

SE1000 Download Tool User Guide

SiEngine Technology Co., Ltd. 芯擎科技有限公司

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Revision History

Revision	Date	Description
V1.1	2022-3-25	First release
V1.2	2022-7-28	Revise for SDK1.3 release
		1. Optimized interface
		2. Support GPT download
		3. Add progress bar
		4. Add emmc download
V1.4	2022-9-26	Revise for SDK1.4 release
		1. Optimized interface
		2. Support All lun GPT download
		3. Support sparse image download
V1.5	2022-11-25	1. Optimize usb download speed
		2. Do not need to reinstall the android adb driver each time you power on
		 No ddr training, no need to choose different download tools according to the board, also speed up the fastboot flash time
		4. You can select a folder to download batch files
		5. Partition cfg can select Ufs.xml
		6. Add the usb sn display
		7. Add auto fastboot flash check box
V1.6	2023-02-23	1. Add gpt erase
		2. Support lun sparse
V1.7	2023-09-19	1. Update for recent download tool changes



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SE1000 Download Tool User Guide

1.Introduction

SiEngine Download Tool is a tool used for downloading UFS on SE1000 chip, its basic principle is through the SE1000 USB2.0 port and use a upper to download the program.

1.1 What's in the download tool

📔 downloader_fip_emmc.bin
📔 downloader_fip_svi.bin
📔 downloader_fip_ufs.bin
siengine.ico
🕌 siengine_downloadtool.exe
ufs-device-configuration.xml
ufs-rpmb-configuration.xml
🗱 usb_driver_r13-windows.zip

Figure1-1 What's in the download tool

- downloader_fip_emmc.bin: fip file used to download the code to be downloaded to the EMMC
- downloader_fip_ufs.bin: fip file used to download the code to be downloaded to the UFS
- downloader_fip_svi.bin: fip file used to download the bare metal image
- siengine_downloadtool.exe: SE1000 USB Download file on the upper
- usb_driver_r13-windows.zip: adb fastboot driver
- ufs-device-configuration.xml: UFS configuration file
- ufs-rpmb-configuration.xml: UFS RPMB configuration file

1.2 Introduction to upper computer software

1: Select storage area. You can choose UFS, EMMC. After SE1000 usb2 connect to the computer, a usb serial number will be shown in this area.

2: Bottom area.

Click "fastboot flash" to load the fastboot file

Click "browser" to select the file to download. The selected file will be displayed in the text box after selection.

Click "oem" to send the contents of the oem command setting area to EVB. Oem cmd, which can send instructions to the chip. (oem command setting area You can send "oem setufs LUN LBA" to specify which LUN and LBA to download. LUN number is 0 by default, and LBA is 0 by default.)

Click "download" to download the selected file.

Click "batch download" to download all LUN files in One click.

Click "GPT download" to download GPT partition file.Click "GPT enable" to enable GPT. Click "partition cfg" to set the size of the UFS LUN.

Click "rpmb enable" to enable ufs rpmb. Click "rpmb disable" to disable rpmb.

- 3: Log printing area, will print the download information.
- 4: Progress bar area. This area shows the real-time progress of the download.

Download 1 FLASH TYPE: UFS usb sn : 14002386532c0030 FASTBOOT: fastboot flash auto SELECT FILE: browser C: /work/USB/upper/sienginedownloadtool s OEM CMD: oem oem setufs 3 DOWNLOAD: download batch download GPT: GPT enable GPT download GPT: GPT enable GPT download PARTITION: partition cfg 2 RPMB: rpmb enable rpmb disable	siengine_dow	ownloadtool_VX.X.X	x		-		×
FLASH TYPE: UFS usb sn : 14002386532c0030 FASTBOOT: fastboot flash □ auto SELECT FILE: browser C: /work/USB/upper/sienginedownloadtool s OEM CMD: oem oem setufs 3 DOWNLOAD: download batch download GPT: GPT enable GPT download GPT: partition cfg 2 PARTITION: partition cfg 2 RPMB: rpmb enable rpmb disable	Download			. 1			
FASTBOOT: fastboot flash auto SELECT FILE: browser C:/work/USB/upper/sienginedownloadtool s OEM CMD: oem oem setufs 3 DOWNLOAD: download batch download GPT: GPT enable GPT download GPT erase PARTITION: partition cfg RPMB: rpmb enable rpmb disable Select file: C:/work/USB/upper/sienginedownloadtool sdk1.5/ 3	FLASH TYPE:	UFS ~	usb sn : 14002386532c0030	1			
SELECT FILE: browser C:/work/USB/upper/sienginedownloadtool s OEM CMD: oem oem setufs 3 DOWNLOAD: download batch download GPT: GPT enable GPT download GPT erase 2 PARTITION: partition cfg RPMB: rpmb enable rpmb disable 2 Select file: C:/work/USB/upper/sienginedownloadtool sdk1.5/	FASTBOOT:	fastboot flash	🗖 auto				
OEM CMD: oem oem setufs 3 DOWNLOAD: download batch download GPT: GPT enable GPT download GPT erase 2 PARTITION: partition cfg RPMB: rpmb enable rpmb disable Select file: C:/work/USB/upper/sienginedownloadtool sdk1.5/ 3	SELECT FILE:	browser	C:/work/USB/upper/siengine	edownlo	adtool	. 3	
DOWNLOAD: download batch download GPT: GPT enable GPT download GPT erase 2 PARTITION: partition cfg RPMB: rpmb enable rpmb disable Select file: C:/work/USB/upper/sienginedownloadtool sdk1.5/ 3	OEM CMD:	oem	oem setufs 3				
GPT: GPT enable GPT download GPT erase 2 PARTITION: partition cfg rpmb disable 2 RPMB: rpmb enable rpmb disable 2 Select file: C:/work/USB/upper/sienginedownloadtool sdk1.5/ 3	DOWNLOAD:	download	batch download				
PARTITION: partition cfg RPMB: rpmb enable rpmb disable Select file: C:/work/USB/upper/sienginedownloadtool sdk1.5/ 3	GPT:	GPT enable	GPT download GPT erase		¢	2	
RPMB: rpmb enable rpmb disable Select file: C:/work/USB/upper/sienginedownloadtool sdk1.5/	PARTITION:	partition cfg			4	2	
Select file: C:/work/USB/upper/sienginedownloadtool sdk1.5/	RPMB:	rpmb enable	rpmb disable				
no fast boot usb connected, please insert usb fast boot usb connected ready to download							
4							

Figure1-2 Upper User Interface



2. Download steps for UFS



The basic operation flow of download for UFS :

Figure2-1 Basic Operation Flow

2.1 Preparing the Test Environment

Connect the serial port cable and USB2.0 cable to the EVB and switch the BOOT CFG DIP switch (sw1-1) to the USB BOOT CFG mode. The power cable is in the upper right corner of the board. Then restart the EVB.





Figure2-2 Preparing the Test Environment 1



Figure2-3 Preparing the Test Environment 2

Open the serial port assistant, select the serial port with the smallest serial number, connect the power cord, and power on (press the power button on the board, the top button of the reset button , and the top button of the LED lights up after pressing it).

Open device manager on PC, it indicates that the PC has installed android ADB driver, and the driver installation step can be skipped.

If you see as, the computer does not have an Android ADB driver installed. Do not skip



the driver installation step.



Figure 2-4 Preparing the Test Environment 3



Figure2-5 Preparing the Test Environment 4



2.2 Installing drivers

1) Right click on Android2.0 and click "update driver".

▼ 【 2 其他设备	
AAP Ser	ver
AAP Ser	ver
Android	20
Wirel	更新驱动程序(P)
> 📊 人体学输	禁用设备(D)
> 🛓 软件设备	卸载设备(U)
> 📑 软件组件	
> 🖬 声音、视	扫描检测硬件改动(A)
> 🕕 鼠标和其	层性(P)
> 🕴 通用串行	/#51工(下)

Figure2-6 Installing Drivers 1

2) Select browse my computer to find drivers.

← ■ 更新驱动程序 - Android 2.0	
你要如何搜索驱动程序?	
→ 自动搜索驱动程序(S) Windows 将在你的计算机中搜索最佳可用驱动程序,并将其安装在你的设备上。	
→ 浏览我的电脑以查找驱动程序(R) 手动查找并安装驱动程序。	
	田が出
	取消

Figure 2-7 Installing Drivers 2

3) Select let me choose from the list of drivers available on my computer.

÷	■ 更新驱动程序 - Android 2.0	~
	浏览计算机上的驱动程序	
	在以下位置搜索驱动程序: Cr\software\CDM-v2.14.1.2-WHQL-Certified	
	☑包括子文件夹(I)	
	→ 让我从计算机上的可用驱动程序列表中选取(L) 此列表将显示与该设备兼容的可用驱动程序,以及与该设备属于同一类别的所有驱动程序。	
	取(N) 取	肖

Figure2-8 Installing Drivers 3

4) Click "Next Page."



 ▲ 夏新驱动程序 - Android 2.0 从以下列表选择设备的类型。 常见硬件类型(H): ■示所有设备 ● 61883 设备 ■ Android Device ● Barco ClickShare Devices ■ Compute accelerators ● DellUtils 	^	
从以下列表选择设备的类型。 常见硬件类型(H): ■ GB83 设备 ■ Android Device ■ Barco ClickShare Devices ■ Compute accelerators ■ DellUtils	^	
从以下列表选择设备的类型。 常见硬件类型(H): ■ 61883 设备 ■ Android Device ■ Barco ClickShare Devices ■ Compute accelerators ■ DellUtils	^	
常见硬件类型(H): □示所有设备 ■ 61883 设备 ■ Android Device ■ Barco ClickShare Devices ■ Compute accelerators ■ DellUtils	^	
 ■示所有设备 ● 61883 设备 ■ Android Device ● Barco ClickShare Devices ■ Compute accelerators @ DellUtils 	^	
 ● 61883 设备 ■ Android Device ● Barco ClickShare Devices ■ Compute accelerators @ DellUtils ■ DellUtils ■ Compute accelerators ■ DellUtils ■		
Android Device Barco ClickShare Devices Compute accelerators DellUtils		
Barco ClickShare Devices Gompute accelerators DellUtils		
Compute accelerators		
PollUtils		
▶ DriverInterface		
PVD/CD-ROM 驱动器		
🛱 ELTIMA Shared Serial Ports		
FS CFS 元数据服务器筛选器		
FS HSM 筛选器		
→ FS 安全性增强器筛选器	~	
下一页(N)	HU	(消

Figure2-9 Installing Drivers 4

5) Click "Next page."

				×
←	重更新驱动程序 - Android 2.0			
	选择要为此硬件安装的设	备驱	动程序	
	请选定硬件设备的厂商和 请单击"从磁盘安装"。	ロ型も	号,然后单击"下一步"。如果手头有包含要安装的驱动程序的磁盘,	
	٢æ	^	mu	
)时 (Conoric LISB Hub)		9 Generic SuperSpeed USB Hub	
	(JEFE 1667 兼容 ACT)		Generic USB Hub (ASMedia Technology Inc)	
	(IEEE 1667 兼容接收器)		Generic USB Hub (Microsoft)	
	(Standard system devices)	~		
	📮 这个驱动程序已经过数字签名	3.	从磁盘安装(H)	
	告诉我为什么驱动程序签名行	夏重夏	<u> </u>	
			下一页(N) 取消	

Figure2-10 Installing Drivers 5

6) Click "Browse".



	从磁盘安装	ц.	×	磁盘
Г (G		插入制造商的安装盘,然后确定已在下面选定正确的驱动 器。	确定 取消	
(IE (IE (St		制造商文件复制来源(C):	浏览(B)	-1)

Figure2-11 Installing Drivers 6

7) Decompress usb_driver_r13-windows.zip in the installation package and select the file android_winusb.inf. Click "open".

🌆 查找文件					×
查找范围(I):	usb_driver		~	G 🤌 📂 🗉	-
大 快速访问 桌面 库	名称 amd64 i386 。android_wi	nusb.inf		修改日期 2021/10 2021/10 2021/10)/28 10:03)/28 10:03)/28 10:03
レーレーレーレーレーレーレーレーレーレーレーレーレーレーレーレーレーレーレ	< 文件名(N): 文件类型(T):	android_winus 安裝信息 (*. i	b. inf nf)	×	打开(0) 取消

Figure2-12 Installing Drivers 7

8) Click "Ok".

÷	更新驱动程 选择要为此	序 - Android 2.0 硬件安装的设备驱动程序		
	从磁盘安	装	×	磁盘,
		插入制造商的安装盘,然后确定已在下面选定正确的驱动器。	确定 取消	
	Г [—] (G (IE (IE	制造商文件看制來適(C)·		
	(、) (二) (二) (二) (二) (二) (二) (二) (二) (二) (The second sec	览(B)	⊣)
		T_7	5(NI)	田以光

Figure2-13 Installing Drivers 8

9) Select "Android Bootloader Interface" and click on the next page.

									\times
÷	📘 更新	驱动程序 - Androi	d 2.0						
	选择要	为此硬件安装	的设备驱动	加程序					
	?	请选定硬件设备 请单击"从磁盘安	的厂商和型号, [装 "。	然后单击"下-	一步"。如果手头	有包含要安	装的驱动程	序的磁盘,	
	型号								1
	C And	Iroid ADB Interfac Iroid Bootloader II Iroid Composite A	nterface						
	📮 此 1 5	区动程序包含 Auth 斥我为什么驱动程	nenticode(TM) <u>序签名很重要</u>	技术签名。			从磁盘安	? 装(H)	
						শ	一页(N)	取消	

Figure2-14 Installing Drivers 9

10) Pop up "Update driver Warning", click "Yes".

←	更新驱动程序 - Android 2.0	×
ì	先择要为此硬件安装的设备驱动程序	
	更新驱动程序警告	亨的磁盘,
Г	不推荐安装这个设备驱动程序、因为 Windows 无法验证这个驱动程序是否与 硬件兼容,如果驱动程序不兼容,你的硬件将无法正常运行,计算机可能会不 稳定或完全停止运行,你想继续安装这个驱动程序吗?	
	当 こ 是(竹) 否(N) 二 Android Composite ADB Interface	
[此驱动程序包含 Authenticode(TM)技术签名。 告诉我为什么驱动程序签名很重要	装(H)
	(N)页一可	取消

Figure2-15 Installing Drivers 10

11) Display "Updated your driver successfully", click close.

← ∎ 更新驱动和 Windows	^{呈序 - Android Bootloader Interface 已成功更新你的驱动程序}	
Windows 단3	≷装完此设备的驱动程序: droid Bootloader Interface	

	关闭(C)

Figure2-16 Installing Drivers 11

12) Power on the Device again. You can find Android Device in Device Manager.





2.3 UFS Configuration

If the current SE1000 chip is empty or the UFS partition size needs to be reconfigured, use the UFS configuration function to configure LUN partitions of the UFS.

1. Choose FLASH TYPE to "UFS".Click "fastboot flash" button to enter usb download state. You can choose the auto checkbox so you don't have to click the fastboot flash button every time

🐜 siengine_dow	nloadtool_VX.X.	x – – ×						
Download								
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030						
FASTBOOT:	fastboot flash	□ auto						
SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s						
OEM CMD:	oem	oem setufs 3						
DOWNLOAD:	download	batch download						
GPT:	GPT enable	GPT download GPT erase						
PARTITION:	partition cfg							
RPMB:	rpmb enable	rpmb disable						
Select file C:/work/USE no fast boo fast boot u ready to do	: /upper/siengin t usb connecto sb connected wnload	nedownloadtool sdk1.5/ ed, please insert usb						
	SiEngine Inc.Convright 2023 All Rights Reserved							

Figure2-18 UFS Configuration 1

ufs_verify_init attr_id : 0xa_value : 0x0			
link start up finished	am siengine dow	unloadtool VX X	x — — X
Please use 'ufs ready LUN' to clear UAC before read/write blocks if devi	all stengine_det	1100000-17.20	
0	Download		
SVI> MICRON UFS	ELACH TYPE.	LIFE V	uch cn + 14002286522c0020
ufa dass 100 200000	FLASH TYPE:	Urs V	usb sh : 140023603320030
Power mode change start	FACTROOT	faathaat flaah	E sute
Power mode change completed	FASTBOOT:	Tastboot flash	auto
Power mode change start	OF LEGT FUE	harden and	C: /work/IISP/upper/ai anging downloadt ool a
Power mode change completed	SELECT FILE:	browser	c.) work/ 05b/ upper/ stenginedownroaucoor s
check current rate: 0x2	0.014.0140		
0	OEM CMD:	oem	oem setuts 3
SVI> USB2 clock regs init			
wait for speedbridge connectingAXICLK register:10101	DOWNLOAD:	download	batch download
PHYCLK register:10000		COT II	
strings_dev[2].s = 14002386532c0030	GP1:	GPT enable	GPT download GPT erase
USB dwc2 udc probe			1
collogo dus2 a social function register ok	PARITION:	partition cfg	
as open			
0 0	RPMB:	rpmb enable	rpmb disable
as open: usb not ready			
ret = -105usb not ready, please insert usb cable	foot boot 1	ab composited	
get config: c 4f610, speed 3, type: 2	1430 0000 0	as connected	
get config: c 4f610, speed 3, type: 2	ready to do	ownload	
get config: c 4f610, speed 3, type: 2	no fast bor	t ush connect.	ed please insert ush
crq->brequest:0x0	10 1400 000	o abb comicco.	da, prodoc incoro abb
dwc2_ep_enable: 00000000041278	fast boot u	isb connected	
dwc2_ep_enable: enabled epiin-bulk, stopped = 0, maxpacket = 512	ready to do	umload	
dwc2 en enable: 00000000001f308	10440, 00 40		
dwc2_ep_enable: enabled ep2out-bulk, stopped = θ , maxpacket = 512			
usb ep enable: ret 0			
gserial connect			SiEngine, Inc.Copyright 2023.All Rights Reserved
gserial_connect: start ttyGS0			,, <u>,</u> , <u>,</u>
usb serial port:0 is ready,			

Figure2-19 UFS Configuration 2

2. Click "partition cfg" button to get the configuration in ufs-device-configuration.xml and

then configure it in UFS. After the UFS is configured, power on and restart the EVB.

Sim siengine_downloadtool_VX.X.X – 🗆 X							
Download							
FLASH TYPE:	UFS ~	usb sn : 14002386532c0030					
FASTBOOT:	fastboot flash	🗆 auto					
SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s					
OEM CMD:	OEM CMD: 0em loem setufs 3						
DOWNLOAD:	download	batch download					
GPT:	GPT enable	GPT download GPT erase					
PARTITION:	partition cfg						
RPMB:	rpmb enable	rpmb disable					
fast boot u	usb connected						
ready to do	ownload						
no fast boo	ot usb connect	ed, please insert usb					
fast boot u	isb connected						
ready to do	ready to download						
SiEngine, Inc.Copyright 2023.All Rights Reserved							
	Figure2-2	0 UFS Configuration 3					

3. After you click partition cfg, a dialog box is displayed. You can select the ufs xml file anywhere or rename it.

anna 打开					×
← → · ↑ 🔤 « 新建文件夹 → USB Dor	wnloader Tool > 20230208-V5.0.10 > siengine_downlo	adtool_V5.0.10	5 V		gine_downloadtool
组织 ▼ 新建文件夹					· · · · · · · · · · · · · · · · · · ·
◇ 📌 快速访问	^ 名称 ^	修改日期	类型	大小	
	downloader_fip_emmc.bin downloader_fip_svi.bin downloader_fip_ufs.bin readme.txt its siengine_downloadtool.exe ufs-device-configuration.xml ufs-rpmb-configuration.xml UG_SE1000_Download_Tool_User_Guide.do usb_driver_r13-windows.zip	2023/2/2 14:37 2022/11/3 11:16 2033/2/6 11:20 2023/2/6 11:50 2022/6/21 15:41 2023/2/6 12:09 2022/12/30 16:09 2022/12/30 16:09 2022/12/1 10:56 2023/2/23 14:12 2022/10/24 9:56	BIN 文件 BIN 文件 BIN 文件 文本文档 圖标 应用程序 XML 文档 XML 文档 XML 文档 WinRAR ZIP 压缩文件	168 KB 132 KB 160 KB 2 KB 67 KB 12,640 KB 3 KB 8,856 KB 8,856 KB 8,479 KB	
 ○ 1 ×11 ◆ 下戦 > 首乐 > ■ 桌面 > ☆ OS (C:) > 〒 wuhan yan.li (\\10.12.6.21) (Y:) 文件名(N): 	~				~
				打开(O)	取消

Figure2-21 UFS Configuration 4



6 0 0 gs_open: usb not ready ref = -105usb not ready	and signal down	vnloadtool_VX.X	α – Ο X	
get config: c 4f610, speed 3, type: 2 get config: c 4f610, speed 3, type: 2	Download			
get config: c 4f610, speed 3, type: 2 crq-sbrequest:0x0 dwc2.en_emble: 000000000004f379	FLASH TYPE:	UFS ~	usb sn : 14002386532c0030	
dwc2_ep_enable: enabled eplin-bulk, stopped = 0, maxpacket = 512 usb ep enable: ret 0	FASTBOOT:	fastboot flash	auto C /work (IISR/unper/signational signation) =	
dwc2_ep_enable: 00000000004f308 dwc2_ep_enable: enabled ep2out-bulk, <mark>stopped</mark> = 0, maxpacket = 512	OFM CMD:	oem	oem setufs 3	
usb ep enable: ret 0 gserial_connect gserial_connect: start ttvGS0	DOWNLOAD:	download	batch download	
usb serial port:0 is ready,	GPT:	GPT enable	GPT download GPT erase	
cmd:oem final	PARTITION:	partition cfg		000000000000000000000000000000000000000
Cc18000000000000000000000000000000000000	RPMB:	rpmb enable	rpmb disable	
cmd:cem ufsconfig2 0c00020000000000000000000000000000000	0x00000030	0c000200,		000000000010000000000030c00
cmd:oem final	0x0000000000 0x00000000000000000000000	10000000, 10000000, 12000000,		
cmd:cem ufsconfig1 007f0101010001e6000000000000000000000000000	0x000000000000000000000000000000000000	10000000, 100000000, 100000000,		000000000002010000000000000000000000000
cmd:oem ufsconfig2 0c00020000000000000000000000000000000	0x000000000 set ufs ok	0000000,		0000000001000000000030c00
ufs config attr id : 0x0, value : 0x1				
			SiEngine, Inc.Copyright 2023.All Rights Reserved	

Figure2-22 UFS Configuration 5

Notes:

You do not need to repeat the configuration on the EVB where UFS is configured. Repeated configuration will delete all data in the UFS. After you modify the XML configuration file and partition cfg, all data in the UFS will be cleared and all mirrors need to be download again. After configuring the UFS, restart the EVB.



2.4 Starting Download

- 1. Before downloading, it's important to understand raw images and sparse images. Raw images are uncompressed original images, while sparse images are compressed images. Sparse images are smaller and have shorter download times compared to raw images. For a very large image, sparse compression can significantly reduce its size. This download tool supports both raw images and sparse images, and it will automatically recognize whether it is a raw image or a sparse image. There are three ways to download a sparse image:
 - 1. Perform a format operation first and then download all LUNs.
 - 2. Manually erase the target area before downloading the image for that region.

3. If it's a LUN file, change the image name to "lunx_fip.bin," and the download tool will automatically erase the LUN before proceeding with the download. Raw images can be downloaded directly without erasing.

2. Open the siengine_downloadtool.exe. Click "fastboot flash" button, "ready to download " will be printed in the log area , and serial port printing as shown in the picture below.

🦮 siengine_dow	nloadtool_VX.X.	x	-		×
Download					
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030			
FASTBOOT:	fastboot flash	🔽 auto			
SELECT FILE:	browser	C:/work/USB/upper/sienginedown]	.oadtoo	1 5	
OEM CMD:	oem	oem setufs 3			
DOWNLOAD:	download	batch download			
GPT:	GPT enable	GPT download GPT erase			
PARTITION:	partition cfg				
RPMB:	rpmb enable	rpmb disable			
0x000000000 0x00000000 0x00000000 0x000000	0000000, 0000000, 0000000, 0000000, 000000				
				_	
		SiEngine, Inc.Copyright 202	3.All Rigł	nts Rese	rved

Figure2-23 Starting Download 1



0	4		
SVI> MICRON UFS	and siengine_do	wnloadtool_VX.X.	x – 🗆 ×
ufs desc 100 2000000	Download		
Power mode change start	FLACULTVOF.	LIFE	web and 1 4002205522-0020
Power mode change completed	FLASH TYPE:	UFS V	usb sh : 140023805320030
Power mode change start			1
Power mode change completed	FASTBOOT:	fastboot flash	✓ auto
check current rate: 0x2			1
0	SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s
SVI> USB2 clock regs init			
wait for speedbridge connectingAXICLK register:10101	OFM CMD:	oem	oem setufs 3
PHYCLK register:10000			
strings_dev[2].s = 14002386532c0030	DOM/NILOAD.	download	hatch download
USB dwc2 udc probe	DOWINLOAD:	download	Batch download
gser_bind	COT	COT analyle	CDT download CDT areas
se1000 dwc2 g_serial function register ok	GPT:	GPT enable	GPT download GPT erase
gs_open			
0 0	PARTITION:	partition cfg	
gs_open: usb not ready			
ret = -105usb not ready, please insert usb cable	RPMB:	rpmb enable	rpmb disable
get config: c 4f610, speed 3, type: 2			
get config: c 4f610, speed 3, type: 2			
get config: c 4f610, speed 3, type: 2	ready to d	ownload	
crq->brequest:0x0			
dwc2_ep_enable: 000000000004f278	ready to d	lownioad	
dwc2_ep_enable: enabled eplin-bulk,	no fast bo	ot usb connect	ed, please insert usb
usb ep enable: ret θ			
dwc2_ep_enable: 000000000004f308	fast boot	ush connected	
dwc2_ep_enable: enabled ep2out-bulk, <mark>stopped</mark> = θ, maxpacket = 512	ready to d	ownload	
usb ep enable: ret 0	ready to d	ownroad	
gserial_connect			
gserial_connect: start ttyGS0			
usb serial port:0 is ready,			
			SiEngine, Inc.Copyright 2023.All Rights Reserved

Figure2-24 Starting Download 2



3. Now enter the USB Download state. Download the files in UFS LUN0 first. Click "Browser" and select the file to be downloaded into LUN0. Here, the file lun0_fip.bin is selected. The fip file is downloaded into UFS LUN0. (the file is an example file, and the file name is different in actual download)

siengine_dov	💥 siengine_downloadtool_VX.X.X — 🗆 >						
Download							
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030					
FASTBOOT:	fastboot flash	₩ auto					
SELECT FILE:	browser	lun0_fip.bin					
OEM CMD:	oem	oem setufs 3					
DOWNLOAD:	download	batch download					
GPT:	GPT enable	GPT download GPT erase					
PARTITION:	partition cfg						
RPMB:	rpmb enable	rpmb disable					
no fast boot usb connected, please insert usb fast boot usb connected ready to download Select file: C:/Users/yan.li/Downloads/lun0_fip.bin							
	SiEngine, Inc.Copyright 2023.All Rights Reserved						

Figure2-25 Starting Download 3



4. Fill in "oem setufs 0" in the input box and click "oem" cmd button to send to the chip. The interface shows that the current download area is LUN0 LBA0.

siengine_dow	x – – – >	×				
Download						
FLASH TYPE:	UFS ~	usb sn : 14002386532c0030				
FASTBOOT:	fastboot flash	auto 🔽				
SELECT FILE:	browser	lun0_fip.bin				
OEM CMD:	oem	oem setufs 0				
DOWNLOAD:	download	batch download				
GPT:	GPT enable	GPT download GPT erase				
PARTITION:	partition cfg					
RPMB:	rpmb enable	rpmb disable				
no fast boot usb connected, please insert usb fast boot usb connected ready to download Select file: C:/Users/yan.li/Downloads/lun0_fip.bin lun0 lba0						
		SiEngine, Inc.Copyright 2023.All Rights Reserve	d			

Figure2-26 Starting Download 4



5. Click the "download" button to start the downloading until "Done" appears in the log area and the progress bar turn green. Now the downloading is complete, you can also click Finished Downloading Image on the serial port. During the downloading process, the progress bar is blue, and you can see the amount data length and the data length already downloaded.

💥 siengine_dow	x – 🗆 ×					
Download						
FLASH TYPE:	UFS ~	usb sn : 14002386532c0030				
FASTBOOT:	fastboot flash	🔽 auto				
SELECT FILE:	browser	lun0_fip.bin				
OEM CMD:	oem	oem setufs 0				
DOWNLOAD:	download	batch download				
GPT:	GPT enable	GPT download GPT erase				
PARTITION:	partition cfg					
RPMB:	rpmb enable	rpmb disable				
ready to download Select file: C:/Users/yan.li/Downloads/lun0_fip.bin lun0 lba0 lun0 loau Download Done						
2109.9M/2109.9M						
SiEngine, Inc.Copyright 2023.All Rights Reserved						

Figure2-27 Starting Download 5

6. Next step download files in UFS LUN1 is the same way as that in LUN0.Click "browser" and select the file to be downloaded to LUN1. In this case, the file lun1_fip.bin is selected (the file is example, and the file name in the actual download may be different).Fill in "oem setufs 1" in the input box and click "oem" cmd button to send to the chip. The interface shows that the current download area is LUN1 LBA0.Click the "download" button to start the downloading. Until "Done" is displayed in the Log area, the download is complete. You can also click Finished Downloading Image in the serial port.

Siengine_dow	siengine_downloadtool_VX.X.X — 🗌 🗙					
Download						
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030				
FASTBOOT:	fastboot flash	🔽 auto				
SELECT FILE:	browser	lun1_fip.bin				
OEM CMD:	oem	oem setufs 1				
DOWNLOAD:	download	batch download				
GPT:	GPT enable	GPT download GPT erase				
PARTITION:	partition cfg					
RPMB:	rpmb enable	rpmb disable				
Download Done Select file: C:/Users/yan.li/Downloads/lun1_fip.bin lun1 lba0 Download Done						
0.2M/0.2M						
SiEngine Inc Copyright 2023 All Rights Reserved						

Figure2-28 Starting Download 6

7. Then download files in UFS LUN2 in the same way as that in LUN0.Click "browser" and select the file to be downloaded in LUN2. In this case, the file lun2_fip.bin is selected (the file is example, and the file name in the actual download may be different). Fill in "oem setufs 2" in the input box and click "OEM" CMD button to send to the chip. The interface shows that the current download area is LUN2 LBA0.Click the "download" button to start the download. Until "Done" is displayed in the Log area, the download is complete. You can also click Finished Downloading Image in the serial port.

siengine_dow	siengine_downloadtool_VX.X.X —					
Download						
FLASH TYPE:	UFS ~	usb sn : 14002386532c0030				
FASTBOOT:	fastboot flash	🔽 auto				
SELECT FILE:	browser	lun2_fip.bin		_		
OEM CMD:	oem	oem setufs 2				
DOWNLOAD:	download	batch download				
GPT:	GPT enable	GPT download GPT erase				
PARTITION:	partition cfg					
RPMB:	rpmb enable	rpmb disable				
Download Done Select file: C:/Users/yan.li/Downloads/lun2_fip.bin lun2 lba0 Download Done						
		6.2M/6.2M				
SiEngine, Inc.Copyright 2023.All Rights Reserved						

Figure2-29 Starting Download 7

8. Then download files in UFS LUN3 in the same way as that in LUN0.Click "browser" and select the file to be downloaded in LUN3. In this case, the file lun3_fip.bin is selected (the file is example, and the file name in the actual download may be different). Fill in "oem setufs 3" in the input box and click "OEM" CMD button to send to the chip. The interface shows that the current download area is LUN3 LBA0.Click the "download" button to start the download. Until "Done" is displayed in the Log area, the download is complete. You can also click Finished Downloading Image in the serial port.

siengine_dow	nloadtool_VX.X.>	×				
Download						
FLASH TYPE:	UFS ~	usb sn : 14002386532c0030				
FASTBOOT:	fastboot flash	🔽 auto				
SELECT FILE:	browser	lun3_fip.bin				
OEM CMD:	oem	oem setufs 3				
DOWNLOAD:	download	batch download				
GPT:	GPT enable	GPT download GPT erase				
PARTITION:	partition cfg					
RPMB:	rpmb enable	rpmb disable				
Download Done Select file: C:/Users/yan.li/Downloads/lun3_fip.bin lun3 lba0 Download Done						
246.4M/246.4M						
SiEngine, Inc.Copyright 2023.All Rights Reserved						

Figure2-30 Starting Download 8

9. If other LUN have download requirements, the download methods is similar to the download methods of LUN0, LUN1, LUN2 and LUN3.



2.5 Download Complete

1. Power off the EVB, switch the BOOT CFG dip switch (sw1-1) back to the original position, that is, all the dip switches are in the lower part. If the dip switches are in the power-on state, you need to reset the board to restart the switch.



Figure2-31 Download Complete 1

2. Power on, check the serial port printing, then the program is finished, exit the download mode, and enter the normal process.

INFO:	BL1: 0x60000 - 0x75000 [size = 86016]						
NOTICE:	Booting SiEngine Trusted Firmware						
NOTICE:	BL1: v2.1(debug):se1000 rom v1.2						
NOTICE:	L1: Built : 00:46:58, Apr 25 2021						
INFO:	BL1: RAM 0x60000 - 0x75000						
INFO:	BL1: cortex_a76: CPU workaround for cve_2018_3639 was applied						
INFO:	Using crypto library 'mbed TLS'						
NOTICE:	Reset reason:1.						
NOTICE:	Booting from UFS						
INFO:	BL1: Loading BL2						
INFO:	Loading image id=1 at address 0x30000						
INFO:	Image id=1 loaded: 0x30000 - 0x4da48						
NOTICE:	BL1: Booting BL2						
INFO:	Entry point address = 0x30000						
INFO:	SPSR = 0x3c5						
early_bl	2_config						
baseaddr	: 0x6000, offset : 1, freq: 0 M						
realtime	pll_freq_check[401]						
realtime	_pll_freq_check[409]						
26214416	paseaddr: 0x6000, ffset : 1, freq: 2000 M						
realtime	_pll_freq_check[419]						
realtime	_pll_freq_check[422]						
=======							
LPDDR4X_	6GB_3200M Training successfully!						
=====d	dr init end=======						

Figure 2-32 Download Complete 2



2.6 Batch Download

To save user operation time and reduce user operation steps, batch download function.



Figure2-33 Batch Download 1

 In Section 2.1 and 2.2, prepare the test environment and configure UFS (partition cfg to configure UFS if the chip is empty).Click the "fastboot flash" button. Then click the "batch download" button to choose the folder include the file you want to download(lun0_fip.bin lun1_fip.bin lun2_fip.bin lun3_fip.bin ect). Then start batch download.



siengine_dov	siengine_downloadtool_VX.X.X — 🗌 🗙						
Download							
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030					
FASTBOOT:	fastboot flash	🔽 auto					
SELECT FILE:	browser	lun3_fip.bin					
OEM CMD:	oem	oem setufs 3					
DOWNLOAD:	download	batch download					
GPT:	GPT enable	GPT download GPT erase					
PARTITION:	partition cfg						
RPMB:	rpmb enable	rpmb disable					
Download Done Select fil C:/Users/y: lun3 lba0 Download Done	e: an.li/Download:	s/lun3_fip.bin 246.4M/246.4M					

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Figure 2-34 Batch Download 2

雷选择文件夹									×
$\leftarrow \rightarrow$ \checkmark \uparrow \square $<$ OS (C:) \rightarrow svn	> SW Projec	t Management >	Release Tool > SE1000	> SDKv1.4 → siengine	_downloadtool_V4	4.0.7_ → image	~ Č	. ∕ 在 image 中	搜索
组织 ▼ 新建文件夹									III • 🕜
	****	名称 images TestReport	~	博定日期 2022/10/11 14:19 2022/10/11 14:34	與型 文件共 文件共 文件共	大小			
文件夹: image							ſ	连续立件士	No.24
								437年天1千天	

Figure2-35 Batch Download 3



siengine_downloadtool_VX.X.X —					
Download					
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030			
FASTBOOT:	fastboot flash	🔽 auto			
SELECT FILE:	browser	lun3_fip.bin			
OEM CMD:	oem	oem setufs 3			
DOWNLOAD:	download	batch download			
GPT:	GPT enable	GPT download GPT erase			
PARTITION:	partition cfg				
RPMB:	rpmb enable	rpmb disable			
start downl	oad lun2				
lun2 done					
start downl	.oad lun3				
lun3 done					
auto downlo	ad done				
		SiEngine, Inc.Copyright 2023.All Rights Reserved			

Figure2-36 Batch Download 4

2.7 GPT Download

1. Click the "fastboot flash" button and click the "GPT enable" button to start the GPT download.

siengine_dov	vnloadtool_VX.X.>	(— — X
Download		
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030
FASTBOOT:	fastboot flash	🔽 auto
SELECT FILE:	browser	lun3_fip.bin
OEM CMD:	oem	oem setufs 3
DOWNLOAD:	download	batch download
GPT:	GPT enable	GPT download GPT erase
PARTITION:	partition cfg	
RPMB:	rpmb enable	rpmb disable
start down lun2 done start down lun3 done auto downlo	load lun2 load lun3 oad done	
		SiEngine, Inc.Copyright 2023.All Rights Reserved

Figure2-37 GPT download 1

2. Choose partition file "SiPartitionFile_lun0".

青打开								×
$\leftarrow \rightarrow \neg \uparrow \blacksquare$ > test > image						0 V		R.
组织▼ 新建文件夹							00 🔹	0
★ 快速访问	^	名称	修改日期	类型	大小			
- 点面		📑 images	2022/9/15 18:02	文件夹				
Tas	<u> </u>	TestReport	2022/9/15 18:10	文件夹				
 1136 12 stratig 	- 1	gitlog.txt	2022/9/15 17:56	文本文档	3 KB			
2 X49	1	prm_gpt_lun0.img	2022/9/15 18:00	光盘映像文件	24 KB			
	1	prm_gpt_lun2.img	2022/9/15 18:00	光盘映像文件	24 KB			
image		prm_gpt_lun3.img	2022/9/15 18:00	光盘映像文件	24 KB			
siengine_downloadtool_linux_sdk1.4		SiPartitionFile_lun0	2022/9/15 18:00	文件	4 KB			
siengine_downloadtool_V4.0.7		SiPartitionFile_lun2	2022/9/15 18:00	文件	8 KB			
sienginedownloadtool sdk1.4		SiPartitionFile_lun3	2022/9/15 18:00	文件 ※毎蚰慮立件	2 KB			
🛄 此电脑		[iii] subcining	2022/0/10/0/0/	JUEL MIRKARY	1,041,027.0			
🧊 3D 对象								
🔢 视频								
■ 图片								
📄 文档								
🕹 下戦								
▶ 音乐								
三 桌面								
🗱 OS (C:)								
🛫 yan.li (\\10.10.6.21) (Y:)	~							
文件名(N)-						_		
XH=(N);								
							打开(O)	取消

Figure2-38 GPT download 2

- 3. Check the GPT partition, select the file you want to download. Click the number button left to the check button to choose file, for example, if you want to download dtb and bl22_a image, click the dtb and bl22_a check button, and click the number button to choose file.
- 4. Then click the "GPT download" button starting to download. Wait until the last partition download over.

ownload				
FLASH TYPE:	UFS ~	usb sn : 14002386532c0030	□ select all	
FASTBOOT:	fastboot flash	✓ auto	1 🔽 prm_gpt_lun0 0 0	
SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtoo	ols 2 □ misc 0 256	
DEM CMD:	oem	oem setufs 3	3 🗖 boot_a 0 512	
		Track demoteral	4 🗆 boot_b 0 16896	
DOWINLOAD:	download	batch download	5 🗸 dtb_a 0 33280	
GPT:	GPT disable	GPT download GPT erase	6 🗆 dtb_b 0 33536	
PARTITION:	partition cfg		7 🗖 metadata 0 33792	
RPMB:	rpmb enable	rpmb disable	8 🗖 super 0 37888	
			9 🗔 userdata 0 1350656	i
Select file C:/Users/ya	e: <u>an li/Download</u> s	/b122_fip.bin	10 🔽 prm_gpt_lun2 2 0	
Download dt	tb_a image		11 🗆 env 2 256	
dtb_a done Download bl	122 a image		12 🔽 bl22_a 2 512	
b122_a done	ess_a ruage		13 🗖 bl22_b 2 768	
			14 🗆 bl31_a 2 1024	
		0.2M/0.2M		

Figure2-39 GPT download 3



2.8 RPMB Enable

- 1. Download tool support enable ufs rpmb.
- 2. Click the "fastboot flash" button and click the "rpmb enable" button to choose "ufs-rpmbconfiguration.xml" file to enable ufs RPMB region. After click "rpmb enable", all lun must be downloaded again.

siengine_dow	nloadtool_VX.X.X	\sim – \Box ×
Download		
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030
FASTBOOT:	fastboot flash	auto
SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s
OEM CMD:	oem	oem setufs 3
DOWNLOAD:	download	batch download
GPT:	GPT enable	GPT download GPT erase
PARTITION:	partition cfg	
RPMB:	rpmb enable	rpmb disable
0x000000030 0x000000000 0x000000000 0x00000000	0c000200, 00000000, 00000000, 00000000, 000000	0.2M/0.2M
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Figure2-40 RPMB Enable 1



名称 ^	修改日期	类型	大小	
🥁 downloader_fip_emmc.bin	2022/11/3 11:23	BIN 文件	168 KB	
📓 downloader_fip_svi.bin	2022/11/3 11:16	BIN 文件	132 KB	
🥁 downloader_fip_ufs.bin	2022/11/25 12:16	BIN 文件	160 KB	
in siengine.ico	2022/6/21 15:41	图标	67 KB	
🔛 siengine_downloadtool.exe	2022/11/24 13:36	应用程序	14,312 KB	
ufs-device-configuration.xml	2022/9/13 18:13	XML 文档	3 KB	
ufs-rpmb-configuration.xml	2022/11/21 17:27	XML 文档	3 KB	
usb driver r13-windows.zip	2022/10/24 9:56	WinRAR ZIP 压缩	8,479 KB	

Figure2-41 RPMB Enable 2

3. If you want to disable rpmb, you can Click the "fastboot flash" button and click the "rpmb disable" button to disable ufs RPMB region. After click "rpmb disable", all lun must be downloaded again.

Same siengine_dow	nloadtool_VX.X.)	×
Download		
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030
FASTBOOT:	fastboot flash	🔽 auto
SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s
OEM CMD:	oem	oem setufs 3
DOWNLOAD:	download	batch download
GPT:	GPT enable	GPT download GPT erase
PARTITION:	partition cfg	
RPMB:	rpmb enable	rpmb disable
0x000000030 0x00000000 0x00000000 0x00000000	c000200, 0000000, 2000000, 0000000, 0000000, 0000000, 000000	
		0.2M/0.2M
		SiEngine, Inc.Copyright 2023.All Rights Reserved

Figure2-42 RPMB Enable 3

2.9 Erase UFS

- 1. Download tool support erase ufs blocks.
- 2. Click the "fastboot flash" button and input "oem format", All of the ufs content will be cleared.

siengine_dow	×	
Download		
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030
FASTBOOT:	fastboot flash	🔽 auto
SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s
OEM CMD:	oem	oem format
DOWNLOAD:	download	batch download
GPT:	GPT enable	GPT download GPT erase
PARTITION:	partition cfg	
RPMB:	rpmb enable	rpmb disable
0x000000000 0x00000000 0x00000000 0x000000	0000000, 000000, 200000, 000000, 0000000, 0000000, 0000000	0.2M/0.2M

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Figure2-43 Erase UFS 1

Input "oem erase ", you can erase certain blocks of ufs. For example, in the picture below "oem erase 0 16896 256", "0" is lun number, "16896" is the start block number, "256" is the total number of the erase block. You can find the relevant partition information from the Sipartitionfile.

siengine_downloadtool_VX.X.	< — — — ×						
Download							
FLASH TYPE: UFS V	usb sn : 14002386532c0030						
FASTBOOT: fastboot flash	🔽 auto						
SELECT FILE: browser	C:/work/USB/upper/sienginedownloadtool s						
OEM CMD: oem	oem erase 0 16896 256						
DOWNLOAD: download	batch download						
GPT: GPT enable	GPT download GPT erase						
PARTITION: partition cfg							
RPMB: rpmb enable	rpmb disable						
format ok FAIL erase fail FAIL erase fail no fast boot usb connected, please insert usb fast boot usb connected ready to download erase ok							
	0.2M/0.2M						
	SiEngine, Inc.Copyright 2023.All Rights Reserved						

Figure2-44 Erase UFS 2



2.10 GPT Erase

1. Click the "fastboot flash" button and click the "GPT enable" button to start the GPT erase.

siengine_dov	vnloadtool_VX.X.X	(×
Download		
FLASH TYPE:	UFS 🗸	usb sn : 14002386532c0030
FASTBOOT:	fastboot flash	🗹 auto
SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s
OEM CMD:	oem	oem erase 0 16896 256
DOWNLOAD:	download	batch download
GPT:	GPT enable	GPT download GPT erase
PARTITION:	partition cfg	
RPMB:	rpmb enable	rpmb disable
format ok FAIL erase FAIL erase no fast bo fast boot ready to d	fail fail ot usb connecte usb connected ownload	d, please insert usb
erase ok		
		0.2M/0.2M
		SiEngine, Inc.Copyright 2023.All Rights Reserved

Figure2-45 GPT Erase 1

- 2. Choose partition file "SiPartitionFile_lun0".
- 3. Check the GPT partition, select the file you want to erase. For example, if you want to erase dtb_a image, click the dtb_a check button.

ownload			
LASH TYPE:	UFS V	usb sn : 14002386532c0030	□ select all
ASTBOOT:	fastboot flash	l▼ auto	1 🗖 prm_gpt_lun0 0 0
ELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s	2 🗖 misc 0 256
EM CMD:	oem	oem erase 0 16896 256	3 Doot_a 0 512
OWNLOAD:	download	batch download	4 Doot_b 0 16896
PT:	GPT disable	GPT download GPT erase	5 M dtb_a U 33280
ARTITION:	partition cfg	· · · · · · · · · · · _ /	7 🗖 metadata 0 33792
PMB:	rpmb enable	rpmb disable	8 🗖 super 0 37888
			9 🗆 userdata 0 1350656
FAIL erase no fast boo	fail ot usb connecte	ed, please insert usb	10 🗖 prm_gpt_lun2 2 0
fast boot u	usb connected		11 🗖 env 2 256
ready to do	ownload		12 🗖 bl22_a 2 512
erase ok Load GPT pa	artition		13 🗖 Ъ122_Ъ 2 768
		0.2M/0.2M	14 🗆 b131_a 2 1024

Figure2-46 GPT Erase 2

4. Then click the "GPT erase" button starting to download. Wait until the last partition erase over.

siengine_download	dtool_VX.X.X			- 🗆	\times
Download					
FLASH TYPE: UFS	~	usb sn : 14002386532c0030		select all	^
FASTBOOT: fast	tboot flash	✓ auto	1	prm_gpt_lun0 0 0	
SELECT FILE:	browser	C:/work/USB/upper/sienginedownloadtool s	2	misc 0 256	
OEM CMD:	oem	oem erase 0 16896 256	3	boot_a 0 512	
	lownload	hatch download	4	boot_b 0 16896	
	iowinoad		5	dtb_a 0 33280	
GPT: GF	PT disable	GPT download GPT erase	6	dtb_b 0 33536	
PARTITION: par	rtition cfg		7	metadata O 33792	
RPMB: rpr	mb enable	rpmb disable	8	super 0 37888	
			9	userdata O 1350656	
no fast boot us	sb connecte	d, please insert usb	10	prm_gpt_lun2 2 0	
fast boot usb c	connected		11	env 2 256	
erase ok	Jad		12	b122_a 2 512	
Load GPT partit	tion		13	Ъ122_Ъ 2 768	
dtb_a erase ok			14	bl31_a 2 1024	
					~
		SiEngine, Inc.Copyright 2023.All Rights Reserved	d		

Figure2-47 GPT Erase 3



3.Download steps for EMMC

The basic operation flow of download for EMMC :



Figure3-1 Basic Operation Flow

Notes:

The hardware operations like power, DIP switch and other operations are the same as those of the download ufs, which will not be described here.

3.1 Starting Download

1. Choose FLASH TYPE to "EMMC".Click "fastboot flash" button, "flash downloader_fip_emmc.bin done" will be printed in the log area .



					_	_
mmc-sselected_mode = 1 SDHCI_HOST_CONTROL2 = 0x8 SDHCI_HOST_CONTROL2 = 0x8	Single siengine_dov	vnloadtool_VX.X.	x	- 0		×
selecting mode HS400ES (200MHz) (freq : 200 MHz)	Download					
clock is enabled (20000000Hz)	STAGLE TUDE					
set host 2 reg	FLASH TYPE:	EMMC ~	usb sn : 14002386532c0030			
nmc->selected_mode = 12			<u> </u>			
reg = 0xfstart to config hs400es	FASTBOOT:	fastboot flash	🔽 auto			
HS400 config done	L					
sel000_sdhci_init, ret = 0	SELECT FILE:	browser	image_dtb.bin			
JSB2 CLOCK regs init			1			
Wait for speedbridge connectingAXICLK register:10101 PHYCLK register:10000	OEM CMD:	oem	oem setemmcboot 0			
strings_dev[2].s = 14002386532c0030						
JSB dwc2 udc probe	DOWNLOAD:	download	batch download			
gser_bind			1			
se1000 dwc2 g_serial function register ok	GPT:	GPT enable	GPT download GPT erase			
gs_open			/ /			
0 0	PARTITION:	partition cfg				
gs_open: usb not ready			1			
ret = -105usb not ready, please insert usb cable	RPMB:	rpmb enable	rpmb disable			
get config: c 4d5f8, speed 3, type: 2						
get config: c 4d5f8, speed 3, type: 2						
get config: c 4d5f8, speed 3, type: 2	dtb_a erase	e ok				
crq->brequest:0x0	choose EMMC	:				
dwc2_ep_enable: 00000000004d278	no foot boo	it usb sonnosta	ed, please insert usb			
dwc2_ep_enable: enabled eplin-bulk, stopped = 0, maxpacket = 512	fast boot u	usb connected				
Jsb ep enable: ret ⊍						
dwc2_ep_enable: 0000000004d308	flash downl	loader_fip_emmo	c.bin			
dwc2_ep_enable: enabled ep2out-bulk, stopped = 0, maxpacket = 512	dono					
uso ep enable: ret u	uone					
gserial_connect start ttyGSA						
JSerial_connect: Start (19050						
isb serial port:0 is ready,			site de Comieto 202	a All pt-Las I		-
	1		SiEngine, Inc.Copyright 202	3.All Rights I	Keserve	bd

Figure 3-2 EMMC Download 1

- 2. If you need to download data to boot partition. Fill in "oem setemmcboot 1" in the input box and click "oem" cmd button to send to the chip. The interface shows that the current download area is boot1.Now enter the USB Download state.
- 3. If you need to download data to none boot partition. Fill in "oem setemmcboot 0" in the input box and click "oem" cmd button to send to the chip. The interface shows that the current download area is none boot.Now enter the USB Download state.

sengine_downloadtool_VX.X.X —							
Download							
FLASH TYPE:	EMMC ~	usb sn : 14002386532c0030					
FASTBOOT:	fastboot flash	✓ auto					
SELECT FILE:	browser	ap0_ap1.fip					
OEM CMD:	oem	oem setemmcboot 1					
DOWNLOAD:	download	batch download					
GPT:	GPT enable	GPT download GPT erase					
PARTITION:	partition cfg						
RPMB:	rpmb enable	rpmb disable					
Done boot enable Select file: C:/work/USB/upper/sienginemanufatcuretool sdk1.6_back/ap0_ap1.fip boot enable Dowmload Done							
31.5M/31.5M							
SiEngine, Inc.Copyright 2023.All Rights Reserved							

Figure3-3 EMMC Download 2

siengine_downloadtool_VX.X.X – 🗆 🗙							
Download							
FLASH TYPE:	EMMC ~	usb sn : 14002386532c0030					
FASTBOOT:	fastboot flash	🔽 auto					
SELECT FILE:	browser	image_dtb.bin					
OEM CMD:	oem	oem setemmcboot 0					
DOWNLOAD:	download	batch download					
GPT:	GPT enable	GPT download GPT erase					
PARTITION:	partition cfg						
RPMB:	rpmb enable	rpmb disable					
fast boot usb connected flash downloader_fip_emmc.bin done boot disable Download Done							
32.6M/32.6M							
SiEngine, Inc.Copyright 2023.All Rights Reserved							

Figure3-4 EMMC Download 3



3.2 Download Complete

1. Power off the EVB, switch the BOOT CFG dip switch (sw1-2) back to the original position, that is, all the dip switches are in the lower part. If the dip switches are in the power-on state, you need to reset the board to restart the switch.



Figure3-5 Download Complete



SE1000 Linux Download Tool User Guide

1.Introduction

siengine_downloadtool_linux is a tool for downloading in Linux environments. Compared to the Windows version, the Linux version of the download tool does not have a GUI interface, using instructions to download SE1000.

Notes:

The hardware operations like power, DIP switch and other operations are the same as those of the Windows version download tool, which will not be described here.

2.What's in the download tool

Use the tar command to decompress siengine_downloadtool_linux.tar.gz.

- downloader_fip_emmc.bin: fip file used to download the code to be downloaded to the EMMC
- downloader_fip_ufs.bin: fip file used to download the code to be downloaded to the UFS
- downloader_fip_svi.bin: fip file used to download the bare metal image
- · fastbootflashscript: user run this script can run fastboot flash command
- siengine_downloadtool: Linux executable file. It is used to download tools. If you do not have the execution permission, grant the execution permission to the file
- ufs-device-configuration.xml: ufs configuration file
- ufs-rpmb-configuration.xml: UFS RPMB configuration file

yan.li@gerrit-android-wh:~/siengine downloadtool linux\$ ll								
总用量 2159	92			_		-		
drwxr-xr-x	2	yan.li	swdesign	4096 3月	2	10:24	./	
drwxr-xr-x	16	yan.li	swdesign	4096 3月	2	09:42	/	
-rwxr-xr-x	1	yan.li	swdesign	172032 3月	1	20:37	downloader_fip_emmc.bin*	
-rwxr-xr-x	1	yan.li	swdesign	139264 3月	1	20:37	downloader_fip_svi.bin*	
-rwxr-xr-x	1	yan.li	swdesign	167936 3月	1	20:37	downloader_fip_ufs.bin*	
-rwxr-xr-x	1	yan.li	swdesign	124 11)] 25	12:32	fastbootflashscript*	
-rwxr-xr-x	1	yan.li	swdesign	1769 3月	1	20:40	readme.txt*	
-rwxr-xr-x	1	yan.li	swdesign	12405936 3月	1	20:38	siengine_downloadtool*	
-rwxr-xr-x	1	yan.li	swdesign	2492 3月	1	20:42	ufs-device-configuration.xml*	
-rwxr-xr-x	1	yan.li	swdesign	2525 3月	1	20:42	ufs-rpmb-configuration.xml*	
-rwxr-xr-x	1	yan.li	swdesign	9197793 2月	8	11:21	UG_SE1000_Download_Tool_User_Guide.docx*	

Figure Linux2-1 What's in the download tool

3. Download steps

 The BOOT CFG dip switch (sw1-1) is used to switch to the USB BOOT CFG mode and download downloader_fip.bin to enter the USB Download state. If you have several EVB connected to one linux machine, you can send "fastboot devices" to query the usb



serial number. And choose the EVB you want to download by adding "-s xxxx" in each instruction. if you only have one EVB, you don't have to add "-s xxxx" in instructions. For example, my EVB usb serial number is 0A00114A53323231. So I will add "-s 0A00114A53323231" in every instruction.

yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$ fastboot devices 0A00114A53323231 fastboot

Figure Linux3-1 Download steps 1

2. This step corresponds to Step 2 in Section 2.4 of the Windows version. The instructions are as follows:

EMMC:

./siengine_downloadtool download -s 0A00114A53323231 downloader_fip_emmc.bin ./siengine_downloadtool flash -s 0A00114A53323231 downloader_fip_emmc.bin

yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool download -s 0A00114A53323231 downloader_fip_emmc.bin Downloading... progress: 100%: yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool flash -s 0A00114A53323231 downloader_fip_emmc.bin

Figure Linux3-2 Download steps 2

UFS:

./siengine_downloadtool download -s 0A00114A53323231 downloader_fip_ufs.bin ./siengine_downloadtool flash -s 0A00114A53323231 downloader_fip_ufs.bin

Figure Linux3-3 Download steps 3

3. If the SE1000 chip is empty or the UFS partition size needs to be reconfigured, you need to configure the UFS LUN partition by using the UFS configuration function. If you do not need to change the UFS partition size, skip this step. This step corresponds to Step 2 in Section 2.3 of the Windows version.

The instructions are as follows:

./siengine_downloadtool download -s 0A00114A53323231 downloader_fip_ufs.bin ./siengine_downloadtool flash -s 0A00114A53323231 downloader_fip_ufs.bin ./siengine_downloadtool oem -s 0A00114A53323231 "ufsconfig"





Figure Linux3-4 Download steps 4

Notes:

After modifying the XML configuration file and then "partition cfg", all data in the UFS will be emptied.

4. Start downloading.

EMMC:

./siengine_downloadtool oem -s 0A00114A53323231 "setemmcboot 0" ./siengine_downloadtool download -s 0A00114A53323231 image_dtb.bin ./siengine_downloadtool oem -s 0A00114A53323231 "setemmcboot 1" ./siengine_downloadtool download -s 0A00114A53323231 ap0_ap1.fip



Figure Linux3-5 Download steps 5

UFS:

Set UFS LUN0 and download LUN0 files. Set UFS LUN1 and download LUN1 files. Set UFS LUN2 and download LUN2 files. Set UFS LUN3 and download LUN3 files.

./siengine_downloadtool download -s 0A00114A53323231 downloader_fip_ufs.bin ./siengine_downloadtool flash -s 0A00114A53323231 downloader_fip_ufs.bin



./siengine_downloadtool oem -s 0A00114A53323231 "startdownload" ./siengine_downloadtool oem -s 0A00114A53323231 "eraselun 0" ./siengine_downloadtool oem -s 0A00114A53323231 "setufs 0" ./siengine_downloadtool download -s 0A00114A53323231 lun0_fip.bin

./siengine_downloadtool oem -s 0A00114A53323231 "startdownload" ./siengine_downloadtool oem -s 0A00114A53323231 "eraselun 1" ./siengine_downloadtool oem -s 0A00114A53323231 "setufs 1" ./siengine_downloadtool download -s 0A00114A53323231 lun1_fip.bin

./siengine_downloadtool oem -s 0A00114A53323231 "startdownload" ./siengine_downloadtool oem -s 0A00114A53323231 "eraselun 2" ./siengine_downloadtool oem -s 0A00114A53323231 "setufs 2" ./siengine_downloadtool download -s 0A00114A53323231 lun2_fip.bin

./siengine_downloadtool oem -s 0A00114A53323231 "startdownload"
./siengine_downloadtool oem -s 0A00114A53323231 "eraselun 3"
./siengine_downloadtool oem -s 0A00114A53323231 "setufs 3"
./siengine_downloadtool download -s 0A00114A53323231 lun3 fip.bin



Figure Linux3-6 Download steps 6

5. After downloading, flip the DIP switch and enter the normal flow. This step corresponds to Section 2.5 of the Windows version.



Figure Linux3-7 Normal Flow

6. GPT download

First put your SiPartitionFile_lun0, SiPartitionFile_lun2, SiPartitionFile_lun3 in the same path of siengine_downloadtool. Select which partition you need to download, then download.

yan.li@sewhbf01:~/siengine_d	lownloadtool_linux\$ cp	/data/sdk_release/SDK/SDK1.4/DailyBuild_2022-09-20_01-53/SiPartitionFile_lun* .
yan.li@sewhbf01:~/siengine d	lownloadtool linux\$ ll	
total 12820	(,,,), (,,),	
drwxr-xr-x 2 yan.li swdesign	4096 Sep 26 17:07	
drwxr-xr-x 9 yan.li swdesign	4096 Sep 26 15:11	
-rwxr-xr-x 1 yan.li swdesign	172032 Sep 24 14:42	downloader fip emmc.bin*
-rw-rr 1 yan.li swdesign	143360 Sep 24 14:42	downloader fip svi.bin
-rwxr-xr-x 1 yan.li swdesign	372288 Sep 24 14:42	downloader_fip_ufs.bin*
-rwxr-xr-x 1 yan.li swdesign	12404744 Sep 24 15:09	siengine_downloadtool*
-rw-rr 1 yan.li swdesign	3630 Sep 26 17:07	SiPartitionFile_lun0
-rw-rr 1 yan.li swdesign	7358 Sep 26 17:07	SiPartitionFile_lun2
-rw-rr 1 yan.li swdesign	1785 Sep 26 17:07	SiPartitionFile_lun3
-rw-rr 1 yan.li swdesign	2537 Sep 26 10:58	ufs-device-configuration.xml
-rw-rr 1 yan.li swdesign	303 Sep 26 10:58	ufs-rpmb-configuration.xml
yan.li@sewhbf01:~/siengine_d	lownloadtool_linux\$	

Figure Linux3-8 GPT Download 1

For example, if you want to download bl22_a :

./siengine_downloadtool download -s 0A00114A53323231 downloader_fip_ufs.bin ./siengine_downloadtool flash -s 0A00114A53323231 downloader_fip_ufs.bin

./siengine_downloadtool oem -s 0A00114A53323231 " startdownload "
./siengine_downloadtool erasegpt -s 0A00114A53323231 bl22_a
./siengine_downloadtool parsegpt -s 0A00114A53323231 bl22_a
./siengine_downloadtool download -s 0A00114A53323231 bl22_fip.bin





Figure Linux3-9 GPT Download 2

For another example, if you want to download m4_a :
./siengine_downloadtool oem -s 0A00114A53323231 " startdownload "
./siengine_downloadtool erasegpt -s 0A00114A53323231 m4_a
./siengine_downloadtool parsegpt -s 0A00114A53323231 m4_a
./siengine_downloadtool download -s 0A00114A53323231 m4_fip.bin
yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool erasegpt -s 0A00114A53323231 m4_a
OKAY: erase ok
yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool parsegpt -s 0A00114A53323231 m4_a
OKAY: lun2 lba68608
yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool parsegpt -s 0A00114A53323231 m4_a
OKAY: lun2 lba68608
yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool parsegpt -s 0A00114A53323231 m4_a
OKAY: lun2 lba68608
yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool download -s 0A00114A53323231 m4_a

Figure Linux3-10 GPT Download 3

7. RPMB enable/disable

If you want to enable RPMB:

./siengine_downloadtool download -s 0A00114A53323231 downloader_fip_ufs.bin ./siengine_downloadtool flash -s 0A00114A53323231 downloader_fip_ufs.bin

./siengine_downloadtool oem -s 0A00114A53323231 "enablerpmb"

ven liGerennit enderid ver (siensing develandtes) linvet	(signating daym]aadtaa]		400114452222221	" en eh 1 e verek "
yan.ti@gerrit-android-wn:~/siengine_downtoadtoot_tinux\$.	./siengine_downloadtool	oem -s e	A00114A55525251	enablerpmb
0x00/1010101000100,				
0x01000000000000000000				
0x0c00000000000000000				
0x0000000000000000000000000000000000000				
0x00000000000000000,				
0x2000000000000000000000000000000000000				
0x2000000000000000000000000000000000000				
0x000000000000000000000000000000000000				
0×000000000000000000000000000000000000				
0x000000030c008000.				
0x000000000000000				
0x000000100000000.				
0x00030c0000200000,				
0x00000000000000,				
0x020100000000000,				
0x0c0120000000300,				
0x00000000000003,				
0x000000000000000,				
0x020000000000001,				
0x000000000030c00,				
0x000000000000000,				
0x000000000010000,				
0x00000030c000200,				
0×000000000000000,				
0×00000010000000,				
0x00030c0002000000,				
0x000000000000000,				
0x0000000000000000,				
0x00000000000000000,				
0.0000000000000000000000000000000000000				
UKAT: Seturs				

Figure Linux3-11 RPMB Enable

After you send enable rpmb instruction, you need to download all lun_fip.bin again.

If you want to disable RPMB:

./siengine_downloadtool oem -s 0A00114A53323231 "disablerpmb"





Figure Linux3-12 RPMB Disable

After you send disable rpmb instruction, you need to download all lun_fip.bin again.

8. Erase ufs

If you want to format ufs:

./siengine_downloadtool download -s 0A00114A53323231 downloader_fip_ufs.bin ./siengine_downloadtool flash -s 0A00114A53323231 downloader_fip_ufs.bin

./siengine_downloadtool oem -s 0A00114A53323231 "format"

yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool oem -s 0A00114A53323231 "format")KAY: format ok Jone

Figure Linux3-13 Erase ufs1

If you want to erase some particular part of the ufs: ./siengine downloadtool oem -s 0A00114A53323231 "erase 0 16896 256"

van.li@gerrit-android-wh:~/siengine_downloadtool_linux\$_/siengine_downloadtool_oem_-s_0A00114A53323231 "erase 0_1

an (1999) It and old with stengthe down coducor (1903) / stengthe down coducor dem is door it associated strate o 10000 AY: erase ok one

Figure Linux3-14 Erase ufs2

If you want to erase some gpt partition(SipartitionFile should be placed in the same directory):

./siengine_downloadtool erasegpt -s 0A00114A53323231 m4_a

yan.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool erasegpt -s 0A00114A53323231 m4_a

Figure Linux3-15 Erase ufs3

If you want to erase one of the lun in ufs:

/siengine_downloadtool oem -s 0A00114A53323231 "eraselun 0"

/an.li@gerrit-android-wh:~/siengine_downloadtool_linux\$./siengine_downloadtool oem -s 0A00114A53323231 "eraselun 0" KAY: erase ok Jone

Figure Linux3-16 Erase ufs4