

# **W55FA93 NandWriter User Guide**

**V1.03.000**

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# 1. Introduction

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## 1.1. NandWriter Introduction

W55FA series have two boot flows – one is Normal mode; the other is Recovery mode. For FA93, the boot flows are as below:

The Normal mode boot flow is SD card 0 boot -> NAND boot -> SPI boot -> SD card 1 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

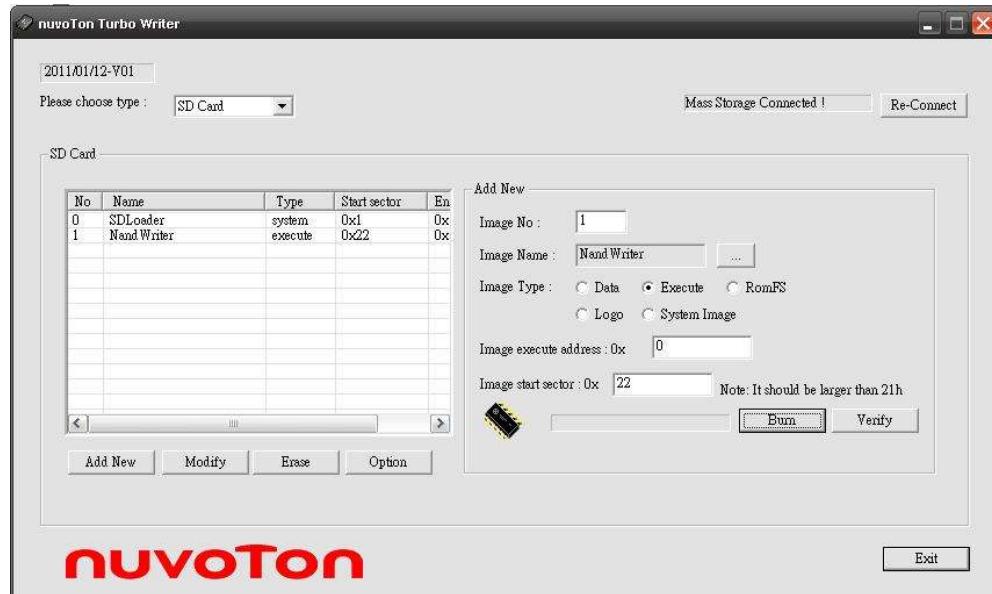
### 2.1. SD Card

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.

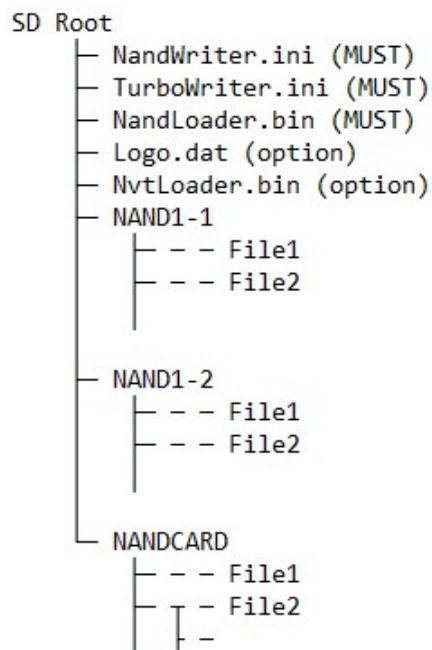
*Table 2-1 System Reserved Area Size*



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 and NAND1-2 folder. The files in NAND1-1 folder are copied to partition Nand1-1 and files in NAND1-2 folder are copied to root folder of partition Nand1-2. It also provides some option in NandWriter.ini for user. Please check the INI File section.

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



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## 2.2. INI File

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### 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:

```
[NandLoader File Name]
NandLoader.bin

[Logo File Name]
Logo.dat

[NVTLoader File Name]
NvtLoader.bin

[Boot Code Header Selection]
// 0 : Get information from this chip
// 1 : Old Boot Code Header
// 2 : Latest Boot Code Header
// 3 : Latest Boot Code Header for X3DN
0

[System Reserved MegaB]
//Unit : Mega Byte
4

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

[NAND1-1 FAT FILE]
// 1 to Use FAT file , 0 to use DiskImage, -1 to skip NAND1-1 copy
1
```

```
[NAND1-2 FAT FILE]
// 1 to Use FAT file , 0 to use DiskImage, -1 to skip NAND1-2 copy
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 be changed.
- Only “[Logo File Name]”, “[NVTLoader File Name]” and “[System Reserved MegaB]” sections are options for their settings. 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.

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

Regarding the copy for Nand1-1 and Nand1-2, it provides 3 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 needs 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.



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### 2.2.2. TurboWriter.ini

NandWriter v1.4 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 MUST match the FA93 IC version to ensure successful booting. The user can get it from development tool TurboWriter. If the option [Boot Code Header Selection] is 3, the INI file should be renamed to “**TurboWriter\_X3DN.ini**”, otherwise the file name “**TurboWriter.ini**” is retained.

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:

```

W55FA93 NandWriter (v1.0)
Mount SD Card: PASS
Erase NAND: PASS
Writing NandLoader: PASS
Writing logo: PASS
Writing NvtLoader: PASS
Mount GNAND: PASS
Format Nand: PASS
Copying NAND1-1: PASS
Copying NAND1-2: PASS

Comparing BB.TXT Code: 0
Nand: 1023 (Blk) * 64 (Pg) * 2048 (Size)
    
```

NAND1-1 folder

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, it 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).”

```

W55FA93 NandWriter (v1.0) FAIL
Mount SD Card: PASS
Erase NAND: PASS
Writing NandLoader: PASS
Writing Logo: PASS
Writing NvtLoader: PASS
Mount GNAND: PASS
Format Nand: PASS
Copying NAND1-1: PASS
Copying NAND1-2: FAIL

No X:\NAND1-2\ Folder Code: ffff8220
Nand: 1023(Blk)*64(Pg)*2048(Size)
    
```

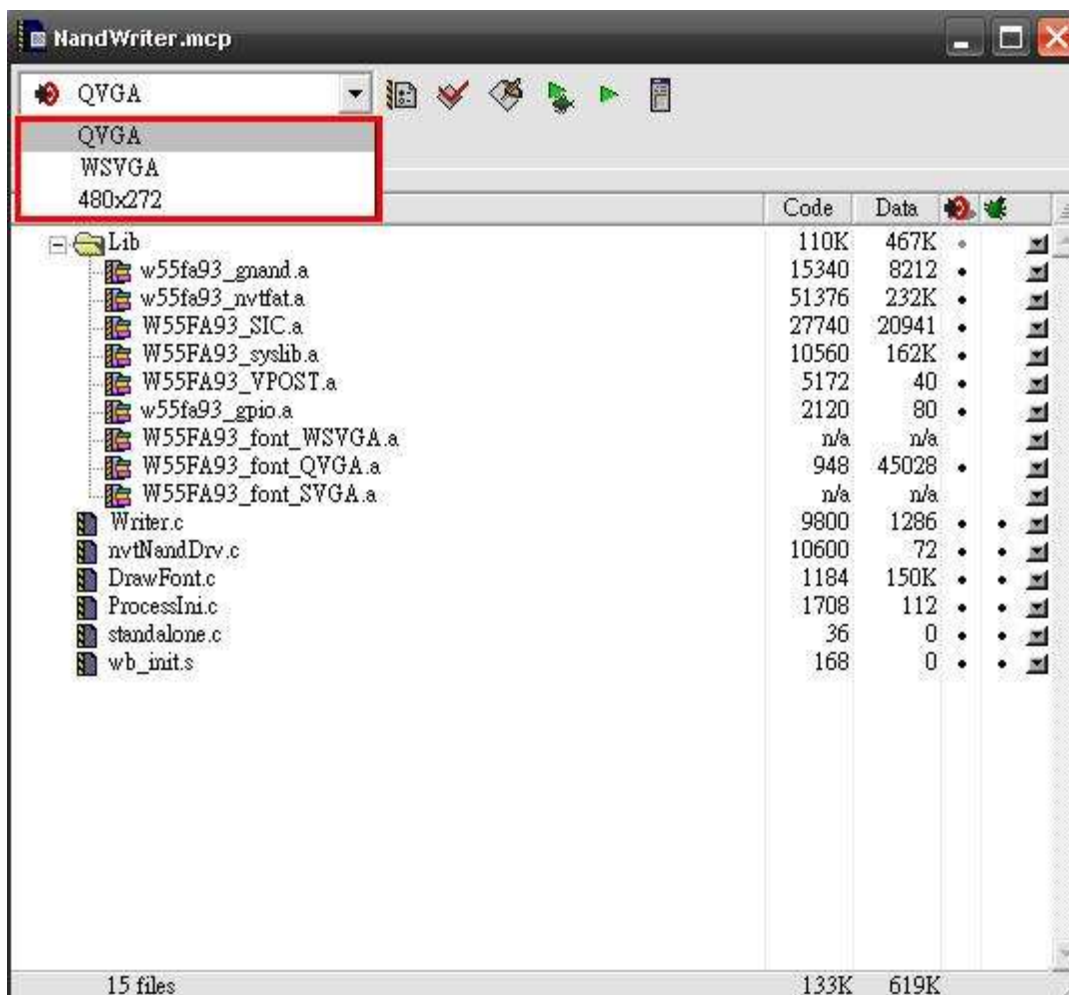
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## 2.4. Modification

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	Feb., 2011	<ul style="list-style-type: none"> <li>• Created</li> </ul>
V1.1	Nov., 2011	Modify this document to meet the NandWriter version 1.1 new features. <ul style="list-style-type: none"> <li>• No limitation for file size of INI file</li> <li>• Copy files in folder NAND1-2 to root folder of partition 2, not "Data" folder.</li> </ul>
V1.2	Dec., 2013	Modify this document to meet the NandWriter version 1.4 new features. <ul style="list-style-type: none"> <li>• Support user define boot code option from TurboWriter.ini</li> </ul>
V1.3	Dec., 2020	Modify this document to meet the NandWriter version 1.12 new features. <ul style="list-style-type: none"> <li>• Support new option "[Boot Code Header Selection]" in NandWriter.ini</li> <li>• Remove TurboWriter.ini from project. The user should use the correct TurboWriter.ini to match the IC version.</li> </ul>

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