



## **NAND FLASH Pre-Programming Questionnaire**

Unlike most of NOR FLASH, NAND Flash devices have BAD BLOCK(s) and customer who want to program these NAND additional algorithm development process. Mess Programming of NAND devices calls “pre-programming” and will be affected by the process. This pre-programming totally depends on customer’s solution (file system) that will be used in customer’s products.

EE Tools, Inc. has developed solutions and special skills for low level device drivers for NAND Flash, such as small block, big block, OneNand, MLC 2K page, MLC 4K page, FlexOneNand, and MoviNand, etc. We also are able to develop a new algorithm and device adapter up on request.

Please send to us all possible information on following questions, and we can provide the best solution to your request.

**1. Please provide the solution (file system) for NAND Flash of your product.  
These are most solutions; please select your solution for your NAND products.**

- 1> EFS (Qualcomm MSM xxxx)
- 2> QCMP (Qualcomm MSM6275, MSM6800)
- 3> GBBM
- 4> XSR (TFS4, PocketStore II, UniStore II) Version 1.3 / 1.4 / 1.5
- 5> RFS
- 6> SSFDC
- 7> FlashFX (DataLight)
- 8> ZORAN D-TV solution
- 9> MAGIC-EYES solution (MMSP2, VRender3, MMSP2+)
- 10> Telechips solution (TCC77x, TCC78x, TCC79x, etc)
- 11> Sigmatel MP3 solution (STMP35 SDK v2.5, v3.15, STMP36 RFS)
- 12> FMD (Samsung System LSI)
- 13> Broadcom
- 14> Mtek(Triton)

Please specify the full device part number if you select #9, #10, or #11.

If there is no your solution or if you develop the solution yourself, please answer the following questions.

**2. Do you need to program in Spare Area (Redundant Area, OOB Area)?**

- YES → Go Q3.
- NO → Go Q4

**3. Does your binary data contain Spare Area information?**

\* If your binary file contains Spare Area information, please send to us the binary file and it will reduce the development time.

However, please describe all details how to create spare area data if your binary file doesn't include the Spare Area data information.

Example of small block- how to create 16 byte.

Example of big block- how to create 64byte.

If ECC calculation is required, we need your ECC algorithm source code.

(If programmer needs to calculate ECC, the production time of output will be reduced.)

\* If you use MLC Nand Flash or use ECC and meta data, you have to provide ECC source code.

**4. Is there any Meta data to be programmed in special Nand Flash location?**

- 1> Block location for the Meta data.
- 2> How to handle if Meta block is bad block?
- 3> How to create meta data and save.  
ex) bad block replacement table, bad block index table, good block index table, etc.
- 4> Describe the example.  
If the device has 4096 blocks, but block 0, block 100, block 150 are bad block.  
If it is so, please describe how handle these specific blocks.

**5. Please describe the binary (you will send) structure and the way how to handle bad Block when programmer meet bad blocks in programming time. Refer to the following examples and let us know your preferred method, such as drawing or description.**

Ex 1) It programs from block 0 of Nand Flash in first byte of binary one after the other.  
If bad block is detected, program the next good block.  
Or if bad block is detected, replaces good block of special area of Nand Flash.

Ex 2) before programming, make bad block table and recode the BBT in special area of Nand Flash. And it will program by the BBT data.

**6. Is there anything else that need to be Pre-Programmed?**

Ex) In case that bad block exists in special area (block x ~ block y), programmer must make an error for this specific device.

**7. Please describe the Device information. We also need device data sheet.**

Device Part Name:  
Package Type (TSOP / BGA etc):

**8. Is it possible to provide your development environment? If you provide it, we can expedite to develop the algorithm. For example, we make a master chip with sample device has many bad blocks, and we can verify sample device through the master chip.**

- We need to know the possibility to make a master chip from your environment that may provide to us.  
Such as Master Device, Dump data, or master binary code
- We need to know if you can provide a board with socket for the NAND device or the same board with master device is soldered.

**9. How to create your master data for production. (If the distance from the assembled plant is far, or the use of BGA chip is different from that of the master chip, the master information must be sent with a binary file.)**

- Do you want to use a master chip for production?
- Do you want to use master binary file for production?

**10. The Selection for application equipment.**

- 1> SpeedMax

- 2> FlashMax-8G
- 3> FlashMax-16G

**11. The project name of model name.**

Ex) YP-PB2, T1500, P430 ...

**12. If we need more information, we will contact you. Please provide your contact informaion.**

Company Name:  
Name:  
Title:  
Telephone:  
Email Address:

Please contact to us for your further question in this documentation:



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