

# Partition Layout Guide

PARTITION\_LAYOUT\_GUIDE\_V1.0A

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***TeleChips***

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## Revision History

Date	Version	Description
2013.02.13	1.0	Beta Release

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## **1 Introduction**

This document describes how to configure partition layout for Telechips Android system. Older version of Telechips Android system was supported only MBR scheme, but now support GPT partition scheme.

### **1.1 Remarks**

1. Must have to use FWDN V2.44 or higher version

## 2 Partition Layout

### 2.1 Introduction

Default partition layout scheme is GPT. And we support MBR partition scheme only for firmware update which used old version because previously we support only MBR scheme.

If you want to upgrade older version Android to new one, you have to choose MBR scheme. It is not compatible between GPT and MBR.

### 2.2 Make Bootloader

```
1) Change Directory to lk bootloader
$ cd bootable/bootloader/lk

2) Make bootloader for NAND Version 8 Driver
$ make tcc893x_evm

2) Make bootloader for eMMC Driver
$ make tcc893x_evm_emmc

* You can see the type of platform currently support
bootable/bootloader/lk/project
```

### 2.3 Android system build

- ```
1). Execute lunch command in android root
2). Select full_tcc893x-eng
```

When Android system is compiled, the all images are located in **out/target/tcc893x** directory.

### 3 GPT Partition Layout.

#### 3.1 The Partition Layout of GPT for Android system

You should have to understand how to configure partition layout for Android System, before you download Android system images. See the following table of default GPT partition layout.

| Area     | Name             | Purpose                                                    | File System | Required  |
|----------|------------------|------------------------------------------------------------|-------------|-----------|
| Boot     | Boot Area        | Kernel / Ram Disk                                          | RAW         | Mandatory |
| System   | Android System   | Android System Area                                        | EXT4        | Mandatory |
| Cache    | Android Cache    | Android Cache Area                                         | EXT4        | Mandatory |
| Recovery | Android Recovery | Recovery Mode Boot Area<br>Recovery Mode Kernel / Ram Disk | RAW         | Mandatory |
| Kpanic   | Kpanic           | Kernel Panic Log                                           | RAW         | Mandatory |
| Splash   | Splash           | Boot Screen Image                                          | RAW         | Mandatory |
| Misc     | Miscellaneous    | Firmware Update<br>Bootloader Flag                         | RAW         | Mandatory |
| TCC      | Telechips Only   | Set-top Flag write                                         | RAW         | Optional  |
| UserData | Android UserData | Android User Data<br>Application / Database                | EXT4        | Mandatory |

#### 3.2 GPT Partition Size Definition

This layout is only included Mandatory Partition size. The optional partitions are not need for Android system and it used only special purpose.

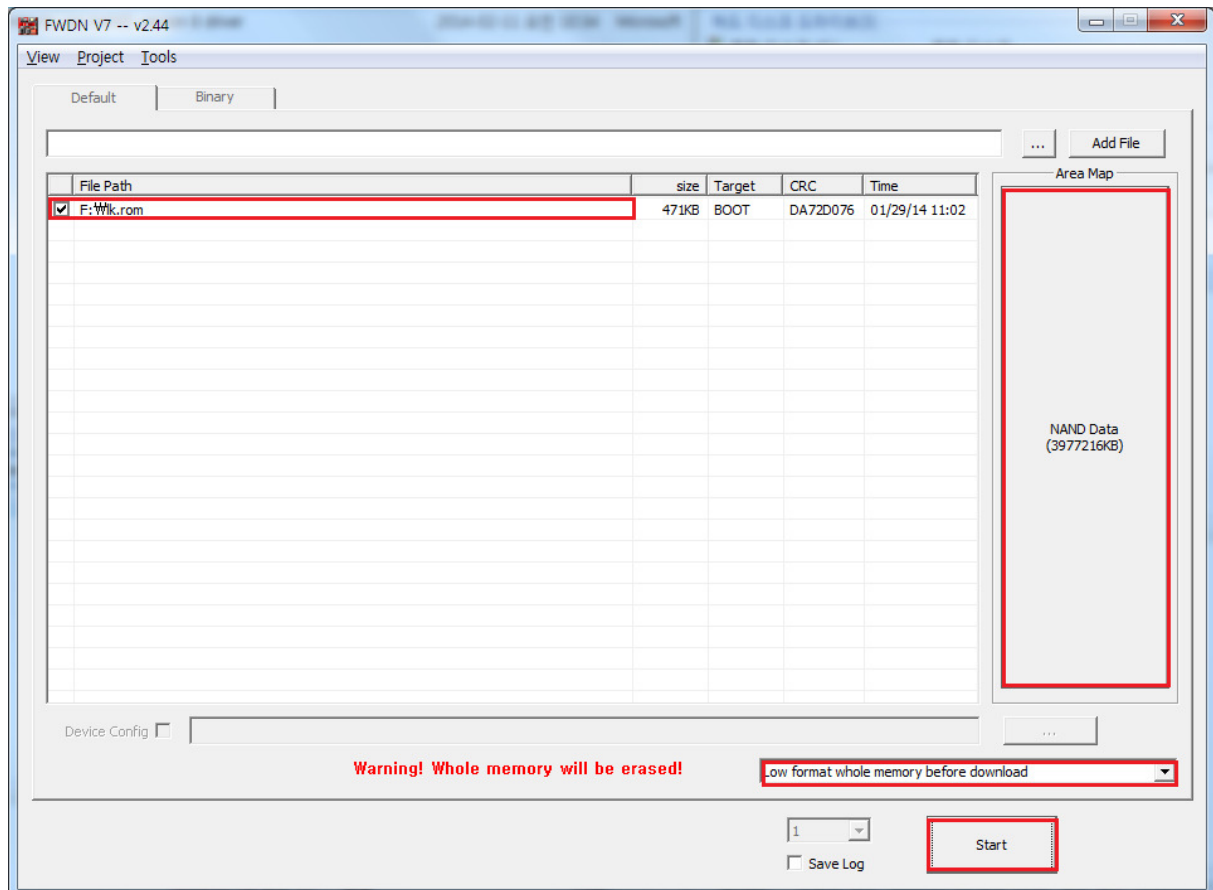
| Area     | Size           | Partition         | FileSystem |
|----------|----------------|-------------------|------------|
| Boot     | 15MB           | ndda1 / mmcblk0p1 | RAW        |
| System   | 650MB          | ndda2 / mmcblk0p2 | EXT4       |
| Cache    | 150MB          | ndda3 / mmcblk0p3 | EXT4       |
| Recovery | 15MB           | ndda4 / mmcblk0p4 | RAW        |
| Kpanic   | 5MB            | ndda5 / mmcblk0p5 | RAW        |
| Splash   | 4MB            | ndda6 / mmcblk0p6 | RAW        |
| Misc     | 1MB            | ndda7 / mmcblk0p7 | RAW        |
| TCC      | 1MB            | ndda8 / mmcblk0p8 | RAW        |
| UserData | Available Size | ndda9 / mmcblk0p9 | EXT4       |

## 4 Prepare to Download Using FWDN

### 4.1 How to make GPT partition layout.

To Download TCC893x Boot Loader And Android system images, you must have to use FWDN V2.44or Higher Version. This section describes that how to prepare and download images.

*Step 1. Load bootloader to FWDN and then attach target devices on FWDN using usb boot mode. if completely attach tcc893x to FWDN, click **NAND Data Button***



*If you want to low format download select format options*



*Step 2. Prepare download as following images.*

*Increase number of partition. The partition order is same as partition layout previously describe in section 3. And then click **Create Image Button***

Image Creation Dialog for Area 'NAND Data'

Image File Path: F:\NAND Data.fai

Disk Image | LOGO Image | KEY STORE RO | UID |

Number of Partition: 9 Use GPT

| Partition   | Partition Size        | Partition Label                         | Image File Path |
|-------------|-----------------------|-----------------------------------------|-----------------|
| Partition 1 | 15360 KB (1MB=1024)   | boot 0xEE (Protected MBR)               | boot.img        |
| Partition 2 | 665600 KB (1MB=1024)  | system Linux native (ext2/3/4,JFS...)   | system.img      |
| Partition 3 | 153600 KB (1MB=1024)  | cache Linux native (ext2/3/4,JFS...)    |                 |
| Partition 4 | 15360 KB (1MB=1024)   | recovery 0X00                           | recovery.img    |
| Partition 5 | 5120 KB (1MB=1024)    | splash 0X00                             |                 |
| Partition 6 | 4096 KB (1MB=1024)    | kpanic 0X00                             |                 |
| Partition 7 | 1024 KB (1MB=1024)    | misc 0X00                               |                 |
| Partition 8 | 1024 KB (1MB=1024)    | tcc 0X00                                |                 |
| Partition 9 | 3115999 KB (1MB=1024) | userdata Linux native (ext2/3/4,JFS...) |                 |

Create Image

**Notice :** To use GPT Partition layout, you have to select GPT partition layout like upper image. and take care of select Protected MBR, it is important to selecting GPT Partition layout. and you can see the Partition label has fill of partition name. the partition name is very important to mount file system and use raw partition. We use partition name to mount file system. So you have to fill out the partition label like upper image.

the difference of MBR and GPT is number of partition. MBR has extended partition to use more than 4 partition. But GPT has no extended partition.

*Step 3. If create image success press start button. And then start download to target board*

## 5 MBR Partition Layout.

### 5.1 How to select MBR partition layout

Previously we describe that MBR scheme support only for firmware update from old version. If you want to use MBR please follow below command.

```
1) go platform directory
$ cd device/Telechips/tcc893x

2) copy MBR configuration in parttype_mbr directory
$ cp parttype_mbe/* ./

3) make Android platform.
```

### 5.2 The Partition Layout of MBR for Android system

You should have to understand how to configure partition layout for Android System, before you download Android system images. See the following table of default MBR partition layout.

| Area     | Name             | Purpose                                                    | FileSystem | Required  |
|----------|------------------|------------------------------------------------------------|------------|-----------|
| Boot     | Boot Area        | Kernel / RamDisk                                           | RAW        | Mandatory |
| System   | Android System   | Android System Area                                        | EXT4       | Mandatory |
| UserData | Android UserData | Android User Data<br>Application / Database                | EXT4       | Mandatory |
| Cache    | Android Cache    | Android Cache Area                                         | EXT4       | Mandatory |
| Recovery | Android Recovery | Recovery Mode Boot Area<br>Recovery Mode Kernel / Ram Disk | RAW        | Mandatory |
| Kpanic   | Kpanic           | Kernel Panic Log                                           | RAW        | Mandatory |
| Splash   | Splash           | Boot Screen Image                                          | RAW        | Mandatory |
| Misc     | Miscellaneous    | Firmware Update<br>Bootloader Flag                         | RAW        | Mandatory |
| TCC      | Telechips Only   | Set-top Flash write                                        | RAW        | Optional  |

### 5.3 The Partition Size Definition

This layout is only included Mandatory Partition size. The optional partitions are not need for Android system and it used only special purpose.

| Area     | Size           | Partition | FileSystem |
|----------|----------------|-----------|------------|
| Boot     | 15MB           | Ndda1     | RAW        |
| System   | 650MB          | Ndda2     | EXT4       |
| UserData | Available Size | Ndda3     | EXT4       |
| Extended | Extended       | Ndda4     | Extended   |
| Cache    | 150MB          | Ndda5     | EXT4       |
| Recovery | 15MB           | Ndda6     | RAW        |
| Kpanic   | 5MB            | Ndda7     | RAW        |
| Splash   | 4MB            | Ndda8     | RAW        |
| Misc     | 1MB            | Ndda9     | RAW        |
| TCC      | 1MB            | ndda10    | RAW        |

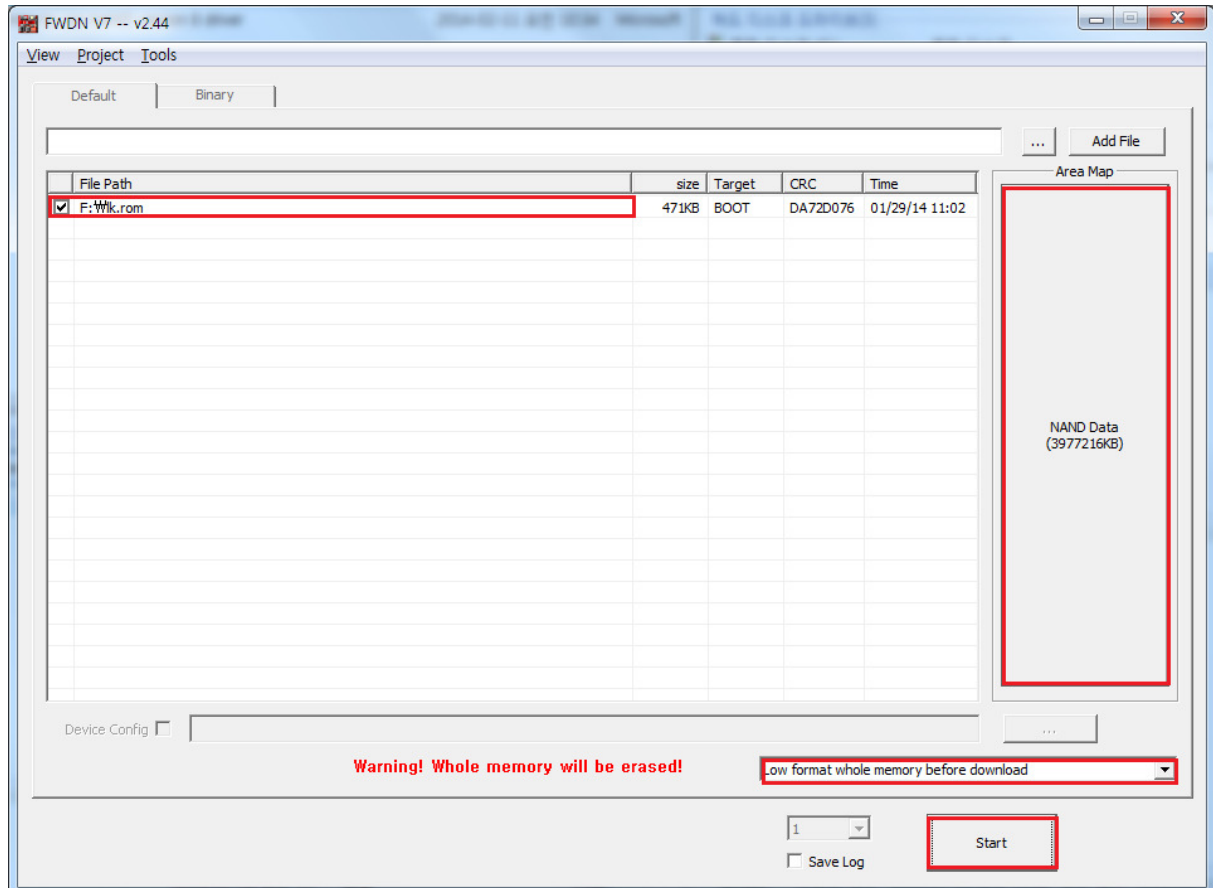
Linux support only 4 primary partition, but we need more than 4 partition. So we set the extended partition. the last 4th partition are extended and remaining 5 partitions are logical partition included in extended.

## 6 Prepare to Download With FWDN

### 6.1 How to make MBR partition layout.

To Download TCC893x Boot Loader And Android system images, you must have to use FWDN V2.44 or Higher Version. This section describes that how to prepare and download images.

*Step 1. Load bootloader to FWDN and then attach target devices on FWDN using usb boot mode. if completely attach tcc893x to FWDN, click **NAND Data Button***



*If you want to low format download select format options*

*Step 2. Prepare download as following images.*

*Increase number of partition. The partition order is same as partition layout previously describe in section 3. And then click **Create Image Button***

Image Creation Dialog for Area 'NAND Data'

Image File Path: F:\NAND Data.fai

Disk Image | LOGO Image | KEY STORE RO | UID |

Number of Partition: 9

Use MBR

| Partition   | Partition Size        | Partition Label                | Image File Path |
|-------------|-----------------------|--------------------------------|-----------------|
| Partition 1 | 15360 KB (1MB=1024)   | 0X00                           | boot.img        |
| Partition 2 | 665600 KB (1MB=1024)  | Linux native (ext2/3/4,JFS...) | system.img      |
| Partition 3 | 3115920 KB (1MB=1024) | Linux native (ext2/3/4,JFS...) |                 |
| Partition 4 | 153600 KB (1MB=1024)  | Linux native (ext2/3/4,JFS...) |                 |
| Partition 5 | 15360 KB (1MB=1024)   | 0X00                           | recovery.img    |
| Partition 6 | 5120 KB (1MB=1024)    | 0X00                           |                 |
| Partition 7 | 4096 KB (1MB=1024)    | 0X00                           |                 |
| Partition 8 | 1024 KB (1MB=1024)    | 0X00                           |                 |
| Partition 9 | 1024 KB (1MB=1024)    | 0X00                           |                 |

Create Image

**Notice** : First select use MBR like upper image to using MBR partition scheme. you can see partition 3 and partition 4 in the blue box . those partition image path are empty. Those are userdata partition and cache partition. From Android 4.1(Jelly Bean Sandwich) if user data and cache partitions are not formatted ext4 file system, format those partition to ext4 file system.

Partition 3 in green box, it use shared storage through MTP. So the size of that partition size is remaining size of NAND. Last partition is automatically calculated remaining size of NAND. So you have to switch the size of partition 3 and 9 like above images.

At boot time, if those partitions are not formatted, system will format those partitions. And then reboot system for initializing Android systems. So FWDN does not write any data to that partition if image file path is empty.

*Step 3. If create image success press start button. And then start download to target board*

## 7 APPENDIX

FWDN v2.44 is changed for new TCC892X\_AX or TCC893X Chipset. so if you use TCC892X\_XX please refer below guide.

If you use TCC892X\_XX Chipset, please set the TCC892x\_XX Chipset like below image.

*Tools Menu -> etc tab you can see the check box for TCC892x XX Chipset*

