

SM2246EN Flash F/W & ISP Release Information – O0724B
Introduction

This purpose of this document is to provide release information on the SM2246EN F/W and ISP release information

Fix Coverage

- stands for the “new fix” or “new support” in the category
- stands for the “no-update” in the category

| ■ Tester FW | ■ Controller ISP |
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| <ul style="list-style-type: none"> □ Yield Issue ■ Flash Issue <ul style="list-style-type: none"> □ SLC Flash <ul style="list-style-type: none"> □ Samsung Flash □ Toshiba/Sandisk Flash □ Intel/Micron Flash □ Hynix Flash □ Others ■ MLC Flash <ul style="list-style-type: none"> ■ Samsung Flash ■ Toshiba/Sandisk Flash ■ Intel/Micron Flash ■ Hynix Flash □ Compatibility issue □ Tester Bug Fix ■ AP Bug Fix & New Function ■ Feature Enhance | <ul style="list-style-type: none"> ■ Yield Issue ■ Flash Issue <ul style="list-style-type: none"> □ SLC Flash <ul style="list-style-type: none"> □ Samsung Flash □ Toshiba/Sandisk Flash □ Intel/Micron Flash □ Hynix Flash □ Others ■ MLC Flash <ul style="list-style-type: none"> ■ Samsung Flash ■ Toshiba/Sandisk Flash ■ Intel/Micron Flash ■ Hynix Flash □ Compatibility issue ■ ISP Bug Fix □ Feature Enhance |

ISP Revision History

| Version | MP Tool version | ISP version | Note |
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| O0724B | O0722C | O0724B | <ol style="list-style-type: none"> 1. Support Toshiba 24nm SLC 2. Support SanDisk 24nm MLC 3. Support SanDisk A19 (1Y) MLC 4. Modify program fail handling procedure 5. Support Toshiba 15nm SLC mode (A2 command) 6. Change Tper authentication to "Anybody authority" 7. Support IEEE 1667 CONFIGURE SILOS command |
| O0617A | O0618A | O0617A | <ol style="list-style-type: none"> 1. This FW can support security and non-security FW that are corresponding to SM2246EN_AB and SM2246EN_AA. 2. MP will detect the controller automatically. If the controller is SM2246AA, MP will block security related functions. If the controller is SM2246AB, MP will show the options of security related functions. 3. Fix the issue related to read command access interface of TCG. 4. Make sure that the related hardware settings constrained to change AES keys are fully performed. 5. Fix the bug that when issuing SMART_EXECUTE_OFFLINE_IMMEDIATE command which may cause the FW not be able to enter low-power mode. 6. Make sure that partial / slumber mode can be low-power. 7. Capacity of SSD would not be influenced when supporting TCG function. |
| N1126K | O0522A | N1126K | <ol style="list-style-type: none"> 1. Modified SMART attribute reset: ID 0xA4~0xA7, 0xAF, 0xC7 and 0xF5 2. Returned status would include <ul style="list-style-type: none"> ● Pure spare count if the threshold is not exceeded ● Erase count if the threshold is exceeded 3. Fixed trim bug: when LBA of trim command is higher than total LBA, this command should be returned 4. Turn LED off when trim command is processed 5. Solved device sleep DRAM backup issue: flash retry FIFO should not be overlapped by DRAM data 6. Solved spare block run out issue: successive Map block can be used |
| N1126F | O0327A | N1126F | <ol style="list-style-type: none"> 1. Fix overflow issue of read – retry table that Hynix NAND flash use. 2. Fix U-link NCQ-03 script issue 3. Support Sandisk 1znm flash. 4. Support Hynix 16nm F-die flash. 5. Add CID options for enabling DRAM SRT feature. |
| N1114H | N1114A | N1114H | <ol style="list-style-type: none"> 1. Fix DEVSLP issue 2. Fix time-out issue of downloading microcode. |
| N1114B | N1114A | N1114B | <ol style="list-style-type: none"> 1. Support 4Die/1CE Flash 2. Support new VU command for Serial Number change 3. Support disk self-destroy function (erase all disk data via GPIO) |

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| | | | <ol style="list-style-type: none"> Extend # of bad block combination to 2048 to improve 1TB initialization Modify Pretest Bad Block Threshold as configurable from 0 to 255 Bug fix of Trim command and potential command timeout/abort. Support Samsung K9QDGD8U5M |
| N1007C | N0918A | N1007C | <ol style="list-style-type: none"> Support TSB 15nm MLC. Support of Sanitize (erase all block feature). Improve command response time with background map rebuild. Improve Macbook installation compatibility. Improve Pretest flow in the cases of reference original and runtime bad. Enhance error/event log structure and content. Enable CDI interrupt iff DEVSLP had been configured and enabled by CID and host. Resolve bugs/issues of NCQ read flow, Flash setting at DEVSLP resume, Trim command handling, program fail handling in swapping active block. |
| N0815B | N0815A | N0815B | <ol style="list-style-type: none"> Fix of program fail handling on pure SLC Flash. Improvement to resolve read disturbance on Hynix 16nm MLC Flash. Improvement to speed up boot time by storing WPRO page index information. Bug fix of program fail. Fix of SPOR timeout issue on 512GB/1TB disk. Bug fix of LTS and RDT. Bug fix of pretest failure on Samsung 21nm Flash. Improvement of random read performance in internal interleave mode. Support of full disk SLC mode on Micron Flash. |
| N0711A | N0704B | N0711A | <ol style="list-style-type: none"> Fix cache program bug since N0704A. Fix program fail handle bug for internal interleave mode since N0704A Fix an IPM issue since FW N0516D which automatically change Partial to Slumber in HIPM if DIPM was enabled. Extend bad block combination number from 512 to 1024. Decide Hynix read-retry count by using OPT command instead of predefine value from MP package. Support Internal Interleave. Support program fail handling Modify trim flow for the performance with Marvell RAID chip |

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| | | | 9. Support Hynix 16nm 64Gb MLC: H27QCG8T2E5R, H27QEG8VEE5R 10. Support Hynix 16nm 128Gb MLC: H27QEG8UDB8R, H27QFG8VEB8R-BCF, H27Q1T8YEB9R (CS sample and after) |
| N0530C | N0529A | N0530C | 1. ISP Bug fix: Erase count miss-match after doing security erase 2. Pretest Bug fix: Load L85A reclaim flash original bad bug found in N0530A 3. Fix an IPM issue since FWN0516D, which cannot enter IPM mode normally. |
| N0530A | N0529A | N0530A | 1. Support auto partial to slumber in HIPM 2. Fill up the active block's valid pages word line when receiving Standby Immediately and swapping active block after power on 3. Save SMART attribute every 20 minutes 4. Save SMART info when receiving Standby Immediately 5. Fine tune a read cache judgment |
| N0402C | N0415A | N0402C | 1. Support 4CH8WAY interleave for 512page/block flash (L85A/L95B) 2. Support 1TB capacity 3. Fix DEVSLP bugs 4. Support the entrance of device sleep without slumber mode first. (CID 0x4D.bit7) 5. Fix the bug of occasional ISP hangs-up if power off while security erase 6. Fix the bug of building the wrong mapping table after resuming from device sleep 7. RDT update: Show the wrong fail message at MP result window 8. Update L95B ECC to 60b in database |
| N0307A | N0307A | N0307A | 1. Speed up boot up time by saving spare bitmap table, and shortening mapping table reset time. 2. Re-issue flash multi-plane ALE after disabling read-retry. 3. Issue one plane ALE instead of multi-plane in read-retry. 4. Extend the ALE, CLE and write pulse width when setting read-retry sequence in EDO mode. 5. Enable hardware write protect.(GPIO p1.bit1) 6. Enable quick erase.(GPIO P1.bit5) 7. Fix the SMART value (attribute ID 0x05) miss-match issue 8. Fix a markbad bug. (N0227A issue from VCT) 9. Fix SMART info miss match issue. 10. Fix read and write log DMA extend command bug. 11. Fix RDT firmware cannot recognize MP vendor command issue. 12. Support 16k 4plane flash. |

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| N0103B | N0114A | N0103B | <ol style="list-style-type: none"> 1. Fix the bug of issuing Samsung 19nm read try command by EDO mode 2. Support DMA read log extend and DMA write log extend. 3. Support DMA read buffer and DMA write buffer. 4. Mark bad block by single block instead of super block and use rest good block to re-combine super block. 5. Support DMA download microcode 6. Add full dram size test in pretest |
| M1213C | M1226A | M1213C | <ol style="list-style-type: none"> 1. Support Micron/Intel L85A, L84C, 2. Support Micron/Intel L95B 3. Support Samsung 19nm MLC 4. Fix seek & read verify sector command bug 5. Support PIO Multiple mode to 2 6. Fix SCT write same bug 7. Enhance SPOR protection 8. Write performance enhancement 9. Fix a FW bug of WHCK Trim test 10. Reduce DEVSLP power consumption 11. Fix a read try bug for Micron/Intel NAND 12. Support Download Micro Code |
| M1024C | M1024A | M1024C | <ol style="list-style-type: none"> 1. Fix ATACT seek & read verify sector command bug. 2. Fix the error of scaling down the number of interleave 3. Add QC tool functions |
| M1011A | M1009B | M1011A | <ol style="list-style-type: none"> 1. Enhance ATA command support for Ulink test 2. Disable all flash CE if channel is idle. 3. Fix a power-cycling bug 4. Fix SN number issue when KeepSN is not 20 byte length. |
| M1003B | M1003A | M1003B | <ol style="list-style-type: none"> 1. Fix IM20nm read retry bug and add more options for read retry. Issue flash reset command before retry sequence. 2. Fix build-link bug in 4ch8way 3. Fix SPOR function bugs 4. Disable dram compensation 5. Lower schmitt trigger windows) 6. Fix seek, read verify sector, and RW multiple command bug 7. Fix a wear leveling bug 8. Support Few Samsung & Hynix dram. 9. Support LTS and fix bugs of RDT function. Add the loop option in RDT 10. Add Micron20nm SLC read-retry table. 11. Add Dram 380Mhz option. 12. Enable write cache as a default. |

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| | | | 13. Modify dram VDT from 1.4 to 1.3v. |
| M0808A | M0808B | M0808A | <ol style="list-style-type: none"> 1. Fix Toshiba & Sandisk flash read-retry error. 2. Enhance SATA error handling 3. Switch to dummy write if the number of spare block decreases to zero, and do not mark bad block 4. Modify SMART command for WAF 5. Extend the number of write log page to 32 6. Fix strong page size bug on M0719 7. Fix pretest bug for manual toggle flash. 8. Add RDT function. 9. Don't reset DRAM when resume |
| M0719A | M0716B | M0719A | <ol style="list-style-type: none"> 1. Support Samsung 21nm K9GCG MLC 2. Support Toshiba 19nm 16KB 2Plane MLC 3. Support Hynix H27QCGDT2BLR, H27QEGDVEBLR 4. Support Micron L84A Onfi MLC 5. Support Micron L85A Onfi MLC |

Note:

1. F/W and ISP update is recommended.
2. History # is denoted by "Version-Date" .

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