W55FA93 NandWriter User Guide

V1.02.000

Publication Release Date: Dec. 2013

The information in this document is subject to change without notice.

The Nuvoton Technology Corp. shall not be liable for technical or editorial errors or omissions contained herein; nor for incidental or consequential damages resulting from the furnishing, performance, or use of this material.

Table of Contents

1. Introduction

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

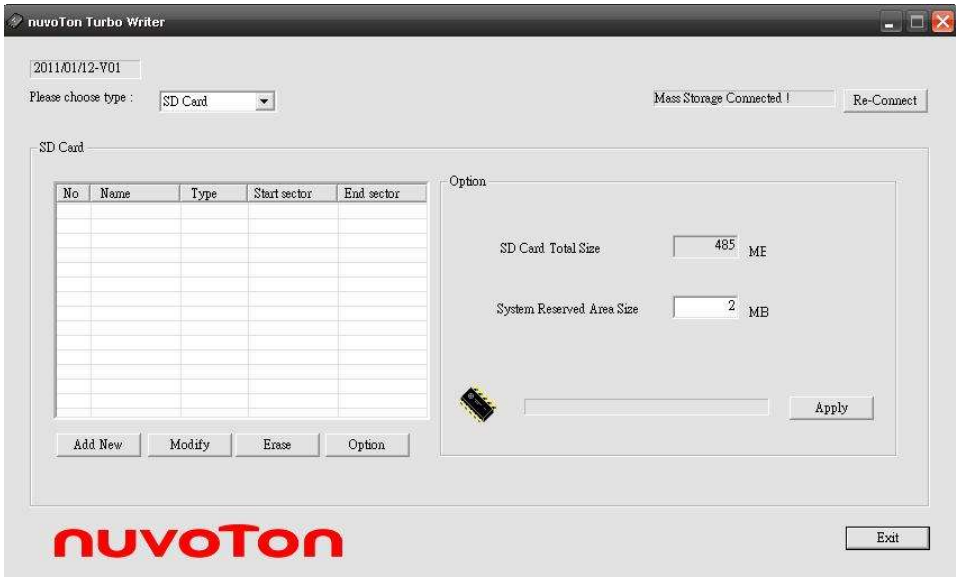
2.1. SD Card

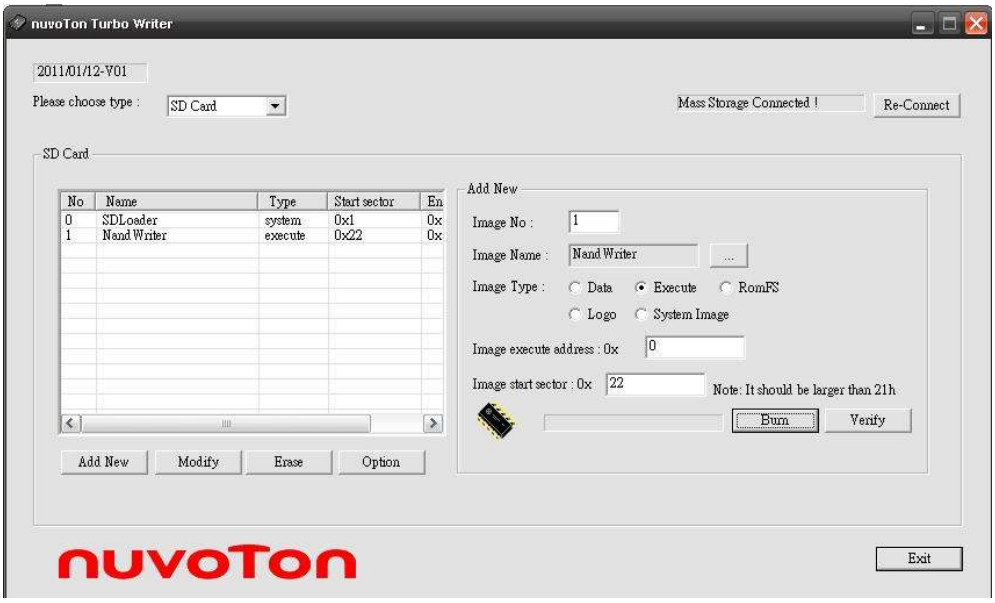
The SD card must reserve some space to store the SDLoader.bin and NandWriter.bin before usage. The procedure is as below step:

- 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

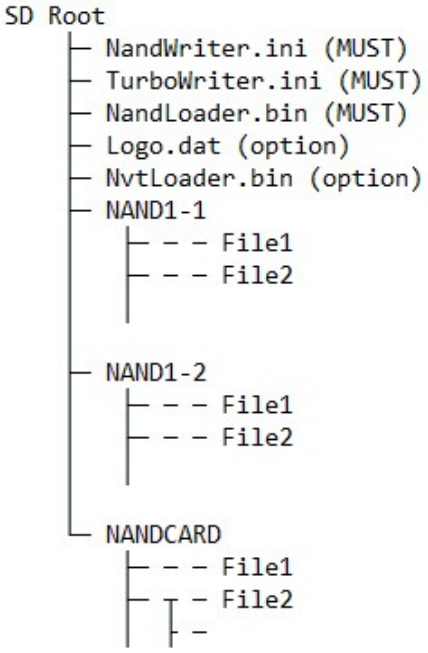




Put this SD card to another card reader and copy NandWriter.ini and related files that are burn to NAND flash to this SD card.

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. 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:

```
[NandLoader File Name]
NandLoader.bin

[Logo File Name]
Logo.dat

[NVTLoader File Name]
NvtLoader.bin

[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 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.

```
[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 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.

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.

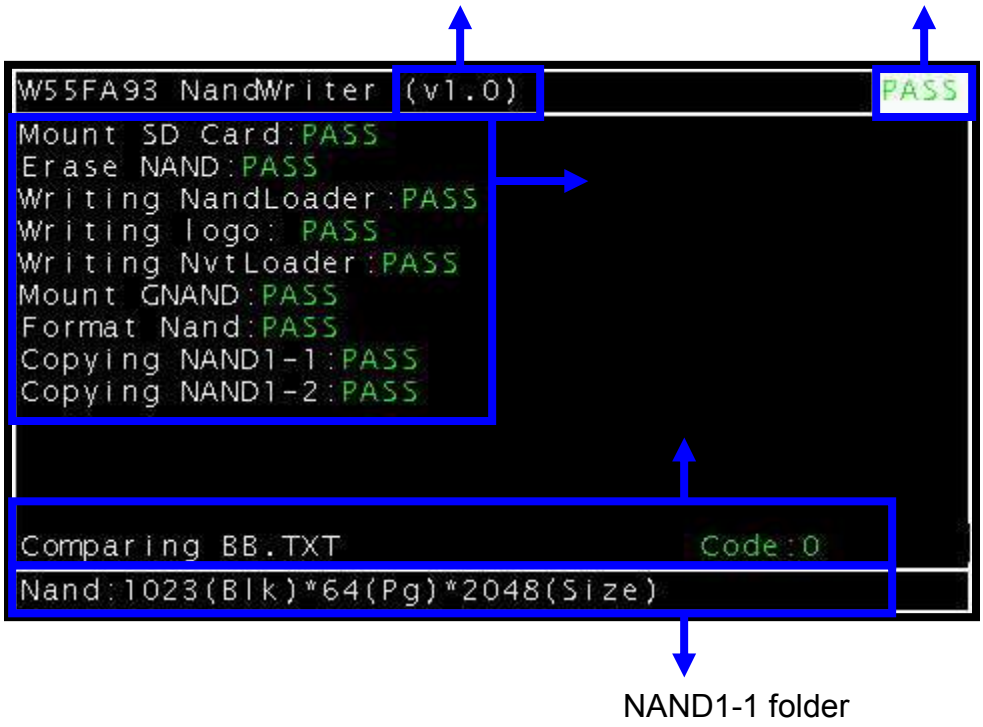
The TurboWriter.ini file provides some sections as below:

```
[ADDRESS]
  ADDRESS = 00900000
[CLOCK_SKEW]
  DQSODS = 00001010
  CKDQSDS = 00888800
[USER_DEFINE]
```

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

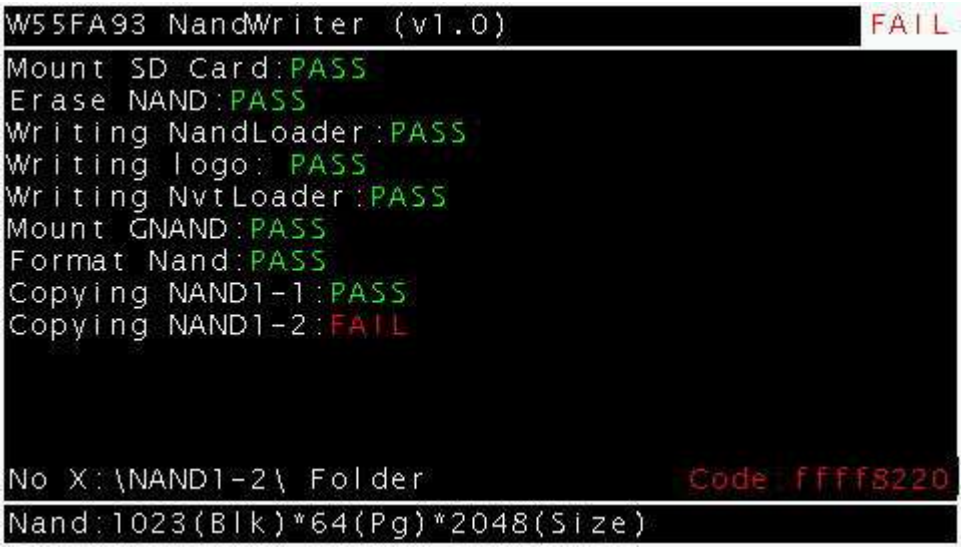
2.3. Operation

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, 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).

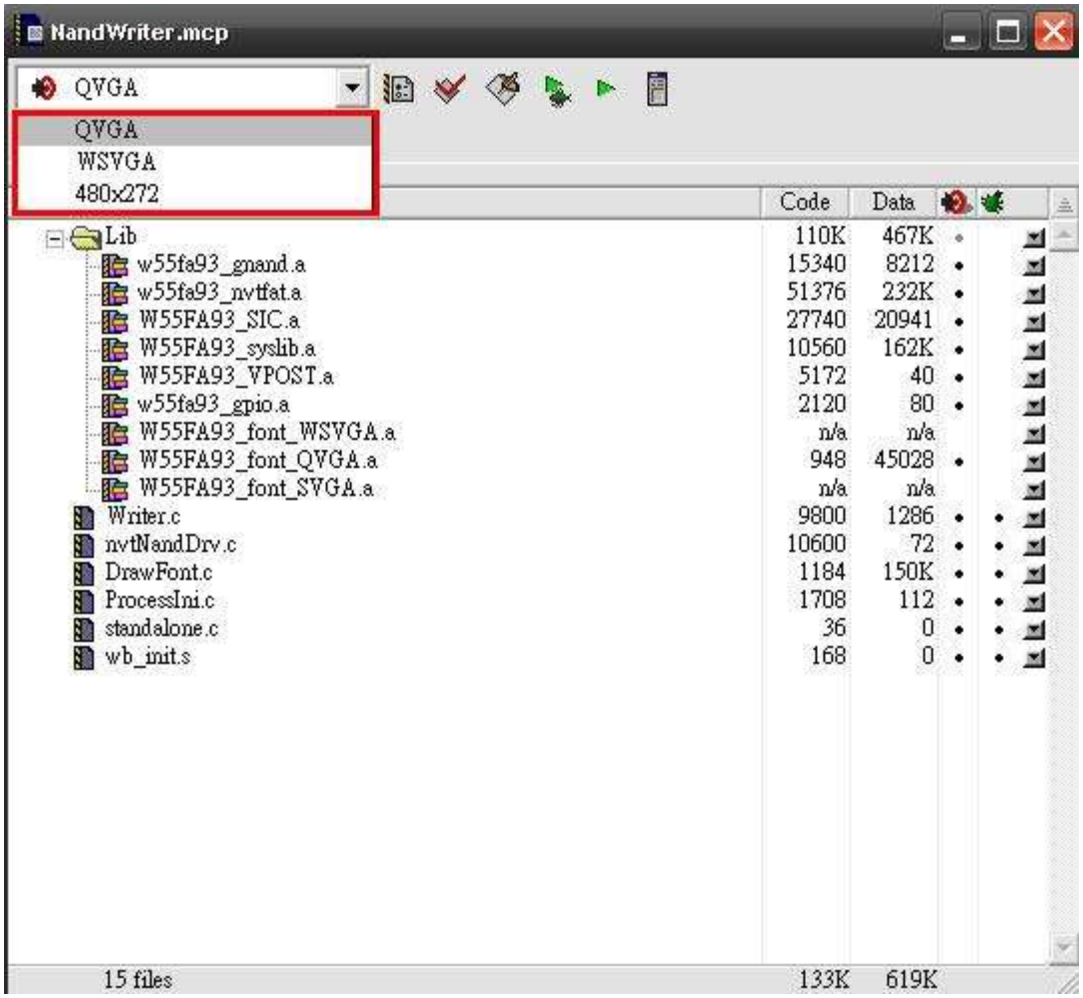


2.4. Modification

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.


NandWriter.mcp
QVGA
QVGA
WSVGA
480x272
Code
Data
Lib 110K 467K
w55fa93_gnand.a 15340 8212
w55fa93_nvtfat.a 51376 232K
W55FA93_SIC.a 27740 20941
W55FA93_syslib.a 10560 162K
W55FA93_VPOST.a 5172 40
w55fa93_gpio.a 2120 80
W55FA93_font_WSVGA.a n/a n/a
W55FA93_font_QVGA.a 948 45028
W55FA93_font_SVGA.a n/a n/a
Writer.c 9800 1286
nvtNandDrv.c 10600 72
DrawFont.c 1184 150K
ProcessIni.c 1708 112
standalone.c 36 0
wb_init.s 168 0
15 files 133K 619K

3. Revision History

Version	Date	Description
V1.0	Feb., 2011	● Created
V1.1	Nov., 2011	Modify this document to meet the NandWriter version 1.1 new features. ● No limitation for file size of INI file ● Copy files in folder NAND1-2 to root folder of partition 2, not "Data" folder.
V1.2	Dec., 2013	Modify this document to meet the NandWriter version 1.4 new features. ● Support user define boot code option from TurboWriter.ini

Important Notice

Nuvoton products are not designed, intended, authorized or warranted for use as components in equipment or systems intended for surgical implantation, atomic energy control instruments, aircraft or spacecraft instruments, transportation instruments, traffic signal instruments, combustion control instruments, or for any other applications intended to support or sustain life. Furthermore, Nuvoton products are not intended for applications whereby failure could result or lead to personal injury, death or severe property or environmental damage.

Nuvoton customers using or selling these products for such applications do so at their own risk and agree to fully indemnify Nuvoton for any damages resulting from their improper use or sales.