W55FA92 NandWriter User Guide

V1.00.000

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1. Introduction

1.1. NandWriter Introduction

W55FA series have two boot flows – one is Normal mode; the other is Recovery mode. For FA92, the boot flows are as below:

The Normal mode boot flow is SD card 0 boot → NAND 0 boot → NAND 1 boot → SPI boot → SD card 1 boot → SD card 2 boot → USB boot

The Recovery mode boot flow is USB boot only.

NandWriter utilizes the character of Normal mode to load code of **NandWriter.bin** from SD card 0. When NandWriter.bin program executes, it will read the **NandWriter.ini** file from SD card 0 then program the NAND according the setting. This document will guide you how to prepare the SD card and change INI file.

2. Operation

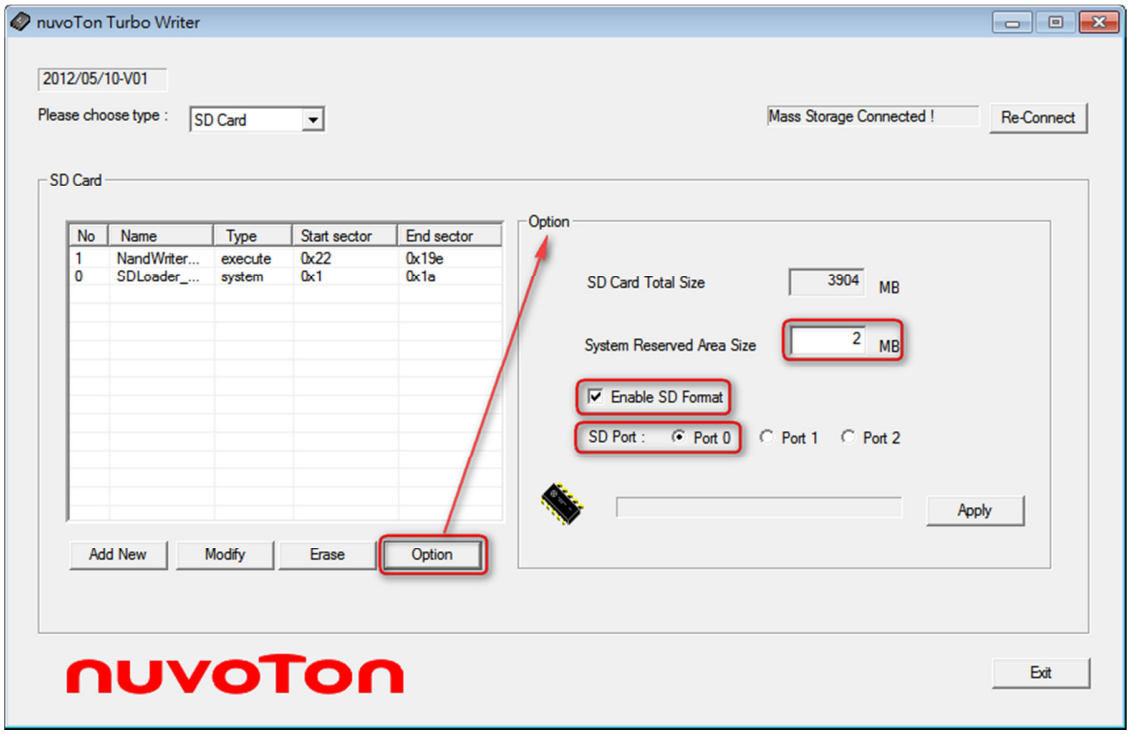
2.1. SD Card

The SD card must reserve some space to store the **SDLoader.bin** and **NandWriter.bin** before usage. The procedure is as below step:

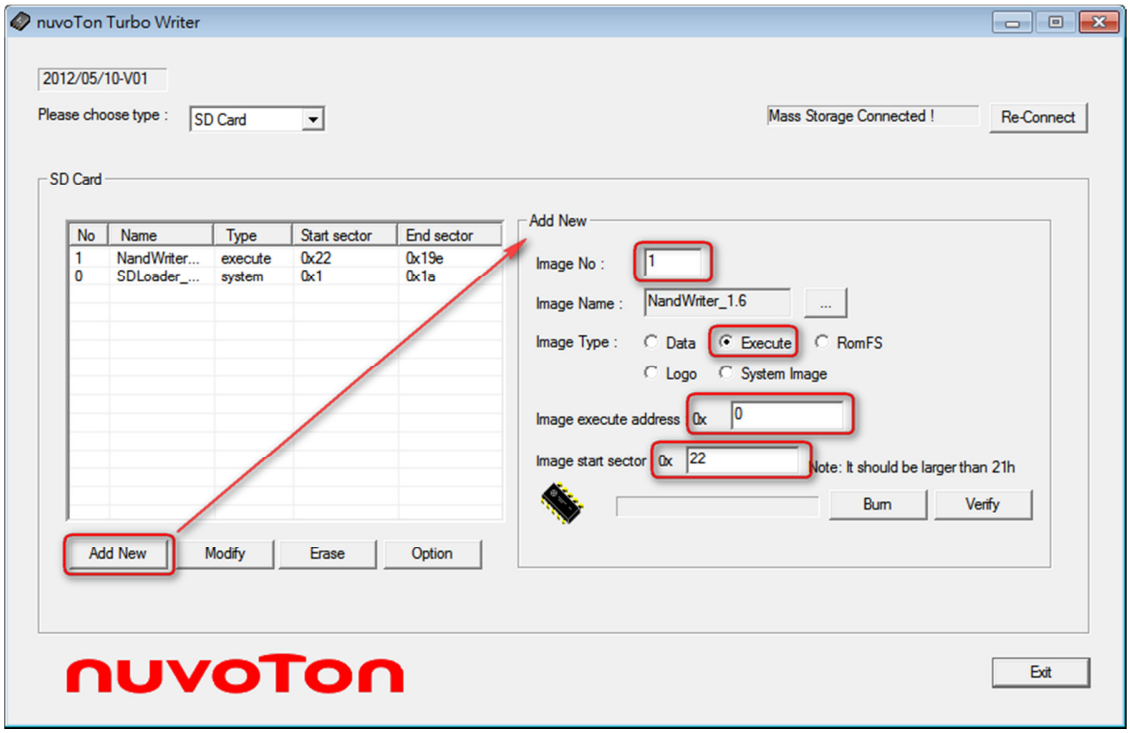
- Launch TurboWriter in recovery mode and set the System Reserved Area Size if this SD card does not do it before
- Burn the SDLoader.bin as system image
- Burn the NandWriter.bin as execute image with **"Image execute address" 0**

These two files are burned in system-reserved area and unable to read from card reader.

Table 2-1 System Reserved Area Size



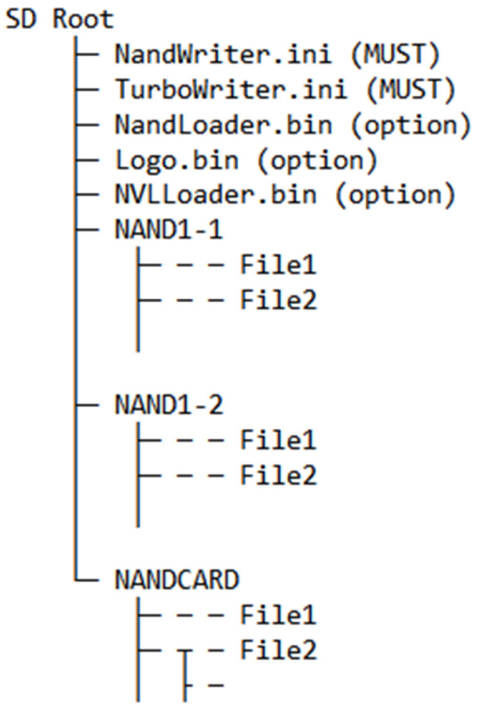
Please note to check the "**Enable SD Format**" option to format SD card. If you format SD card under Windows system, it does not reserve System Reserved Area Size on SD card and cannot as booting SD card in FA92 system.



Put this SD card to another card reader and copy NandWriter.ini and related files that are burn to NAND flash to this SD card.

This SD card content structure is as below figure. The root directory contains the NandWriter.ini (must), TurboWriter.ini (must), NandLoader.bin (must), Logo.dat (option), NvtLoader.bin (option), NAND1-1 folder, NAND1-2 folder, and NANDCARD folder. The files in NAND1-1 folder are copied to root folder of partition Nand1-1 and files in NAND1-2 folder are copied to root folder of partition Nand1-2, and so on. It also provides some option in NandWriter.ini for user. Please check the INI File section for detail.

Please note that the disk volume label of SD card cannot be the same as any folder name in SD card. Fox example, “NAND1-1” or “NAND1-2”



2.2. INI File

2.2.1. NandWriter.ini

The INI file means **NandWriter.ini** file that provides the user a flexible way to do a restricted modification without modifying the source code of NandWriter.bin.

The NandWriter.ini file provides some sections as below:

```
[NAND1-1 FAT FILE]
// -1 to skip NAND1-1 copy, 0 to use DiskImage without MBR,
// 1 to Use FAT file, 2 to use DiskImage with MBR
1

[NandLoader File Name]
// All file name length MUST <= 511 bytes
// Unavailable if [NAND1-1 FAT FILE] is -1
NANDLoader.bin

[Logo File Name]
// Unavailable if [NAND1-1 FAT FILE] is -1
```

```
Logo.bin

[NVTLoader File Name]
// Unavailable if [NAND1-1 FAT FILE] is -1
NVTLoader_NAND.bin

[System Reserved MegaB]
// Unit : Mega Byte
2

[NAND1-1 DISK SIZE]
// Unit : Mega Byte (default : 16MB)
// This specify Nand1-1 partition size, total capacity - Nand1-1 = Nand1-2 parition size
// Unavailable if [NAND1-1 FAT FILE] is 2
32

[NAND1-2 FAT FILE]
// Unavailable if [NAND1-1 FAT FILE] is 2
// -1 to skip NAND1-2 copy, 0 to use DiskImage without MBR, 1 to Use FAT file
1

[NANDCARD FAT FILE]
// -1 to skip NANDCARD copy, 0 to use DiskImage without MBR,
// 1 to Use FAT file, 2 to use DiskImage with MBR
-1
```

Due to its limited parsing ability of NandWriter.bin, there are some constraints in NandWriter.ini as below:

- No space is allowed to precede the option for each line.
- Only "//" comment is allowed at the beginning of each line
- String in "[ ]" is not allowed to changed.
- Only "[Logo File Name]", "[NVTLoader File Name] and "[System Reserved MegaB]" section are option for its setting. The others are must.

If the "[System Reserved MegaB]" section is not provided, the default reserved size is **8** Mega Bytes for it.

If the logo file is not necessary for the NandWriter, below two methods are all to skip burning Logo.dat into the Nand flash.

```
[Logo File Name]
//Logo.dat
```

or

```
[Logo File Name]
```

```
```

It also allows changing the file name for burning. Below sample changes the file name from NandLoader.bin to Nuvoton.bin for "[NandLoader File Name]" section. Please note that the file name length MUST less than or equal to 31 bytes.

```
[NandLoader File Name]
Nuvoton.bin
```

Regarding the copy for Nand1-1, Nand1-2, Nand2, and Nandcard, it provides 4 options for it.

- Option "-1": Skip to check the Nand1-x folder.
- Option "0": NandWriter copy file **content.bin** on Nand1-x folder in SD card through GNAND to Nand1-x partition. It gets the best performance but it need to prepare the disk image by **NRomMaker** tool or Linux
- Option "1": NandWriter copy those files on Nand1-x folder in SD card through FAT to Nand1-x partition.
- Option "2": Like option "0" but the disk image must include partition table (MBR, Master Boot Record).

Please note that the value [NAND1-1 FAT FILE] could influence the action of other options.

- If NAND1-1 is -1 (skip), NandWriter do nothing at first NAND on CS0 interface. It includes all files in System Reserved Area and NAND1-2.
- If NAND1-1 is 2 (disk image with MBR), the options [NAND1-1 DISK SIZE] and [NAND1-2 FAT FILE] are unavailable since they are decided by MBR within disk image, not by NandWriter.

2.2.2. TurboWriter.ini

NandWriter v1.0 support new INI file **TurboWriter.ini** file that provides the user a flexible way to do system tuning before NandLoader running.

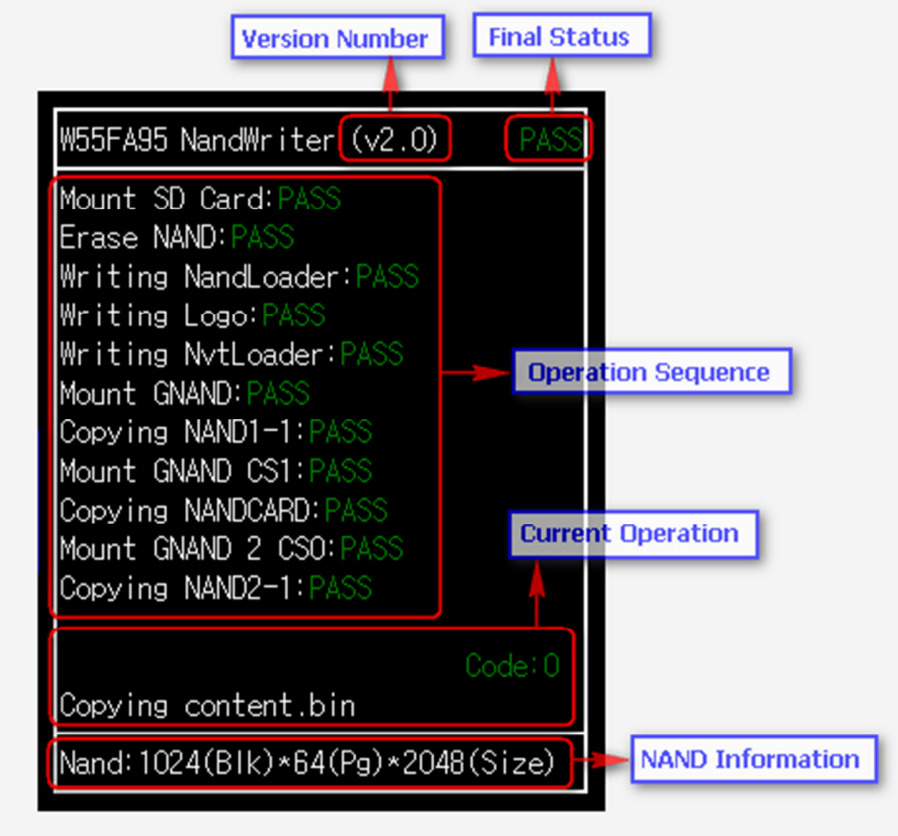
The TurboWriter.ini file provides some sections as below:

```
[ADDRESS]
  ADDRESS = 00900000
[CLOCK_SKEW]
  DQSODS = 00001010
  CKDQSDS = 00888800
[USER_DEFINE]
  B0000004 = 00032FFF
  B0000208 = 00008310
  5A5A5A5A = 00000000
  5A5A5A5A = 00000001
```

Please DO NOT modifies the TurboWriter.ini if you do not understand what it is.

2.3. Operation

When the SD card is prepared successfully and booting from Normal mode, it will show the Nand burning status on the panel as below:



It can divide into several parts:

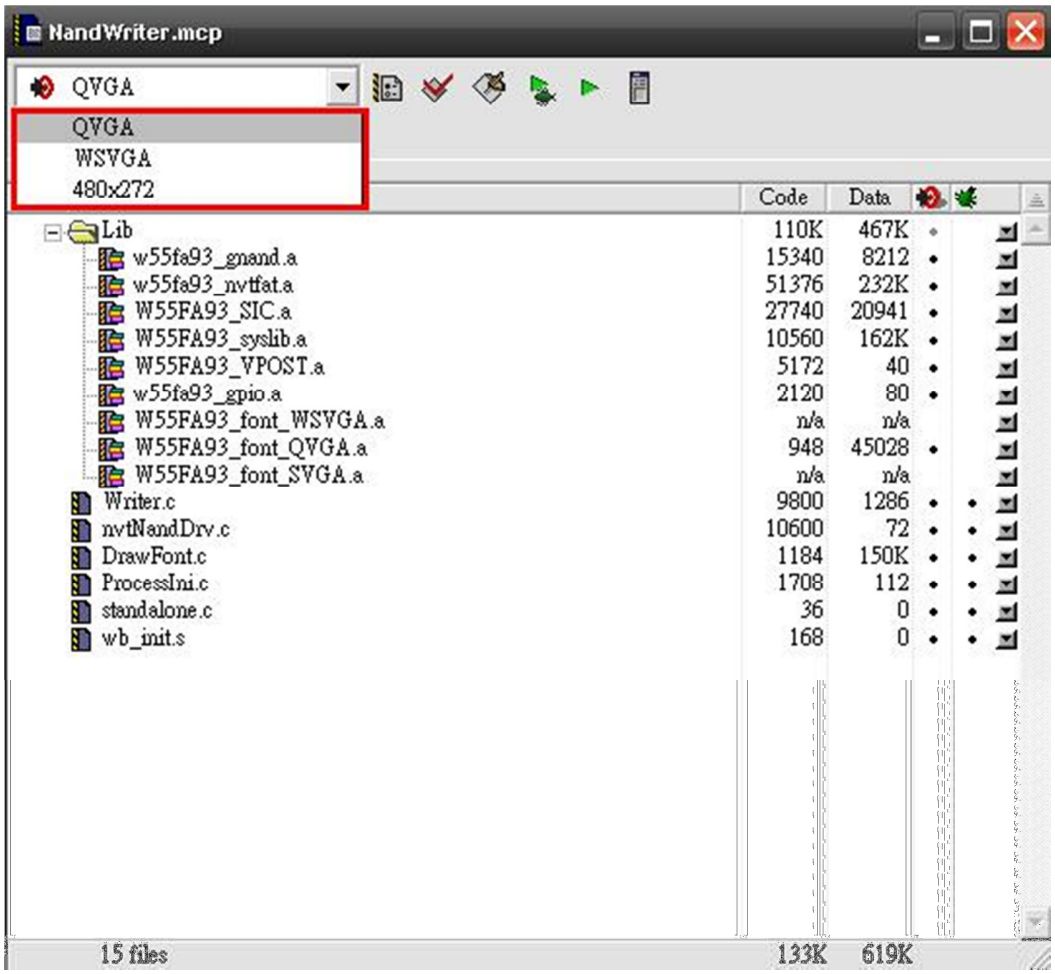
- Version Number: show this version number.
- Final Status: show the final operation status. If there is any fail items in the operation sequence, the final Status will be “FAIL”.
- Operation Sequence: show the current operation progress.
- Current operation: show more detail information for current operation. For example, if fails for some function, the code will show the return code for this.
- The Nand Flash Information: shows current NAND flash in the format “Nand: Total_Block_Number(Blk) * Page_Number_Per_Block(Pg) * Page_Size (Size).

2.4. Modification

If the modification of NandWriter.ini cannot meet customer's request, it will need to open NandWriter project to modify the source code. This project file bases on ARM Developer Suite V1.2. If user does not have such environment, it will need user to do necessary modification for the new environment.

Besides the environment issue, modification is necessary for below condition:

- Panel: If the panel is changed, linked VPOST library need to change.
- Resolution: If the resolution is changed, Select related target for it as below picture.



3. Revision History

Version	Date	Description
V1.0	Oct, 2013	● Created

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