



## SM2246XT Flash F/W &amp; ISP Release Information – Q0927A

**Introduction**

This purpose of this document is to provide release information on the SM22X family 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

<input checked="" type="checkbox"/> <b>MP Tool</b>	<input checked="" type="checkbox"/> <b>Controller ISP</b>
<input type="checkbox"/> <b>Yield Issue</b> <input type="checkbox"/> <b>Flash Issue</b> <input type="checkbox"/> SLC Flash <input type="checkbox"/> Samsung Flash <input type="checkbox"/> Toshiba/Sandisk Flash <input type="checkbox"/> Intel/Micron Flash <input type="checkbox"/> Hynix Flash <input type="checkbox"/> Others  <input type="checkbox"/> MLC Flash <input type="checkbox"/> Samsung Flash <input type="checkbox"/> Toshiba/Sandisk Flash <input type="checkbox"/> Intel/Micron Flash <input type="checkbox"/> Hynix Flash <input type="checkbox"/> Others  <input checked="" type="checkbox"/> <b>MP Tool Bug Fix</b> <input type="checkbox"/> <b>MP Tool New Function</b> <input type="checkbox"/> <b>Feature Enhance</b>	<input type="checkbox"/> <b>Yield Issue</b> <input type="checkbox"/> <b>Flash Issue</b> <input type="checkbox"/> SLC Flash <input type="checkbox"/> Samsung Flash <input type="checkbox"/> Toshiba/Sandisk Flash <input type="checkbox"/> Intel/Micron Flash <input type="checkbox"/> Hynix Flash <input type="checkbox"/> Others  <input checked="" type="checkbox"/> <b>MLC Flash</b> <input type="checkbox"/> Samsung Flash <input checked="" type="checkbox"/> Toshiba/Sandisk Flash <input checked="" type="checkbox"/> Intel/Micron Flash <input type="checkbox"/> Hynix Flash <input type="checkbox"/> Others  <input checked="" type="checkbox"/> <b>ISP Bug Fix</b> <input type="checkbox"/> <b>Feature Enhance</b>



## ISP Revision History

Version	MP Tool version	ISP version	Note
Q0927A	Q1102A	Q0927A	<b>ISP:</b> <ol style="list-style-type: none"> <li>Fix FW hang up issue during SMART self test.</li> </ol> <b>SW:</b> <ol style="list-style-type: none"> <li>Fixed NFTS and exFAT format issue</li> </ol>
Q0707A	Q0522A	Q0707A	<b>ISP</b> <ol style="list-style-type: none"> <li>Modify GC threshold.</li> <li>Change some GC setting for small capacity flash(Micron M83C).</li> <li>Remove redundant risky WL of L06B.</li> <li>Fix data fall back when UGSD in refresh flow.</li> <li>Fix empty planes when SPOR cause data compare fail.</li> <li>Adjust SNDK 1znm and 1ynm retry flow.</li> <li>Fix the SMART read log issue.</li> </ol> <b>SW:</b> <ol style="list-style-type: none"> <li>Add pretest error code 0x31 : can't support one-pass flash</li> <li>Fixed flash database content write too much string in *.ini file</li> <li>Extend Erase delay add in RDT, CID 0x64</li> </ol>
Q0407A	Q0405A	Q0407A	<b>ISP</b> <ol style="list-style-type: none"> <li>Add the judge condition for SMART remain life and used life</li> <li>Modified the SMART C3 calculate location</li> <li>Modify SNDK retry table ID 0x38&amp;39</li> <li>Add endurance bit15 in CID 0x62 bit3</li> <li>Fix SPOR fail caused by flushing old data in des. block</li> </ol> <b>MPISP:</b> <ol style="list-style-type: none"> <li>Modify SRAMTest flow</li> <li>Fix can not find RDT result: CH map does not initial</li> </ol> <b>SW:</b> <ol style="list-style-type: none"> <li>Add Setting.set[OPTION] ShowSpareBlock=1 : display min spare block option in parameter page(pretest 0x23~0x24)</li> <li>Block Endurance option extend to support max 50000(max bit of endurance will save in CID 0x62 bit3)</li> </ol> <b>Others:</b> <ol style="list-style-type: none"> <li>Data Base Q0412</li> </ol>
Q0111A	Q0123A	Q0111A	<b>ISP</b> <ol style="list-style-type: none"> <li>Fix vendor command :Read Flash Diagnosis.</li> <li>Update Toshiba 15nm retry table</li> <li>Fix initial block address setting for L7B.</li> <li>Reduce programming frequency of GcInfo</li> <li>Added the CFAST read log address 31h and for VPG 130 ID table setting</li> <li>Fix when enable a customized function the ID table will be wrong issue.</li> </ol>



			<p>7. Add erase delay function</p> <p>8. Fix erase bad bug.</p> <p>9. Fix the Ulink 5.6 protocol test fail for Sanitize process state test.</p> <p>10. Change erase delay cid to 0x63, separate pret and isp erase delay setting.</p> <p>11. Add early initial option for compatibility</p> <p>12. Add Lower page protect (LPP) feature option for L06B</p> <p>13. Add queue reset in LPP func</p> <p>14. Change late initialization as default setting</p> <p>15. Add SNDK retry table ID0x38&amp;39</p> <p><b>SW:</b></p> <p>1. Fix log file will not display correct disk size and it will not display pass or fail count at first time</p> <p>2. Fix debug DPS/DBS button only read plane 0 data, it will change to read plane x data depend on plane x</p> <p>3. Add Setting.set [OPTION] for set late initialization</p> <p>4. Add Setting.set [OPTION] for display I/M L06B LPP On option in other setting.</p> <p>5. Disable SSC option will save to ini file when pressing ok</p> <p>6. Add Setting.set[FUNCTION]</p>
P0921A	P0920A	P0921A	<p>ISP</p> <p>1.Modified the word 77 bit 7 not support "devslp_to_reduced pwrstate"</p> <p>2.Fix reloading ATA bank when some smart read RTBB.</p> <p>3.Fix power on Gc threshold setting.</p> <p>4.Fix mark bad when sata write error in internal intlv flash: force reset</p> <p>5.Adjust BadInfo address to avoid covered with code bank.</p> <p>RDT:</p> <p>1. Fix EraseBlk() CMD error</p> <p>2. Fix bug for RDT Loop mode setting</p> <p>3. Fix some Read Page CMD bug</p> <p>4. Fix bug for 1P write CMD Error</p> <p>5. Change TSB NAND Erase CMD</p> <p>Pretest:</p> <p>1. Modify gPriMPlaneEraseCmd2 = 0xD0 for TSB and SanDisk NAND</p> <p>2. Modify the manual ch/ce by ChMap and CeMap</p> <p>3. Record the garDataBase[0x20 and 0x21]</p> <p>SW:</p> <p>1.Setting.set [OPTION]SkipCheckEmptyFlashID</p> <p>2.Setting.set [OPTION]CheckFlashIdCount</p> <p>3.Card mode add show CH/CE Accumulation setting if device uses CH/CE Accumulation</p> <p>4.CH/CE Accumulation option change to let user select which CH/CE enable</p>
P0831A	P0824A	P0831A	ISP



			1.Fix WL bug.
P0810C	P0824A	P0810C	ISP 1.Fix SMART self test is abort by standby mode 2.Follow the spec to add the self test abort case 3.Modified the customized SMART attribute for F9 Valid block percentage 4.Fixed the reboot issue in Linux environment Pretest 1. Fix reference run time bad can not refer to different address bad 2. Support Manual Multi-Channel, Multi-Ce SW 1. FW Version of identify will padding 0x20 instead of 0x0 2. Fix Block Endurance and Custom ID option of QC fail
P0725A	P0721A	P0725A	ISP 1. Add SMART attribute for specific customer (SMI Jira 222 requirement) 2. Change Retry table 7 parameter 3. Fix setFlashDrv to select physical CH 4. Move markBadBlock to ATA from RW 5. Modify PwrOnGc to pass UGSD 6. Add SMART attribute A1 and A9 for specific customer. 7. Add internal intlv and 4 plane flash queue depth condition 8. Update TSB A19 Retry table 9. Change SLC retry mode decide condition 10. Fixed SMART Attribute ID in other compier option issue Pretest: 1. Modify multi-plane program command sends 0x80 for some flash vendor 2. Fix MPTool hanging in pretest in the case of ref RDT bad & TooMuchBad 3. Add 78h command before program for some flash vendor SW: 1. Add WWN/WWN16 option



			2. Fix IDTable Page display inverse issue: final 8 bytes of WWN16
P0628B	P0701A	P0628B	<p>ISP:</p> <ol style="list-style-type: none"><li>1. Fix P0527 known issue. (When the config is 4 ways and with 2 die per CE, FW may hang up when SPOR. )</li><li>2. Support full erase under OS system for specific customer.</li><li>3. Remove write protection when dummy write at EOL.</li><li>4. Fix NCQ issue on customer's Linux tool.</li><li>5. Add SMART attribute ID A9 (Remain life) for customer requirement</li><li>6. Add no spare handle in RW function.</li><li>7. SMART attribute remaining life raw data return to current and worst value.</li><li>8. Added the vendor specification string modified by CID table.</li></ol> <p>MP tool:</p> <ol style="list-style-type: none"><li>1. Setting.set [FUNCTION] add Show "Clear Smart and Unformat" on main page</li><li>2. Add "Erase User Data Function" option in other setting.</li><li>3. Fix copy test will not write/read/compare data if selecting percentage method</li><li>4. Add check all Ch/CE flash id is identical in MP flow</li><li>5. Add Setting.set [OPTION], Enable vendor specification string modified by CID table</li></ol>
P0527A	P0601A	P0527A	<p>ISP:</p> <ol style="list-style-type: none"><li>1. Fix programCacheInfo SPOR issue</li><li>2. Fix sending command 0x25 in weak page under LSB only mode</li><li>3. Fix Lecory SATA compliance test item for SSP 07 &amp; 08</li><li>4. Modified the devslp setting DETO time to 90ms</li><li>5. Modified the SMART attribute "Read error rate"</li><li>6. Dummy Write in no spare function</li><li>7. Fix run out of spare in small power off time UGSD.</li><li>8. Modify H2f will release spare immediately when lack of spare.</li></ol>



			<p>9. Modify power on GC will release at least 1 truly spare.</p> <p>Pretest:</p> <ol style="list-style-type: none"> <li>1. Fix Intel internal interleave.</li> </ol> <p>MP tool:</p> <ol style="list-style-type: none"> <li>1. Add "Not define" in ID Table Form and set identify word168 = 0x0.</li> <li>2. Add "SHOWMPINFO" option</li> <li>3. Add a vendor ID for max 54'C as the warning temperature</li> </ol>
P0408A	P0426A	P0408A	<p>ISP:</p> <ol style="list-style-type: none"> <li>1. Define write method in HW write protect mode.</li> <li>2. Add flash command queue depth when 4 plane.</li> <li>3. Add restore old H2f entry in rebuild.</li> </ol> <p>RDT:</p> <ol style="list-style-type: none"> <li>1. Add Disabling SLC mode block restriction.</li> </ol> <p>SW</p> <ol style="list-style-type: none"> <li>1. Add Check SLC Flash ID List function.</li> </ol>
P0316B	O1224H	P0316B	<p>ISP</p> <ol style="list-style-type: none"> <li>1. Fixed SATA write abort flag not clean issue when the write command coming</li> <li>2. Fix resume from Power Mode 1, FW reset SATA MAC issue.</li> <li>3. Fix Index rebuild issue</li> <li>4. Fix Hynix 16nm retry calculate retry table offset bug.</li> <li>5. Fix Hynix 16nm retry calculate multi die offset bug.</li> </ol> <p>MPTool:</p> <ol style="list-style-type: none"> <li>1. Fix dis HIPM DIMP selected issue.</li> </ol>
O1229A	O1224C	O1229A	<p>ISP</p> <ol style="list-style-type: none"> <li>1. Fix SPOR issue for two plane program with the same spare byte.</li> <li>2. Add the enable/disable standby function</li> <li>3. fix multi die retry 5c c5 (0x78) select multi die abort</li> </ol>
O1204A	O1117A	O1204A	<p>ISP</p> <ol style="list-style-type: none"> <li>1. Define customized SMART attribute</li> <li>2. Fix SNDK multi die 65command after reset command fifo not setAutoPlane(0x10c.7) issue</li> </ol>



			<ul style="list-style-type: none"> <li>3. Fix 4 channel and 2way not interleave issue</li> <li>4. Fix SNDK 19nm lower page damage may become empty page case.</li> <li>5. Prevent refresh may refresh empty page from SPOR.</li> </ul>
O1120A	O1117A	O1120A	<p>MPISP</p> <ul style="list-style-type: none"> <li>1. update main.c reduce code size</li> <li>2. sandisk multi die command add set auto plane HW function</li> </ul> <p>RDT</p> <ul style="list-style-type: none"> <li>1. Update 0x65 CMD</li> <li>2. merge sndkDieCmd code</li> <li>3. Fix RDT will not enter Rom code if 1stInfo is not first block.</li> </ul> <p>Bootisp</p> <ul style="list-style-type: none"> <li>1. Fix when only bootisp and para page exit, read flash id will send wrong command. Check Sum:5911E</li> </ul> <p>ISP</p> <ul style="list-style-type: none"> <li>1. Erase/write/read add SNDK_DIE_CMD</li> <li>2. remove setSndkNandParam function</li> <li>3. Return the SMART attribute ID A8 raw data by CID info</li> <li>4. Return the SMART structure model name by CID info</li> <li>5. Fix the word60~word61 bug</li> <li>6. Fix "Security Set Password's master password Id is not reflected correctly in ID data" problem</li> </ul>
O1027A	O1102A	O1027A	<p>Firmware</p> <ul style="list-style-type: none"> <li>1. Support SNDK 1znm flash.</li> <li>2. Fix 2ce 4Die inter intlv condition.</li> </ul>
O1013A	O1022A	O1013A	<p>Pretest</p> <ul style="list-style-type: none"> <li>1. Modify Flow for CMDQ hang on</li> <li>2. Add 2ce 4Die inter intlv condition</li> <li>3. Support 4C4W</li> </ul> <p>Firmware</p> <ul style="list-style-type: none"> <li>3. Support TSB 15nm flash.</li> <li>4. Support SNDK A19nm 4-plan flash.</li> <li>5. Modify Trim flow</li> </ul>



			6. Fix the bug of refresh H2f table 7. Fix 1Ch 1Way bug RDT 1. Modify RDT test scenario similar to SM2246EN.
O0818A	O0825A	O0818A	Pretest: 1. Pretest modification for too much bad CH/CE information Firmware: 1. Support L95B and L85A internal interleave. 2. SNDK 19nm and A19nm support enhancement 3. Toshiba 32nm
O0731A	O0810A	O0731A	Pretest: 1. Add CH and CE information when too many bad blocks error happened. Firmware: 1. Support L74A, L84C and TSB 9D2J internal interleave. 2. Improve H2F error handling RDT: 1. Add internal interleave define. 2. Change program multi plane behavior for internal interleave.
O0529A	O0609A	O0529A	1. Support Hynix 16nm MLC, 2. Fix small capacity burn-in issue 3. Improve GC efficiency 4. Pretest improvement
O0213E	O0311A	O0213E	1. Add K9GCGD8U0A support 2. Improve SPOR stability 3. Improve HD tune read performance 4. Fix Pretest0 bug 5. Improve RDT
O0121A	O0107B	O0121A	Firmware 1. Fix SPOR mark bad issue 2. Fix the issue of run out of spare block when smart read data Pretest 1. Add reference run time bad block function
N1215A	N1215A	N1215A	1. Enhanced Page Mode First Release 2. Flash Support List: Micron L95B, Micron L85A, Intel





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**Note:**

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

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