

Turbo Writer Tool User Guide

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Support Chips: W55FA

Support Platforms: Windows The information in this document is subject to change without notice.

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1. Introduction

1.1. ISP Introduction

W55FA series have two boot flows – one is Normal mode; the other is Recovery mode. If user wants to do ISP (In System Programming) through USB, the system should be set to <u>Recovery mode</u>.

The boot flow descriptions are as follows

- ≻ FA91
 - \diamond Normal mode boot flow
 - ✓ NAND boot \rightarrow SD card boot \rightarrow USB boot \rightarrow SPI boot
 - ♦ Recovery mode boot flow (Must <u>Remove the SD card</u>)
 - ✓ SD card boot \rightarrow USB boot \rightarrow SPI boot \rightarrow NAND boot
- > FA93
 - \diamond Normal mode boot flow
 - ✓ SD card 0 boot → NAND boot → SPI boot → SD card 1 boot → USB boot
 - ♦ Recovery mode boot flow
 - ✓ USB boot
- > FA95
 - \diamond Normal mode boot flow
 - ✓ SD card 0 boot → SPI boot (GPA[15:12]/NAND) → NAND CS 0 boot→
 NAND CS1 boot → SPI boot (GPD[15:12]) → SD card 1 boot → SD card 2 boot → USB boot
 - \diamond Recovery mode boot flow
 - ✓ USB boot
- > FA92
 - \diamond Normal mode boot flow
 - ✓ SD card 0 boot → NAND CS 0 boot → NAND CS1 boot → SD card 1 boot → SD card 2 boot → USB boot
 - \diamond Recovery mode boot flow
 - ✓ USB boot

1.2. Turbo Writer Introduction

Turbo Writer can program the images into specific flash or download to SDRAM and run. This document will tell user how to program the Linux kernel into W55FA demo board NAND flash and SD Card by Turbo Writer. Here we describe the files within the Turbo Writer folder.

> [Turbo Writer Version History – ChangeLog.txt]

All Turbo Writer tool and Turbo Writer firmware change history is listed in this file.

> [Turbo Writer program – Turbowriter.exe]



Turbo Writer PC Tool execution file.

> [Turbo Writer extra support NAND ID – NAND ID.ini]

User can add new NAND ID that Turbo Writer doesn't support without modifying Turbo Writer firmware.

Ex. If user wants to add H27UAG8T2A to Turbo Writer NAND list without modifying Turbo Writer firmware, he can add the following information into NAND ID.ini.

[1stID]	[2ndID]	[3rdID]	[4thID]	[5thID]	[Page per Block]	[Block per Flash]
AD	D5	94	25	44	128	1024

> [Turbo Writer Configuration for W55FA series Boot Code Header – TurboWriter.ini]

IBR supports some user-defined items in Boot code header about boot code executing address, DRAM clock skew setting, Register writing function (FA95/FA92 only), and delay function (FA95/FA92 only). After confirming the flash content is for booting, IBR will do corresponding operation according to the boot code header before reading boot code to destination address. Using FA95/FA92 boot code header, user can change clock setting, dram setting, engine clock, and so on. The file TurboWriter.ini is for NAND, SD, SPI flash and SPI flash raw data.

			Boot code execution address (FA93/FA95/FA92)
🖡 IurboWriter - 記事本 🔲 🗖 🔀			It can be modified if necessary. Generally, it is the
檔案(F) 編輯(E) 格式(O) 檢視(V)			execution address of Loader (SD/NAND/SPI). FA93
說明(<u>H</u>)		[ADDRESS]	has 3 kinds of N3290X, for N32905 (32MB DRAM),
[ADDRESS]	ľ		the execution address is 0x900000. For N32903
ADDRESS = 00900000			(8MB DRAM) the execution address is 0x700000
[CLOCK_SKEW]			Ear N22001 (2MP SDP AM) the execution address
CKDOSDS - 00001010			101 N32901 (21vid SDKAIvi), the execution address
[USER_DEFINE]			is 0x180000. The execution address of FA95 is
B0000004 = 0003073F			0x900000.
B0000224 = 00000948			
B0000220 = 00000932	~	ICLOCK SKEWI	DOCODE (CVDOCDE values (EA02 orly)
B000020C = 38000110	~	[CLUCK_SKEW]	DQSODS /CKDQSDS values (FA95 only)
B0000214 = 001F0000			
B000021C = 00000100 D0002029 - 25744645			
B0003000 = 04130476		ILISER DEFINE	Register writing / delay function $(FA95/FA92 \text{ only})$
B0003000 = 04030476	ſ		Register writing / delay function (1 A)5/1 A)2 only)
B0003010 = 00000006			
80003004 = 00000021 80003004 = 00000023			Register writing function Format:
B0003004 = 00000027			
B0003020 = 00008000			Addross - Value
B0003024 = 00008000			Address – Value
8000301C = 00002402 80002019 = 00000522			
B0003004 = 00000027			Ex. Set REG_CKDQSDS to 0x00CCDD00
B0003004 = 0000002B			B0003034 = 00CCDD00
B0003004 = 0000002B			B0003031 - 0000BB00
80003018 = 00000432 80002010 - 00002792			
B000301C = 00002402			Delay function Format:
B0003034 = 00CCDD00			
B0003008 = 0000805A			55445544 – Delay time (micro second)
80003004 = 00000020 8000080 = 00500000			JJAAJJAA – Delay time (miero second)
B0000208 = 00008110			
B8008124 = 30000066			Ex. Set Delay 1 second
			55AA55AA = 000F4240

Left figure is an example to change PLL setting to 300MHz and initialize DRAM again [Note1] FA92 DRAM initialization and detection are removed from IBR. So if Boot code execution address is DRAM, user needs to add DRAM initialization to the USER_DEFINE field to initialize DRAM.

> [Turbo Writer Firmware - .bin]

Turbo Writer is connected to Turbo writer firmware which loaded from PC to W55FA series by USB boot. When Turbo Writer connects to USB boot, Turbo Writer will send the corresponding binary file (VA91/FA95/FA95/FA92 Turbo writer firmware) to W55FA series and connects to Turbo writer firmware according to USB boot PID. If USB port is full speed, then user should backup the file FA9X_musb.bin, rename the file FA9X_musb_FullSpeed.bin into FA9X_musb.bin to work.

- ♦ VA91 \rightarrow musb.bin
- ↔ FA93 → FA93_musb.bin/FA93_musb_FullSpeed.bin
- \Rightarrow FA95 \rightarrow FA95_musb.bin/FA95_musb_FullSpeed.bin
- ♦ FA92 → FA92_musb.bin/FA92_musb_FullSpeed.bin

Turbo writer firmware binary file includes

- ♦ Turbo Writer firmware marker : 0x2054564E
- ♦ Turbo Writer firmware executing address : 0x000F00000
- ♦ Turbo Writer firmware size : 0xE3C4
- ♦ Turbo Writer firmware version : $0x11102801 \rightarrow 2011/10/28 V1$
- \diamond Turbo Writer firmware code starts from offset 0x20.

00000000h: 4E 56 54 20 00 00 F0 00 C4 E3 00 00 01 28 10 11 ; NVT ..?彌...(.. 00000010h: 18 F0 9F E5 18 F0 9F E5 18 F0 9F E5 18 F0 9F E5 ; .???????? 00000020h: 18 F0 9F E5 18 F0 9F E5 18 F0 9F E5 18 F0 9F E5 ; .????????

> [Turbo Writer Firmware version]

Turbo Writer firmware version is located at Turbo writer firmware binary file and it can be seen from Turbo Writer Tool as follows.

🤣 nuvoTon Turbo Wr	iter		
2011/10/28-V01 Please choose type :	SDRAM	•	

Figure 1 Turbo Writer Firmware version

[Note2] The Turbo Writer Firmware version for FA93 has another meaning about DRAM size. For example

- The version number 2011/10/28-V01 \rightarrow the DRAM size is 2MB.
- The version number 2011/10/28-V03 \rightarrow the DRAM size is 8MB.
- The version number 2011/10/28-V05 \rightarrow the DRAM size is 32MB.

> [Turbo Writer Tool version]

Turbo Writer PC tool version can be seen from Turbo Writer Tool as follows.



Figure 2 Turbo Writer Tool version

1.3. SDRAM

Turbo Writer SDRAM mode can download the Linux kernel and then execute it. The Linux kernel file is **ConProg.bin**.

- ➢ ConProg.bin −
 - ♦ Browse the file "ConProg.bin"
 - \diamond Set the buffer address: **0x0**
 - \checkmark Linux runs at 0x0.
 - ♦ Select the Option: Download and run
 - \diamond Press the button "Download and run".

🛷 nuvo Ion Turbo Writer	
No Version Please choose type : SDRAM	Mass Storage Connected ! Re-Connect
SDRAM Choose file : C.'FA95_demo'comprog.bin Buffer address: 0x 0 C Download only © Download and run	Browse
ΝυνοΤοη	Download

Figure 3 Download ConProg.bin to SDRAM and Run

1.4. Preliminary Definition

Image Type

Turbo Writer defines five image types. The detailed descriptions are as follows.

- System image
 - ♦ Required image ID is 0x03
 - ♦ Nand/ SD/SPI Loader
 - Loaded and Executed by Internal Boot Code (IBR)
 - Execution address is defined in TurboWriter.ini, FA93 has 3 kinds of N3290X, for N32905 (32MB DRAM), the execution address is 0x900000. For N32903 (8MB DRAM), the execution address is 0x700000. For N32901 (2MB SDRAM), the execution address is 0x180000. The execution address of FA95 is 0x900000.

Other images are loaded by Nand/ SD/SPI Loader

- Execute image
 - Optional image ID is 0x01
 - NvtLoader for SD/Nand/SPI
 - Loader will load image to execution address and run it.
- Logo image
 - Optional image ID is 0x04
 - Logo binary file for display
- Data image
 - Optional image ID is 0x00
 - Data image for user
- RomFS
 - Optional image ID is 0x02
 - Linux RomFS

Example

In the following sections, we use FA95 demo flow to describe how to use Turbo Writer. Here, we use three image types.

- System image
 - ◆ NAND/ SD/SPI Loader
 - NANDLoader_0120.bin
 - SDLoader_0119.bin
 - SpiLoader_GWTFM9563B.bin
 - Execution address is 0x900000
 - TurboWriter.ini
 - [USER_DEFINE] can't be set, if not necessary
 - **Ex. With [USER_DEFINE]**

 \rightarrow Nand/ SD/SPI Loader executing address

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[Address]

Address = 00900000 [CLOCK_SKEW] DQSODS = 00001010 CKDQSDS = 00AAAA00 [USER_DEFINE] B0003034 = 00CCDD00

 Ex. Without [USER_DEFINE] [Address] Address = 00900000
 [CLOCK_SKEW] DQSODS = 00001010 CKDQSDS = 00AAAA00
 [USER_DEFINE]

• Execute image

 \rightarrow Set CKDQSDS to 0x00CCDD00

 \rightarrow Not use in FA95/FA92

 \rightarrow Not use in FA95/FA92

- \rightarrow Nand/ SD/SPI Loader executing address
- \rightarrow Not use in FA95/FA92
- \rightarrow Not use in FA95/FA92
- NvtLoader for NAND/SD/SPI
 - NVT_NAND_GW9563_0120.bin for NAND
 - NVT_SDU0_GW9563_0120.bin for SD
 - Conprog.bin for SPI
- Execution address
 - For N32905 (32 MB SDRAM), 0x800000 for NAND/SD. For N32903 (8 MB SDRAM), 0x600000 for NAND/SD. For N32901(2 MB SDRAM), 0x40000 for NAND/SD.
 - 0x000000 for SPI
- Logo image
 - Logo binary file for display
 - NuvotonLogo_480x272.bin
 - Display buffer address is 0x500000

Our demo Booting flow from IBR to Linux is as follows.



Figure 4 Demo booting flow for NAND

1.5. **NAND Flash**

Turbo Writer for NAND flash is as follows.

- NAND Loader
 - ♦ Choose the type "NAND"

 - ♦ Set Image type "System Image"
 ♦ Browse the file "NANDLoader_0120.bin"
 - \diamond Press the button "Burn"

nuvoIon Iurbo Writer			
No Version Please choose type : NAND	•		Mass Storage Connected ! Re-Connect
NAND	Type Start block : system 0x0	Add New Image No : Image Name : NAI Image Type : C D C L Image execute address Image start block : 0x	NDLoader_0120 Data C Execute C RomFS .ogo C System Image s: 0x
Add New Modify	Erase	Option	Bum Venify
	τοη		Exit

Figure 5 System image – NAND Loader

- > Logo -
 - ♦ Set Image type "Logo"
 - ♦ Image number "1"
 - ♦ Browse the file "NuvotonLogo_480x272.bin"
 - ♦ Set the image execute address: **0x500000**
 - \diamond Set the start block number: **0x4**
 - Because the burned NAND Loader occupies block 0~3, so we could select block 4 to burn ✓ the logo file.
 - ♦ Press the button "Burn"

uvoTon Turbo Writer			
No Version			
lease choose type : NAND	-		Mass Storage Connected ! Re-Connect
NAND			
		Mbba	ew
No Name	Type Start bloc	k End block	
0 NANDLoader_0120	system OxO 72 logo Ox4	0x3 Imag 0x5	e No : 1
		Imag	e Name : NuvotonLogo_480x27
		Imag	e Type : C Data C Execute C RomFS
			📀 Logo 🔿 System Image
		Imag	e execute address : 0x 500000
		Imag	e start block : 0x 4
<			Bum Verify
		, ,	
Add New Modify	/ Erase	Option	
NUVC	TON		Exit

Figure 6 Logo image

- \triangleright NVT Loader-
 - ♦ Image number "2"

 - ♦ Set Image type "Execute"
 ♦ Browse the file "NVT_NAND_GW9563_0120.bin"
 - \diamond Set the executed address: **0x800000**
 - \diamond Set the start block number: **0x6**.
 - Because the burned NAND Loader and logo occupied block 0~5, so we could select block \checkmark 6 to burn execute image
 - \diamond Press the button "Burn"

🛷 nuvoIon Turbo Writer	
No Version Please choose type : NAND	Mass Storage Connected ! Re-Connect
NAND-	
No Name Type Start block End block	ew
0 NANDLoader_0120 system 0x0 0x3 Imag	e No : 2
1 NuvotonLogo_480x2/2 logo 0x4 0x5 2 NVT_NAND_GW956 execute 0x6 0x7 Imag	e Name : NVT_NAND_GW956:
Imag	e Type : 🔿 Data 💿 Execute 🔿 RomFS
	🔿 Logo 🔿 System Image
Imag	e execute address : 0x 800000
Imag	e start block : 0x 6
	Bum Verify
Add New Modify Erase Option	
ηυνοτοη	Exit

Figure 7 Execute image - NvtLoader

> Option button –

User clicks down the button option, UI will show as follows. It includes the information of total size, user could set the system reserved area size, and presses the button of apply to take effect.

🥏 ли	voTon	Turbo Writer							
Ne Ple	o Versio ase cho IAND	ose type : NAND	•					Mass Storage Connected !	Re-Connect
	No	Nama	Tuma	Staut black	End block	Option			
	0 1 2	NANDLoader_0120 NuvotonLogo_480x272 NVT_NAND_GW956	system logo execute	0x0 0x4 0x6	0x3 0x5 0x7		NAND Flash Total Size	124 ME	
							System Reserved Area Size	2 MB	
	<	N					,		Apply
				Tase	Option				
			ТС	N					Exit

Figure 8 Reserved System Area Size

➢ Flash memory map after above step −



+Figure 9 NAND flash memory map



➢ Erase button −

- ♦ System Reserved Area Size
 - User clicks down the button option, UI will show as follows. It includes the information of total size, user could set the system reserved area size, and presses the button of apply to take effect.

ND					- Fras	e	
No	Name	Туре	Start block	End block			
0	NANDLoader_0120	system logo	0x0 0x4	0x3 0x5	0	Erase image No	
2	NVT NAND GW956	execute	0x6	0x7			
					•	Erase all Flash	
						F G	
					0	Erase System Area	
						_	
<				>		Š.	 Apply
-						V	
6.2	d New Modify	F	79.00	Ontion			

Figure 10 Erase

Modify button –

User clicks down the button of Modify, UI will show two options including Image No, and Image Type. User could set Image No., modify its Image Type, and click down the button of Apply to take effect.

No Versia No Versia Please cho NAND -	n Turbo Writer	•				Mass Storage Connected	Re-Connect
No 0 1 2	Name NANDLoader_0120 NuvotonLogo_480x272 NVT_NAND_GW956	Type St system Ox logo Ox execute Ox	art block End block a 0x3 x4 0x5 a 0x7	Modify Image No : Image Type :	© Data	C Execute C RomFS	
	dd New Modify		Option				Apply Exit

Figure 11 Modify image type

SD Card 1.6.

Turbo Writer for SD Card is as follows.

- SD Loader
 - ♦ Insert SD Card
 - \diamond Choose the type "SD"

 - ♦ Set Image type "System Image"
 ♦ Browse the file "SDLoader_0119.bin"
 ♦ Press the button "Burn"

Card					ê dê Maur
No	Name	Туре	Start sector	End sector	
U	SDLoader_0119	system	UXI	UXI6	Image No :
					Image Name : SDLoader_0119
					Image Type : C Data C Execute C RomFS
					🔿 Logo 🕟 System Image
					Image execute address : 0x
					Image start sector : Ux Note: It should be larger than 21h
<				>	Sum Verify

Figure 12 System image – SD Loader

- \triangleright Logo –

 - ♦ Set Image type "Logo"
 ♦ Image number "1"
 ♦ Browse the file "NuvotonLogo_480x272.bin"
 ♦ Set the image execute address: 0x500000

 - \diamond Set the start block number: **0x22**
 - \diamond Press the button "Burn"

Please choose type : SD Card Mass Storage Connected ! Re-Connected ! SD Card			riter	on Turbo Wi	No Versi
SD Card Add New No Name Type Start sector End sector 0 SDLoader_0119 system 0x16 Image No : I	nect	Mass Storage Connected Re-Conn	SD Card 💌	hoose type :	Please cho
No Name 1 ype Start sector End sector 0 SDLoader_0119 system Ox16 Image No : 1 1 Nivertoni.con 480/272 Dv21 fr 1 Image No : 1		Add New		ud	SD Can
		and sector Ind sector xl 0x16 Image No : 1 x22 0x21f	_0119 system ogo_480x272 logo	o Name SDLoader NuvotonL	0 1
Image Name : NuvotonLogo_480x27		Image Name : NuvotonLogo 480x27			
C Logo C System Image		C Logo C System Image			
Image execute address : 0x 500000		Image execute address : 0x 500000			
Image start sector : 0x 22 Note: It should be larger than 21h		Image start sector : 0x 22 Note: It should be larger than 21h			
Bum Venity		Bum Verify			<
Add New Modify Erase Option		Option	Modify Era	Add New	A
	t	Exit	voTo	יטר	ſ

Figure 13 Logo image

- \triangleright NVT Loader-
 - ♦ Image number "2"

 - ♦ Set Image type "Execute"
 ♦ Browse the file "NVT_SDU0_GW9563_0120.bin"
 - ♦ Set the executed address: **0x800000**
 - \diamond Set the start block number: **0x220**.
 - \diamond Press the button "Burn"

🔗 nuvoIon Iurbo Writer	
No Version	
Please choose type : SD Card	Mass Storage Connected ! Re-Connect
- SD Card	
	Add New
No Name Type Start sector End sector 0 SDLoader_0119 system 0x1 0x16	Image No : 2
1 NuvotnLogo 480x272 logo 0x22 0x21f 2 NVT_SDU0_GW9563 execute 0x220 0x3cd	Image Name : NVT_SDU0_GW9563
	Image Type : C Data C Execute C RomFS
	C Logo C System Image
	Image execute address : 0x 800000
	Image start sector : 0x 220 Note: It should be larger than 21h
	Bum Verify
Add New Modify Erase Option	
ΠυνοΤοη	Exit

Figure 14 Execute image - NvtLoader

> Option button –

 \checkmark

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- \diamond User clicks down the button option, UI will show as follows.
 - \checkmark System reserved area size
 - ✓ Enable SD Format
 - Turbo Writer formats SD card as one partition disk
 - If NvtLoader wants to formats SD card as multi- partition disk, user can uncheck this check box
 - SD Port
 - User can select the SD port that he wants to control.

🤣 nuvoTon Turbo Writer			
No Version Please choose type : SD Card SD Card	×		Mass Storage Connected Re-Connect
No Name	Tyme Start sector	End sector	Option
0 SDLoader_0119 1 NuvotonLogo_480x272 2 NVT_SDU0_GW9563	system 0x1 logo 0x22 execute 0x220	0x16 0x21f 0x3cd	SD Card Total Size 241 ME
			System Reserved Area Size MB
			₩ Enable SD Format
			SD Port: Port0 Port1 Port2
<			Apply]
Add New Modify	Erase C)ption	
Πυνο	τοη		Exit

Figure 15 Option for SD

➢ Flash memory map after above step −



Figure 16 SD Card memory map

➢ Erase button −

User clicks down the button of Erase, UI will show two options including Erase image No and Erase all Flash. User should select the one of two options, and click down the button of Apply to take effect.

🤣 nuvoIon Turbo Writer			
No Version Please choose type : STD Court			Mass Storage Connected I Re-Connect
SD Card			Ke-Colliect
No Name 0 SDLoader_0119 1 NuvotnLogo_480x272 2 NVT_SDU0_GW9563	Type Start sector End sector system 0x1 0x16 logo 0x22 0x21f execute 0x220 0x3cd	Erase Erase image No Erase all Flash	
Add New Modify	Ersse Option	%	Apply
Πυνο	τοη		Exit

Figure 17 Erase

Modify button –



User clicks down the button of Modify, UI will show two options including Image No, and Image Type. User could set Image No., modify its Image Type, and click down the button of Apply to take effect.

InvoTon Turbo Writer No Version Please choose type : SD Card	Mess Storage Connected ! Re-Connect
SD Card No Name Type Start sector End sector 0 SDLcoder_0119 system Ox1 Ox16 1 NwvotonLogo_480x272 logo Ox22 Ox21f 2 NVT_SDU0_GW9563 execute Ox220 Ox3cd Image: Comparison of the sector Image: Comparison of the sector Ox3cd Add New Modify Erase Option	Modify Image No : Image Type :
ηυνοΤοη	Exit

Figure 18 Modify image type

1.7. **SPI Flash**

Turbo Writer for SPI Flash is as follows.

- > SPI Loader -
 - \diamond Choose the type "SPI"

 - ♦ Set Image type "System Image"
 ♦ Browse the file "SpiLoader.bin"
 ♦ Press the button "Burn"

Versio: æ choc	n ose type : SPI	-		Mass Storage Connected ! Re-Connect
	Name SpiLoader	Type system	Start offset End offset 0x0 0x0	Add New Image No : Image Name : SpiLoader Image Type : Data C Execute C RomFS C Logo C System Image Image execute address : 0x Image start bank: 0x
Ad	ld New	Modify	Erase	Bum Venfy

Figure 19 System image – SPI Loader

- ≻ Logo –

 - ♦ Set Image type "Logo"
 ♦ Image number "1"
 ♦ Browse the file "NuvotonLogo_480x272.bin"
 - \diamond Set the image execute address: **0x500000**
 - \diamond Set the start block number: **0x1**
 - \diamond Press the button "Burn"

🤣 nuvoTon Turbo Writer		
No Version Please choose type : SPI SPI No Name	Type Start offset End offse	Mass Storage Connected Re-Connect
0 SpiLoader 1 NuvotonLogo_480x272	system 0x0 0x0 logo 0x1 0x4	Image No: 1 Image Name: NuvotonLogo_480x27 Image Type: Data Execute C Logo System Image Image execute address: 0x Image start bank: 0x Image start bank: 0x Image start bank: 0x Image start bank: 0x
		Exit

Figure 20 Logo image

- \triangleright Linux Kernel Image-
 - \diamond Image number "2"
 - ♦ Set Image type "Execute"



- ♦ Browse the file "conprog.bin"
 ♦ Set the executed address: 0x0
 ♦ Set the start block number: 0x5.
- \diamond Press the button "Burn"

🥏 п	voTon	Turbo Writer				
N Ple	o Versio ase cho SPI ——	n ose type : SPI	•			Mass Storage Connected
	_	1				- Add New-
	No	Name Spil order	Type	Start offset	End offset	In the No. 2
	1	NuvotonLogo_480x272	logo	0x1	0x4	
	2	conprog	exec	Ux5	Ux26	Image Name : conprog
						Image Type : 🔿 Data 💿 Execute 🔿 RomFS
						C Logo C System Image
	-					Image execute address : 0x 0
						Image start bank: 0x 5
						Sun Verify
	-					
	Ad	ld New M	fodify		Erase	
	_	_				
		UVO	I C	n		Exit

Figure 21 Execute image – Linux Kernel



➢ Flash memory map after above step −



Figure 22 SPI Card memory map

- \succ Erase button
 - \diamond User clicks down the button option, UI will show as follows.
 - ✓ SPI Flash size
 - ✓ Two options including Erase image No and Erase all Flash.
 - Select one of two options, click down the button of Apply to take effect.

No 0 1 2	Name SpiLoader NuvotonLogo_480x272 conprog	Type system logo exec	Start offset End offset 0x0 0x0 0x1 0x4 0x5 0x26	C Erase image No
				SPI Flash Size: 16384 KB
Ad	ld New M	lodify	Erase	Apply

Figure 23 Erase

➢ Modify button −

User clicks down the button of Modify, UI will show two options including Image No, and Image Type. User could set Image No., modify its Image Type, and click down the button of Apply to take effect.

No Versio Please choo	Turbo Writer m ose type : SPI	•				Mass Storage Connected	Re-Connect
No 0 1 2	Name SpiLoader NuvotonLogo_480x272 conprog	Type system logo exec	Start offset End off 0x0 0x0 0x1 0x4 0x5 0x26	Modify Image No : Image Type :	C Data	C Execute C RomFS	Apply
							Exit

Figure 24 Modify image type

1.8. SPI Flash – Raw Data

SPI (Raw Data) displays the SPI flash and supports Image burn, data read back from SPI flash, Make Rom function. The SPI (Raw Data) interface is as follows.

No Version lease choose type : SP	I (Raw Data) 💌		Mass Storage Connected !	Re-Connect
SPI (Raw Data)				
Choose file :	C:Nest.bin		Browse Make Rom	J
Save file :	C:\Readback.bin		Browse Read	
-	[BumVerify	
	SPI Flash Size: 16394 KB	Read blocks for Save file:	256 blocks (1 block is 64 KB)	
	-T			Tada

Figure 25 SPI(Raw) Mode

- ➢ Burn button −
 - ♦ User can use the binary file made by "Make Rom" or any other images
 ✓ Turbowriter will burn the specified file. Using the button "Make F
 - Turbowriter will burn the specified file. Using the button "Make Rom", it will add FA93/FA95 Boot code header automatically, and export the specified file.
- Verify button –

♦ User can verify the binary file just burn into SPI flash (Read back and compare)

- ➢ Read button −
 - ♦ Read Back size
 - ✓ Minimum Read back unit: 64KB
 - ✓ Maximum read back block number will be the read back default value.

Turbo Writer supports SPI MKROM utility for user to build a packed image. This image includes SpiLoader_ GWTFM9563B.bin, NuvotonLogo_480x272.bin and Linux kernel – ConProg.bin.

SpiLoader.bin -

- Set Image type "System Image"
- Browse the file "SpiLoader_GWTFM9563B.bin"

NuvotonLogo_480x272.bin -

- Set Image type "Logo"
- Image number "1"
- Browse the file "NuvotonLogo_480x272.bin"

- Set the executed address: 0x500000
- Set the start block number: 0x1

ConProg.bin -

- Image number "2"
- Set Image type "Execute"
- Browse the file "ConProg.bin"
- Set the executed address: 0x0
- Set the start block number: 0x4
- ➤ Make Rom
 - ♦ User can add / Modify / Remove image to / from Image list
 - ♦ User press "Make" to create binary file with FA93/FA95 Boot code header.
 - ✓ When user press "Make", it will show a window to set the path and file name for the binary file.

N	Name	Туре	Execute address	Start offset	End offset	
0 1 2	SpiLoader_GWTFM9563B NuvotonLogo_480x272 conprog	system Logo execute	0x500000 0x0	0x0 0x1 0x5	0x0 0x4 0x22	
						Add
						Modify
						Remove

Figure 26 MKROM utility map

♦ User can set Image No, Image Name, Image Type, Image execute address, and Image start block

	Add
I	Image No :
I	Image Name :
I	Image Type : 💿 Data 🔿 Execute 🔿 RomFS
	🔿 Logo 🦳 System Image
I	Image execute address : Ox
I	Image start bank : Ox
I	Cancel OK

Figure 27 Add image in MKROM utility

2. Revision History

Version	Date	Description
V2.01.007	Mar. 26, 2013	 Add description for FA92 Add FA93 Firmware number description about DRAM size (N32901U1DN / N32903U1DN / N32905U1DN)
V2.01.006	May. 29, 2012	 Add description for SPI (Raw Data) Make ROM Read back Data from SPI flash
V2.01.005	Feb. 23, 2012	 Add description for FA95 Modify description for new version UI Add description for new function SD format SD Port SPI Flash Size
V2.01.004	Nov. 4, 2010	 Change the file name of firmware for FA93. Its name is FA93_musb.bin
V2.01.003	Oct. 25, 2010	 16 bytes file name for FA91, and 32 bytes for FA93.
V2.01.002	Oct. 19, 2010	 Reduce the checking time for the file TurboWriter.ini,
V2.01.001	Sep. 30, 2010	 Support 32 bytes file name for FA93 later
V2.00.001	Sep. 20, 2010	Modify for W55FA series,Support header of boot loader image.
V1.2	May, 2010	 Add NVT Loader for NAND
V1.1	May, 2009	Add SPI and SPI (raw data) mode
V1.0	Apr, 2009	Created

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