

### What are Samsung PIT Files?

PIT files contain the Partition Information Table (PIT) for Samsung Android phones. Different firmware versions may require different partition layouts so the necessary PIT file 'tells' Odin how to set up the phone partitions correctly for the specified firmware to be installed.

The PIT file contains all the relevant information for each required partition such as Partition Name, Flash File Name, Block Size, Block Count etc. and also contains some unknown properties that maybe identifiers or flags of some sort.

### General Android Partition Description (Qualcomm MSM8960)

The function and content of many of the partitions are not very well described, nor easily found in one place. Here are some further details, that apply primarily to *Qualcomm Snapdragon S4/+* based Android devices. However, Windows Phones using these these SoC's should have a very similar partition structures, but with different names.

For details about: **RPM (PBL)**, **SBL1**, **SBL2**, **SBL3**, **TZ** and **ABOOT (APPSBL)**, please see this and this thread, where they are extensively discussed and described.

**GPT**: See section on PIT and GPT "partitions" below.

**BACKUP**: This partition should contain a copy of MODEMST2. Whether it does or not, is described in the PARAM partition.

**BOOT**: This is the partition that enables the phone to boot, as the name suggests. It includes the kernel and the ramdisk. Without this partition, the device will simply not be able to boot. Wiping this partition from recovery should only be done if absolutely required and once done, the device must NOT be rebooted before installing a new one, which can be done by installing a ROM that includes a */boot* partition.

**CACHE**: Contain the firmware update package which is downloaded from server, and the recovery log file. Other uses include storage for frequently accessed data and application components. Wiping the cache doesn't effect your personal data but simply gets rid of the existing data there, which gets automatically rebuilt as you continue using the device.

**DATA / USERDATA**: This partition contains the user's data – this is where your

contacts, messages, settings and apps that you have installed go. Wiping this partition essentially performs a factory reset on your device, restoring it to the way it was when you first booted it, or the way it was after the last official or custom ROM installation. When you perform a wipe data/factory reset from recovery, it is this partition that you are wiping.

**EFS:** The Android *EFS* partition stores all your phones important, but accessible, hardware data, such as WiFi/BlueTooth MAC's, IMEI (or ESN for a CDMA based device) and some others.

**FOTA:** Is the Firmware Over The Air partition. After the update package has been downloaded from the server it is saved into the CACHE partition. After that the userspace application that does the download writes a special cookie into the FOTA partition. This cookie tells the bootloaders to take the necessary steps to boot into recovery mode

**FSG:** Probably stands for File System (FS) "Golden". According to Samsung documentation, this partition is a "Golden Copy". This is partially confirmed by RE of the *PARAM* partition, which indicate that this partition should contain a copy of *MODEMST1*.

**GROW:** << unknown >>

**MISC:** This partition contains miscellaneous system settings in form of on/off switches. These settings may include *CID* (Carrier or Region ID), USB configuration and certain hardware settings etc. This is an important partition and if it is corrupt or missing, several of the device's features will will not function normally. Not all devices have this partition.

**PARAM:** This is the Parameter partition which contains a number of parameters, variables and settings of the hardware. Apparently it has an 88 byte header structure that tell us if the *MODEMST1* and *MODEMST2* have been backed up to the *FSG* and *BACKUP* partitions, respectively. Furthermore it contain all the debug settings (*DLOW/DMID/DHIG* etc), the "triangle" status of whether or not you have flashed custom ROMs and the flash count (**0x3FFE00**). Current boot mode in use, and much more. The info about this partition could easily occupy a book by itself.

**PERSIST:** << unknown >> The use of this partition is unknown and apparently only exists on Qualcomm based devices.

**PIT:** See below.

**RECOVERY:** Holds the recovery boot image. When updating the system we boot into recovery mode by using the boot image stored in this partition. It lets you boot the device into a recovery console for performing advanced recovery

and maintenance operations on it.

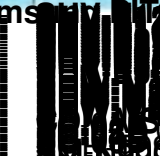
**SSD:** "Secure Software Download" is a memory based file system (*RAMFS*) for secure storage, used to download and store "who knows what" on the eMMC. It is a referenced part in the *Remote Storage RPC Client* of the MSM kernel.

**SYSTEM:** This partition basically contains the entire operating system, other than the kernel and the ramdisk. This includes the Android user interface as well as all the system applications that come pre-installed on the device. Wiping this partition will remove Android from the device without rendering it unbootable, and you will still be able to put the phone into recovery or bootloader mode to install a new ROM.

Partition Information Table (PIT) for Samsung Android phones

| partition name | Order | dev        | Type | first sector number(HEX) | first sector number | number of sectors | size(MB) |
|----------------|-------|------------|------|--------------------------|---------------------|-------------------|----------|
| GPT            |       |            |      |                          | 0                   | 34                |          |
| MODEM          |       | mmcblk0p1  |      | 00002000                 | 8,192               | 122,880           |          |
| SBL1           |       | mmcblk0p2  |      | 00020000                 | 131,072             | 256               |          |
| SBL2           |       | mmcblk0p3  |      | 00020100                 | 131,328             | 512               |          |
| SBL3           |       | mmcblk0p4  |      | 00020300                 | 131,840             | 1,024             |          |
| ABOOT          |       | mmcblk0p5  |      | 00020700                 | 132,864             | 4,096             |          |
| RPM            |       | mmcblk0p6  |      | 00021700                 | 136,960             | 1,024             |          |
| BOOT           |       | mmcblk0p7  |      | 00021B00                 | 137,984             | 20,480            |          |
| TZ             |       | mmcblk0p8  |      | 00026B00                 | 158,464             | 1,024             |          |
| PIT            |       | mmcblk0p9  |      | 00026F00                 | 159,488             | 1,024             |          |
| PARAM          |       | mmcblk0p10 |      | 00027300                 | 160,512             | 20,480            |          |
| EFS            |       | mmcblk0p11 |      | 0002C300                 | 180,992             | 27,904            |          |
| MODEMST1       |       | mmcblk0p12 |      | 00033000                 | 208,896             | 6,144             |          |
| MODEMST2       |       | mmcblk0p13 |      | 00034B00                 | 215,040             | 6,144             |          |
| SYSTEM         |       | mmcblk0p14 |      | 00036000                 | 221,184             | 3,072,000         | 15       |
| USERDATA       |       | mmcblk0p15 |      | 00324000                 | 3,293,184           | 55,959,552        | 273      |
| PERSIST        |       | mmcblk0p16 |      | 03882000                 | 59,252,736          | 16,384            |          |
| CACHE          |       | mmcblk0p17 |      | 03886000                 | 59,269,120          | 1,720,320         | 8        |
| RECOVERY       |       | mmcblk0p18 |      | 03A2A000                 | 60,989,440          | 20,480            |          |
| FOTA           |       | mmcblk0p19 |      | 03A2F000                 | 61,009,920          | 20,480            |          |
| BACKUP         |       | mmcblk0p20 |      | 03A34000                 | 61,030,400          | 12,288            |          |
| FSG            |       | mmcblk0p21 |      | 03A37000                 | 61,042,688          | 6,144             |          |
| SSD            |       | mmcblk0p22 |      | 03A38800                 | 61,048,832          | 16                |          |
| GROW           |       | mmcblk0p23 |      | 03A38810                 | 61,048,848          | 5                 |          |

Total 61,071,360 sectors  
 Sector Size 512 bytes  
 Total Size 31,268,536,320 bytes  
 29.1 GB

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