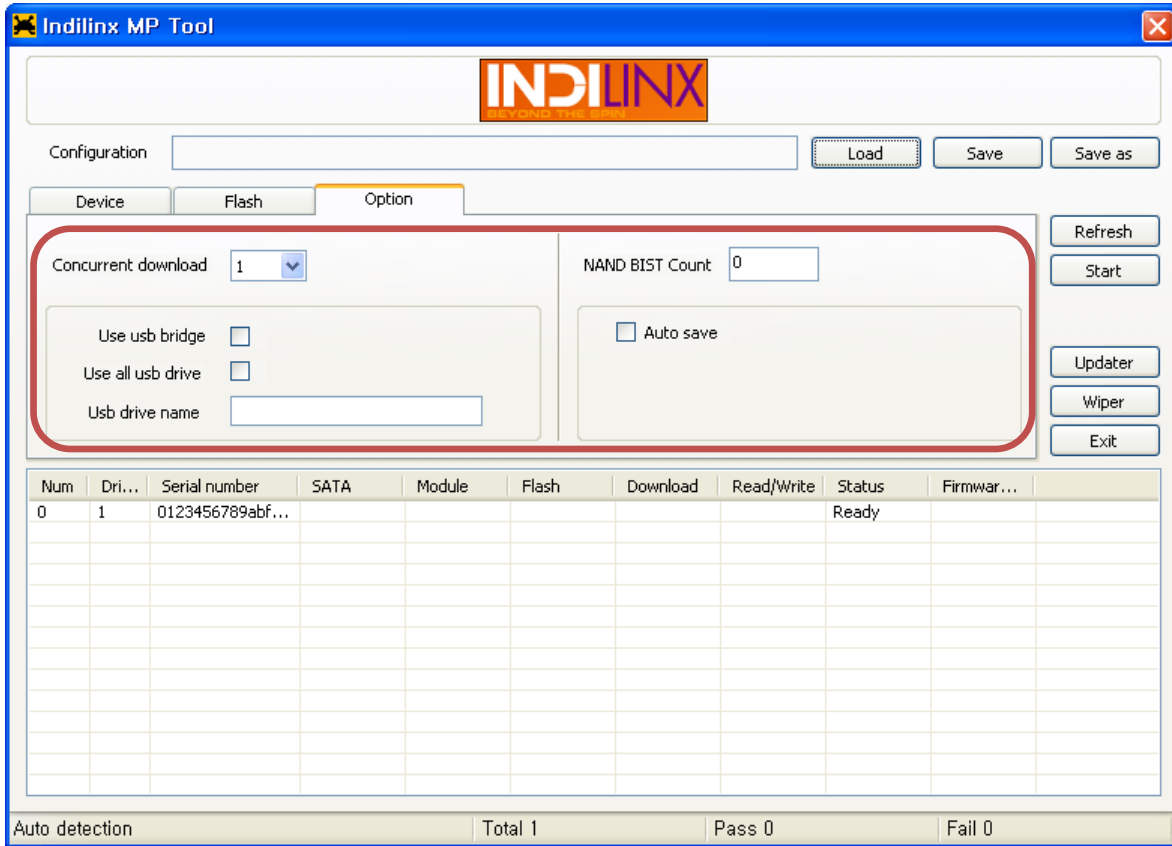
Choose the right NAND/SDRAM configuration from pull down bar. Indilinx MPTool contains different F/W for different configuration. If one of following things is changed, MPTool needs additional F/W.

- Number of NANDs
- NAND stuffing
- SDRAM vendor
- SDRAM capacity

Please be careful when choosing Device Type. Also, make sure you plugged in all the same type drives. Indilinx MPTool can't download different F/W to each drives if you choose specific device type.

New MPTool supports automatic device detection. It is useful when all different device types have the same model number and revision number. MPTool will detect SDRAM/NAND of each device and download appropriate F/W to each device. It is done concurrently.

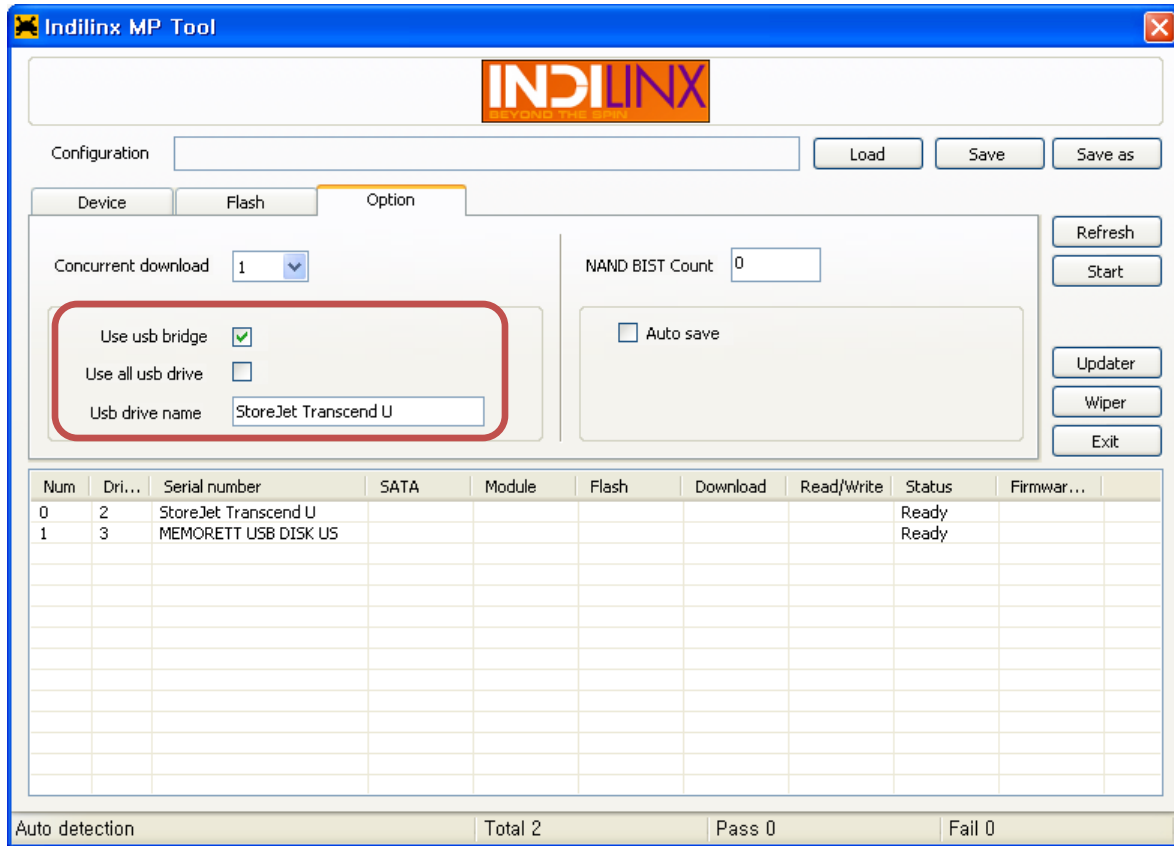




Now choose the number of drives which you want to download F/W simultaneously. Your host PC may have performance limitation for concurrent download. Manufacturing engineer will need to find out the optimal value for his host PC.

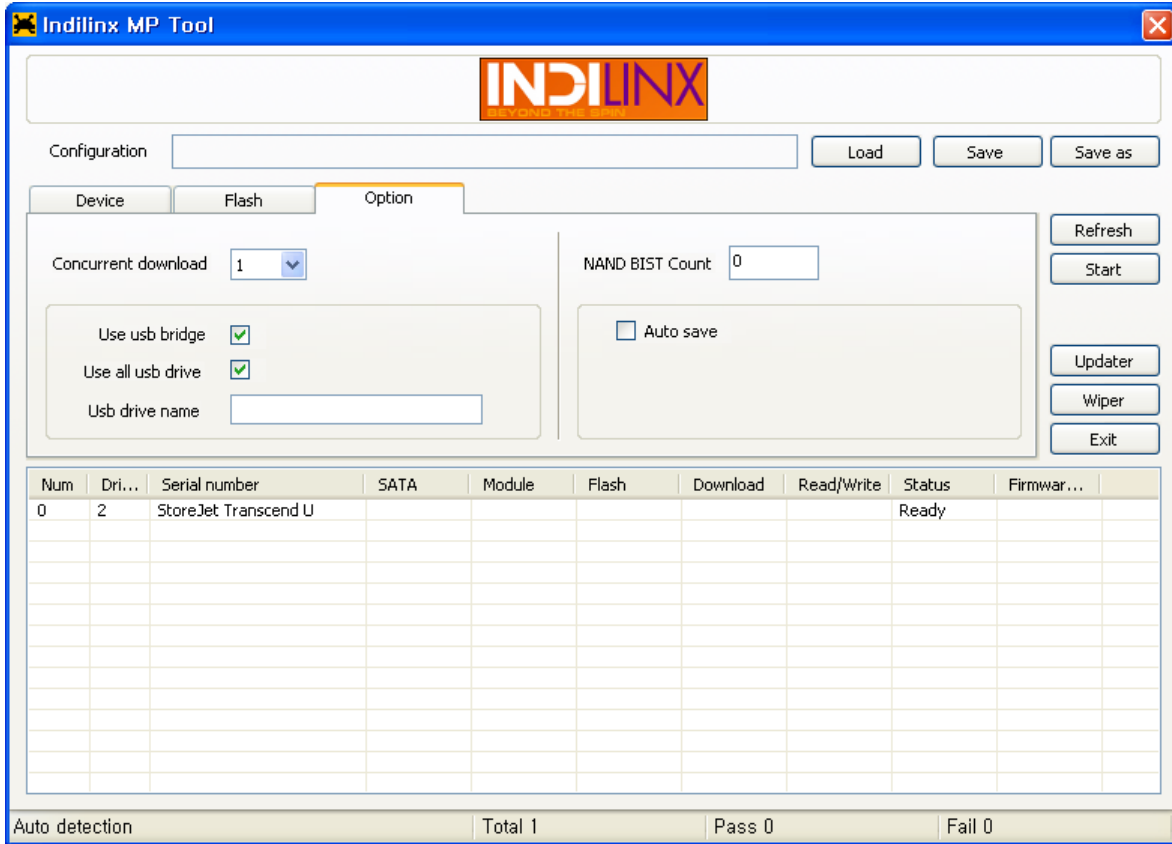
Enter NAND BIST count. NAND BIST is flash cell test. When reused NANDs are soldered on SSD drive, it is recommended to run at least “2” times of NAND BIST. NAND BIST will find out runtime bad block, if any. For more information on using second hand NAND for Barefoot controller, please refer to “How to use second hand NAND.pdf” document.

USB-SATA bridge support



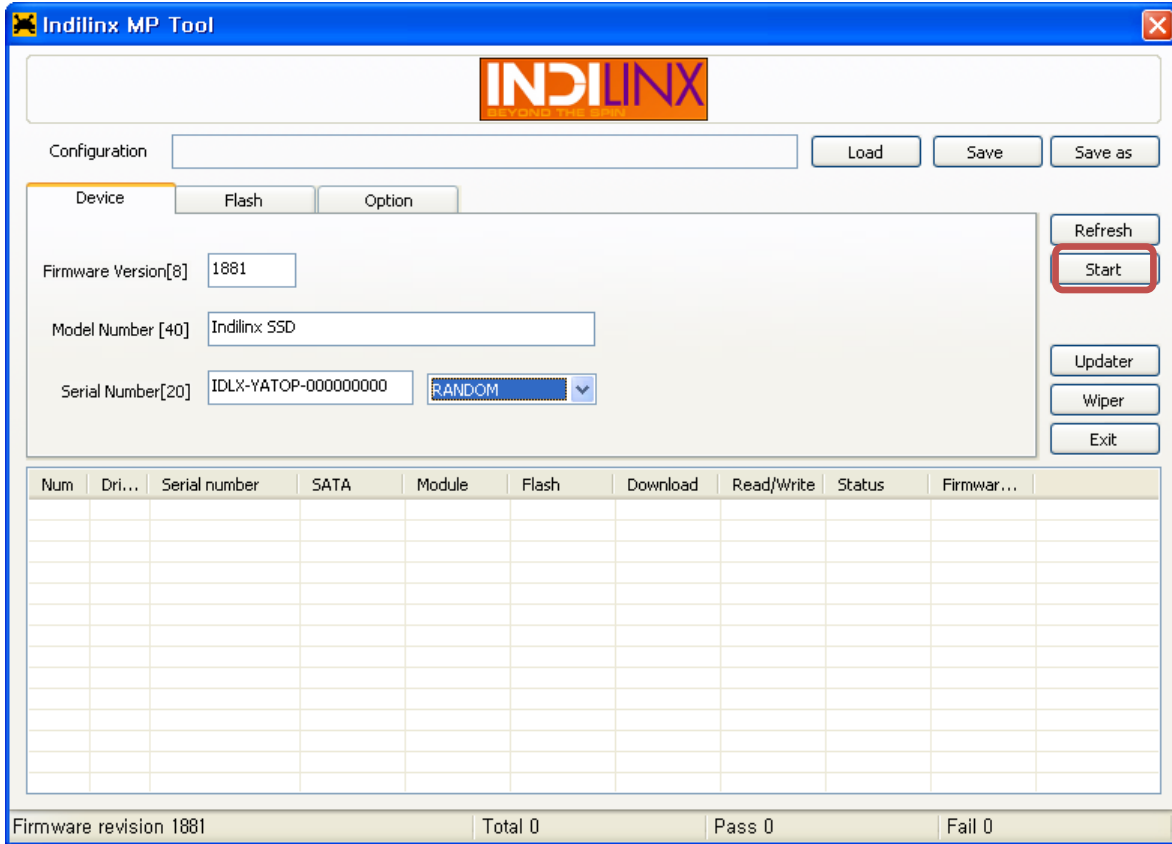
MPTool supports USB-SATA bridge. In the above example, host PC has one Barefoot SSD through USB-SATA bridge and one USB memory drive. In this case, firmware should be downloaded only to Barefoot, so we need to enter "StoreJet Transcend U" to USB drive name. Then MPTool will not try to download firmware to MEMORETT USB memory drive. If you try to download firmware on USB memory drive, it will be corrupted.

Other usage is to simply remove all USB drives before connecting Barefoot SSD.

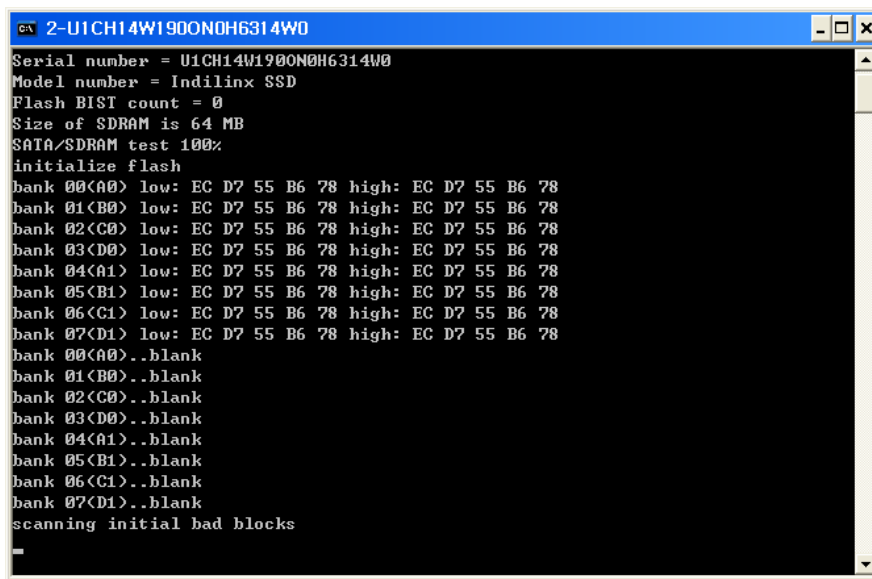


In this case, we can simply check “Use all usb drive” option.

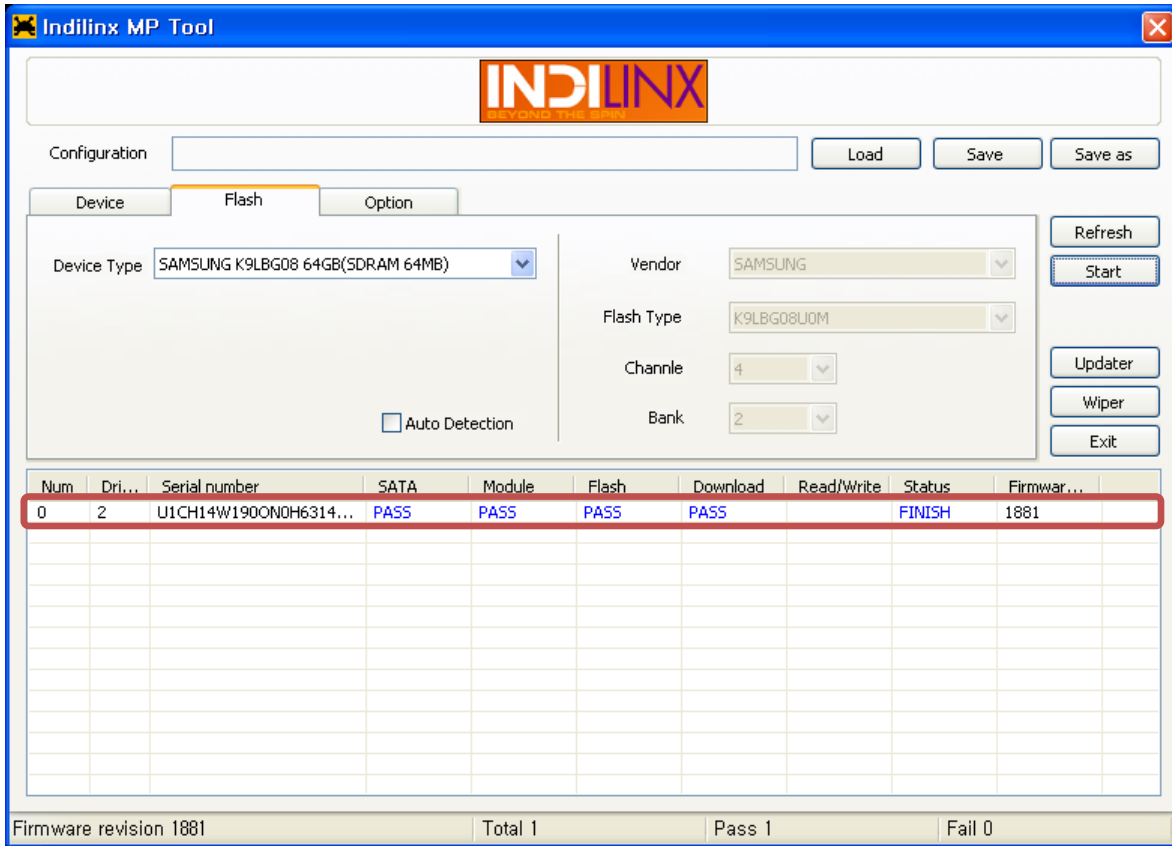
Firmware download



Click "Start" then command windows are opened for each drives.



Download status can be seen from both command window and MPTool window.



When F/W download is complete, following pop up window is displayed, regardless of jumper existence. If jumper is installed, then remove jumper and click "OK"



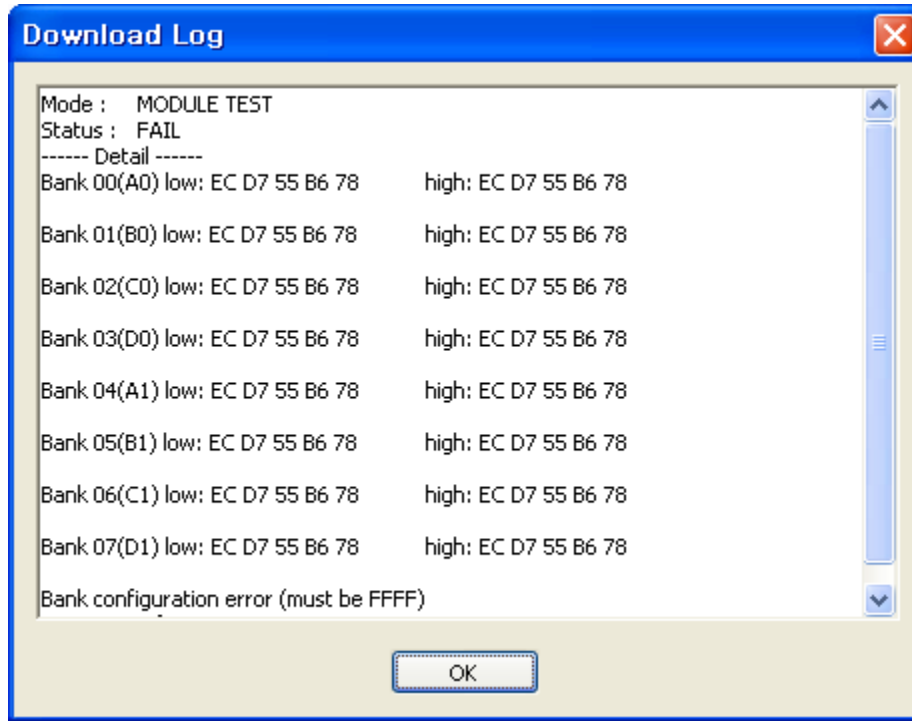
Following is the error case.

The screenshot shows the Indilinx MP Tool interface. The 'Flash' tab is selected, displaying configuration for a Samsung K9HCG08 128GB SDRAM 64MB device. The 'Status' column in the device list is highlighted in red, indicating a failure. The summary bar at the bottom shows 'Firmware revision 1881', 'Total 1', 'Pass 0', and 'Fail 1'.

Num	Dri...	Serial number	SATA	Module	Flash	Download	Read/Write	Status	Firmwar...
0	1	K1355A2GMBE3403PY370	PASS	FAIL				ERROR	1881

Firmware revision 1881 Total 1 Pass 0 Fail 1

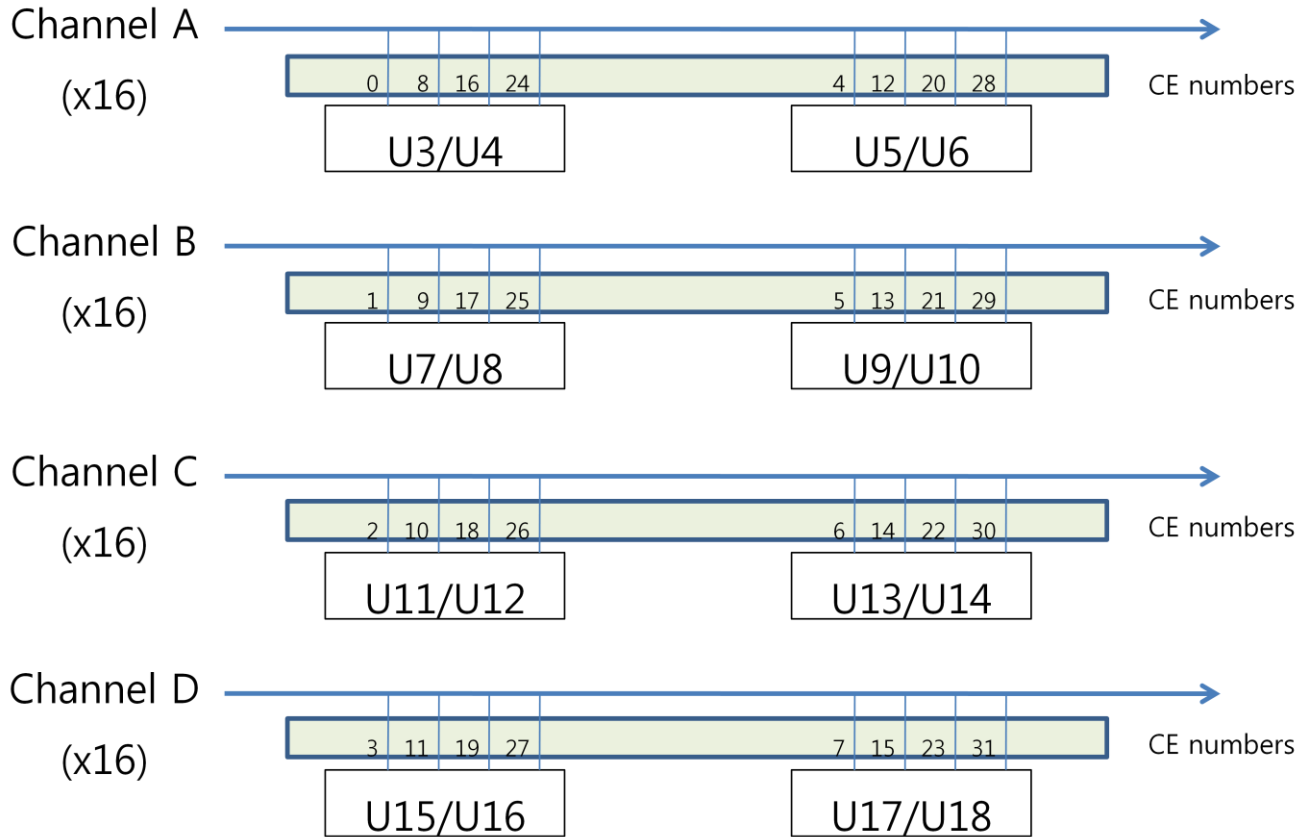
If you double-click blue FAIL line, detail information is displayed.



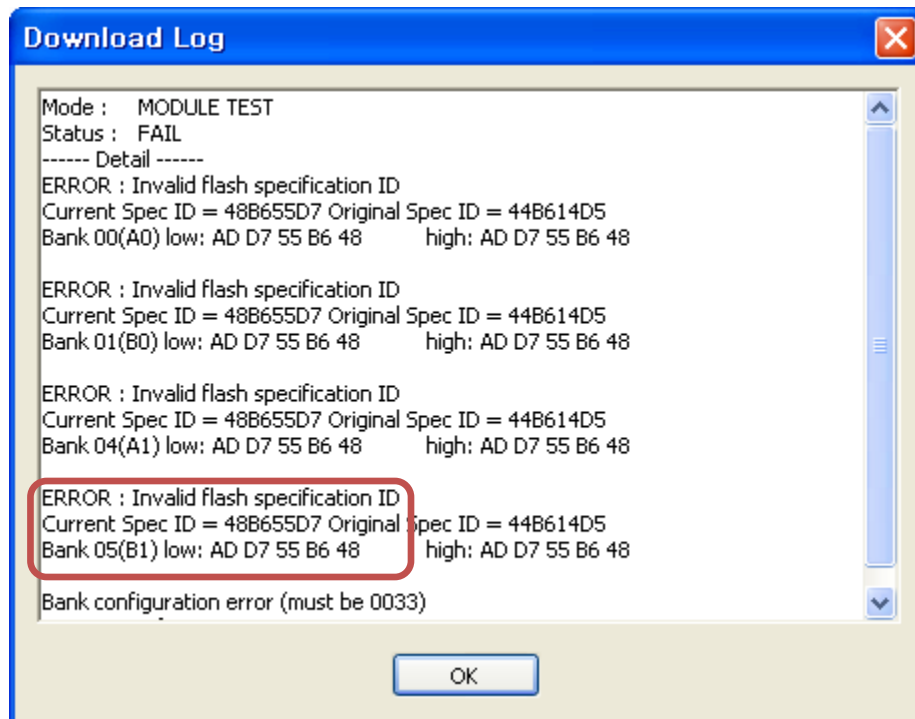
In the next page, it is explained to find bad NAND chips.

4. How to locate bad NAND

Following diagram explains how Barefoot channels are organized and how NAND CE pins are connected.



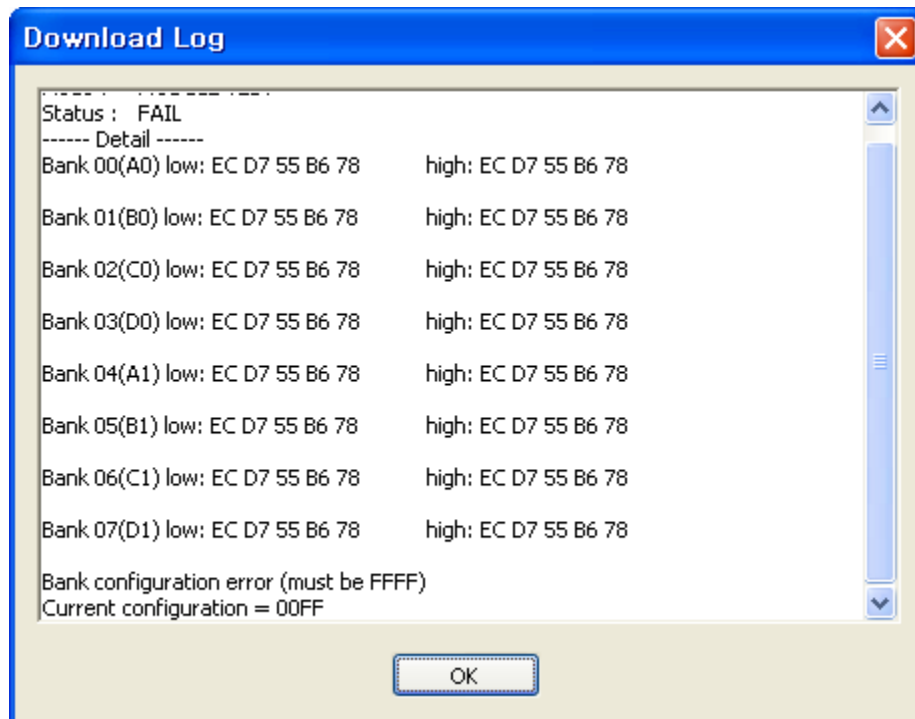
- U3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18 is the names used in Hoof25 (Indilinx Barefoot 2.5 inch reference board) schematic.
- Barefoot has 16 bit data bus, so NAND packages should be stuffed as a pair, for example U3/U4. In this case U3 is the low chip (Data bit 0:7) and U4 is the high chip. (Data bit 8:15)
- When 4 NAND packages are stuffed, U3/U4/U7/U8 is the recommended/possible configuration. U3/U7/U11/U15 is not possible.
- For example, CE 0,8,16,24 are connected to U3/U4. It means U3 (low chip) and U4 (high chip) share CE0, CE8, CE16 and CE24.
-



For example, let's find the U number of Bank 05(B1) low chip. In this example, error message says that incorrect NAND part is assembled. It happens usually when trying to download F/W A to configuration B. (For example, K9HCG F/W to K9LBG SSD) Or that NAND is malfunctioning and gives incorrect NAND ID. For the second example, this NAND should be replaced. We need two information.

- **Bank 05** : In the previous page, 05 belongs to U9/U10.
- **Low** : In U9/U10 pair, U9 is low chip and U10 is high chip

So bad NAND to be replaced is U9.



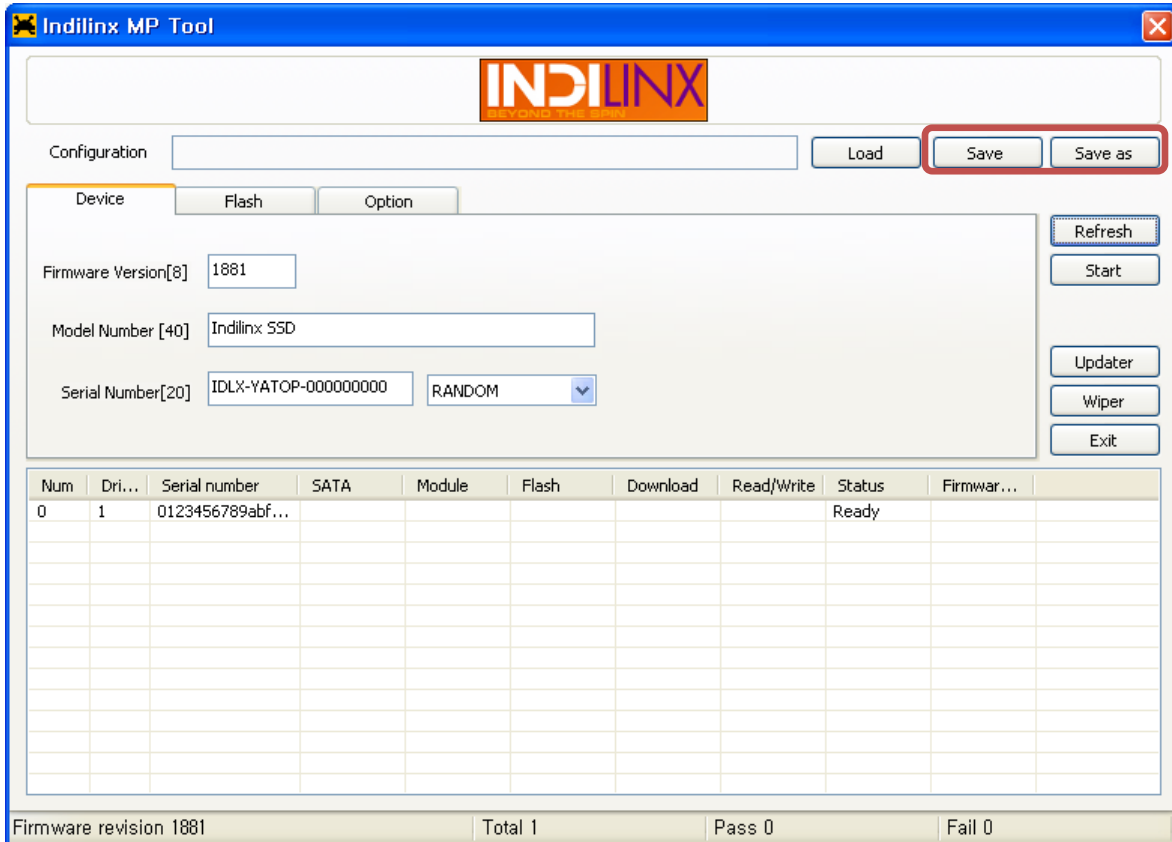
It is another example of common case. User selected FFFF (bitmap of CE) firmware. But connected SSD has 00FF bitmap.

It is the example of K9HCG08U1M (2 CE NAND) and K9LBG08U0M (1 CE NAND) configuration. User selected 16 pieces of K9HCG08U1M NAND firmware, but connected SSD has 16 pieces of K9LBG08U0M NAND. NAND ID didn't make error because K9HCG08U1M and K9LBG08U0M have the same NAND ID. Only bank configuration error was found.

5. Job Management

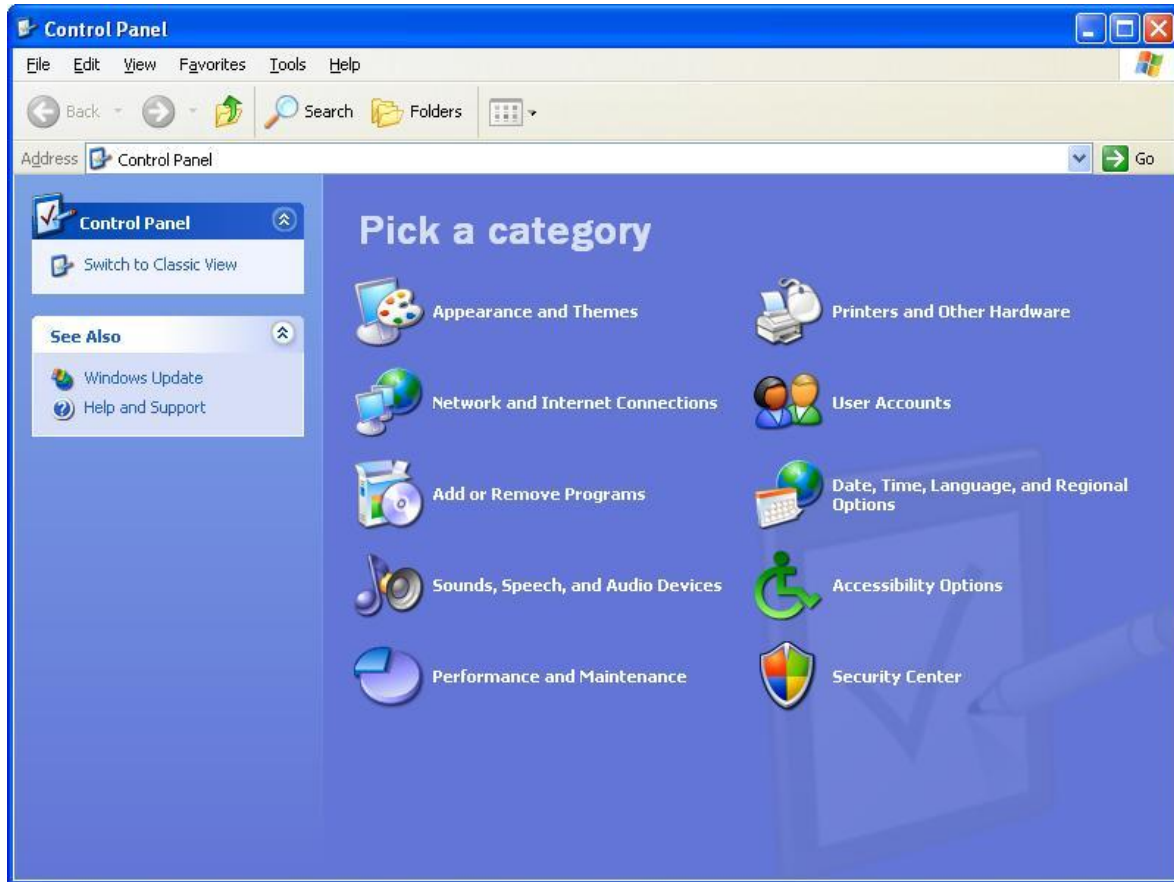
For example, one host PC is dedicated to specific configuration manufacturing. Operator will not want to repeat the same setting/choice steps on tomorrow. Another example is, when operator calls it a day, he/she will turn off host PC, but he/she will have to remember current serial number to continue on tomorrow. In such cases, operator can save his/her job and serial number for later use.

To save current job, click "Save" or "Save as".

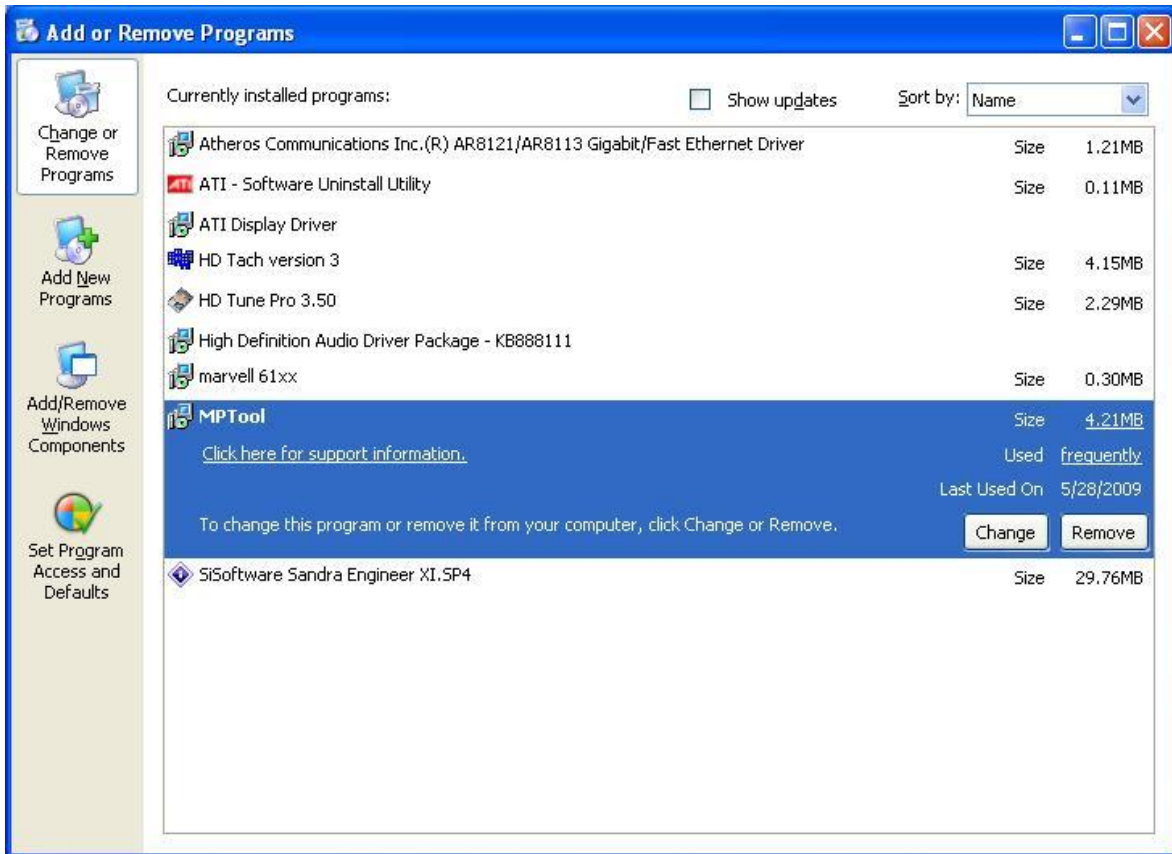


6. Uninstall

When new MPTool should be installed, previous version of MPTool should be uninstalled.



In the control panel, click "Add or Remove Program"

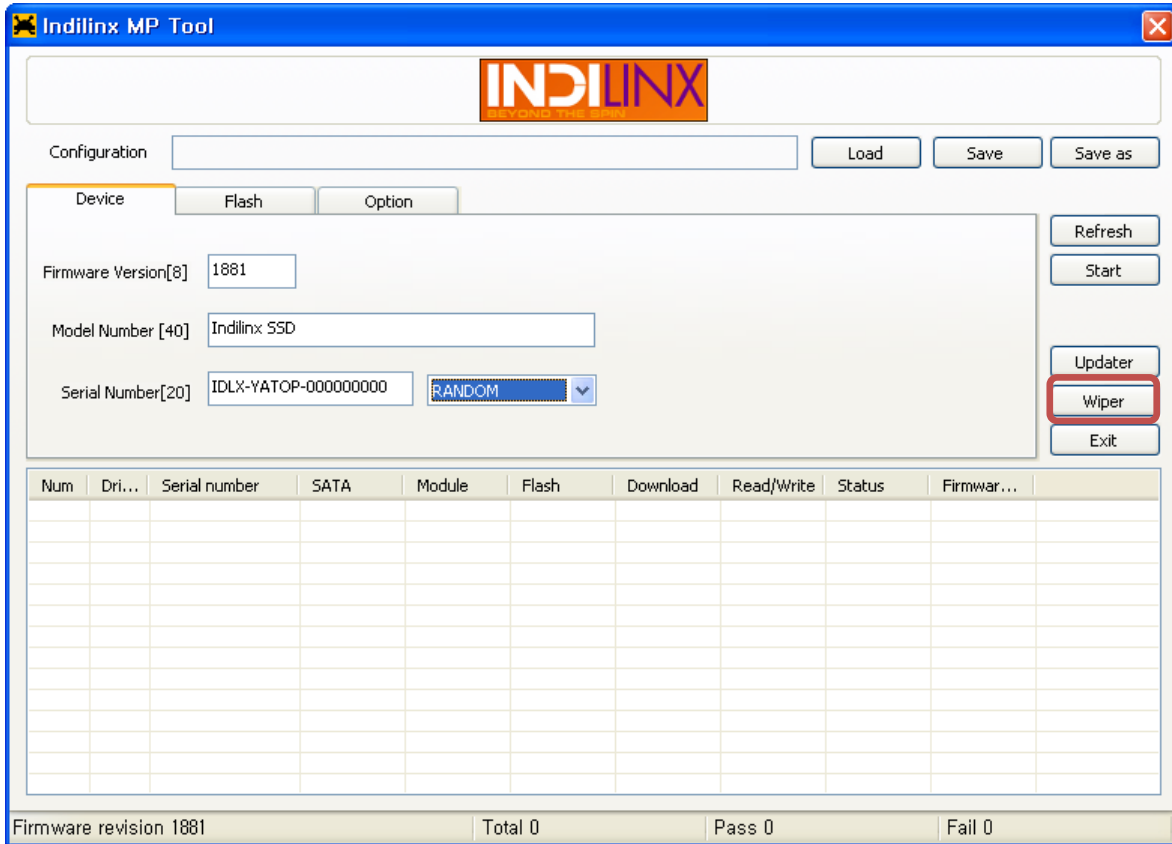


Locate "MPTool" and click "Remove"

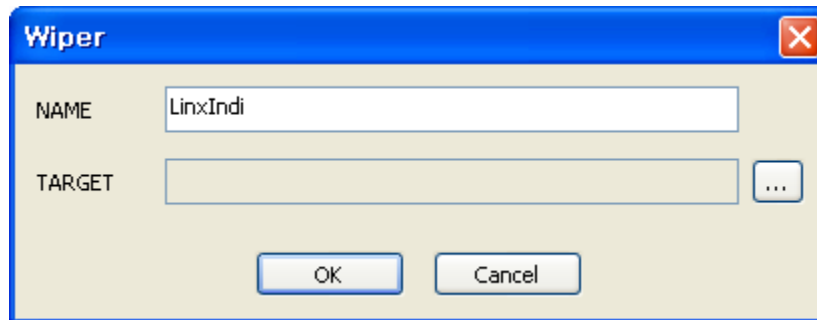


Clicking "Yes" will remove MPTool from your host PC. Now you can install MPTool again.

8. Wiper

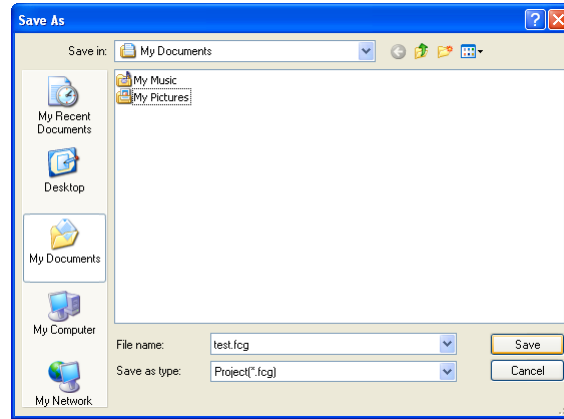


MPTool has “Wiper” button, which is used to generate banner changed Wiper program. When it is pressed, following dialog comes up.

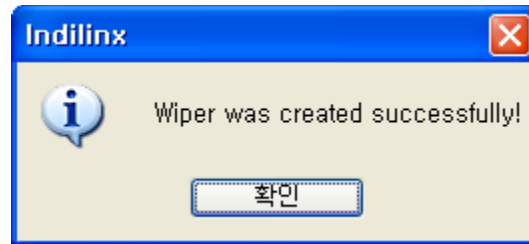


In the Name field, typically your company's name will be given.

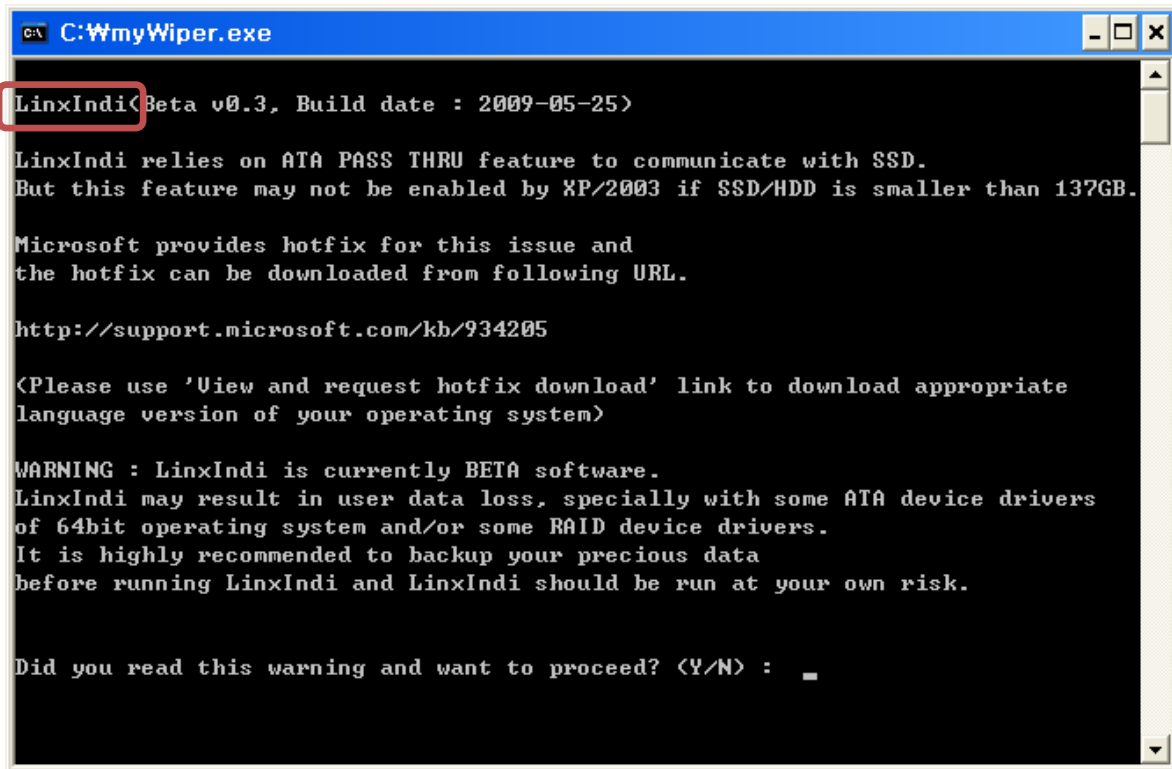
Next, click “...” button to give the file name of new Wiper EXE file. You can omit EXE extension.



Next, click OK. Then following message will be displayed.



If you gave file name, "myWiper", then myWiper.exe will be generated.



Wiper banner was changed to “LinxIndi” for your company. You can distribute this file to user end users.