



User guide for JMicon 605 MP tool

Preview Version A.1.0



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JMicon Technology Corporation
1F, No.13, Innovation Road 1,
Science Based Industrial Park
Hsinchu, Taiwan, R.O.C

For more information on JMicon products, please visit the JMicon web site at
<http://www.JMicon.com> or send email to sales@jmicon.com



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1. Feature

- Integrate download firmware & read/write testing.
- Concurrent multi-port process.
- Jumper less setting.
- Provide windows user interface and easy to use.
- Auto-selection of system file.
- Auto detect the configuration of flash array and update to INI file.
- Use one button to complete the preformat, download system firmware and read/write test.
- Interface: Data access through USB or USB to SATA Bridge (JM20329) or USB to PATA Bridge (JM20335).
- Input device information such as serial number, model name...etc.
- Read/write defect table.
- Error proof mechanism.
- Free-Style Layout

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2. Functions

2-1. Test item: can select partial test items to do.

2-2. Flash info: disk media setting include flash maker, type, bank number...etc

2-3. Device setting: Input serial number, model name, f/w version, VID/PID...etc.

2-4. F/W setting: Show firmware setting.

2-5. H/W setting:

2-1. Test item

- Flash module test: scan all nand flash's id of SSD, and compare with user setting value.
 - Check Flash ID1: Compare 1st ID with user setting value.
 - Check Flash ID2: Compare 2nd ID with user setting value.
 - Check Flash ID3: Compare 3rd ID with user setting value.
 - Check Flash ID4: Compare 4th ID with user setting value.
 - Check Flash ID5: Compare 5th ID with user setting value.
- Bus interface test: Read /write data from PC to SRAM of controller through SATA or USB bus.
- Flash interface test: Read/write data from PC to each flash of the SSD.
- Pre-format: scan all blocks of SSD to build defect table and system table.
 - Factory Default BB: Find factory bad block and build defect table
 - Factory + New BB: Merge factory bad block and new bad block into a defect table.
 - Erase Search: Erase all block and build defect table
- Download program: Download firmware to the SSD.
 - Bin File: SATA code
 - SN encode: Decimal or Hexadecimal
 - SATA LBA mode: LBA28 or LBA48
 - SN length: Maximum length of serial number
 - HDDA control: 3 status (Read, Write, IDLE), 3 effect (turn on, turn off, blink)
- Check Tables: Check defect table.
- Read/write test: Read/Write data from PC to the SSD.

2-2. Flash setting

- Flash maker.
- Flash type.



- Bank number.
- Channel number.
- Select specified firmware.
- Set drive current
- IDEMA capacity setting (see more detail in http://idema.org/_smartsite/modules/local/data_file/show_file.php?cmd=download&data_file_id=1066)

2-3. Device setting

- Input serial number, model name, f/w version, VID/PID...etc.

2-4. FW setting

- Early Bad: keep factory's defect block.
- Later to early: add later bad blocks to early bad blocks when create defect table.
- Erase rebuild early : Use the erase method to rebuild early bad blocks.

2-5. H/W setup

- Via JMF329 USB to SATA Bridge board (PCB No. JM329-DB-001-0) to do all test.



USB to SATA bridge board ↑



Bridge board connect to device ↑



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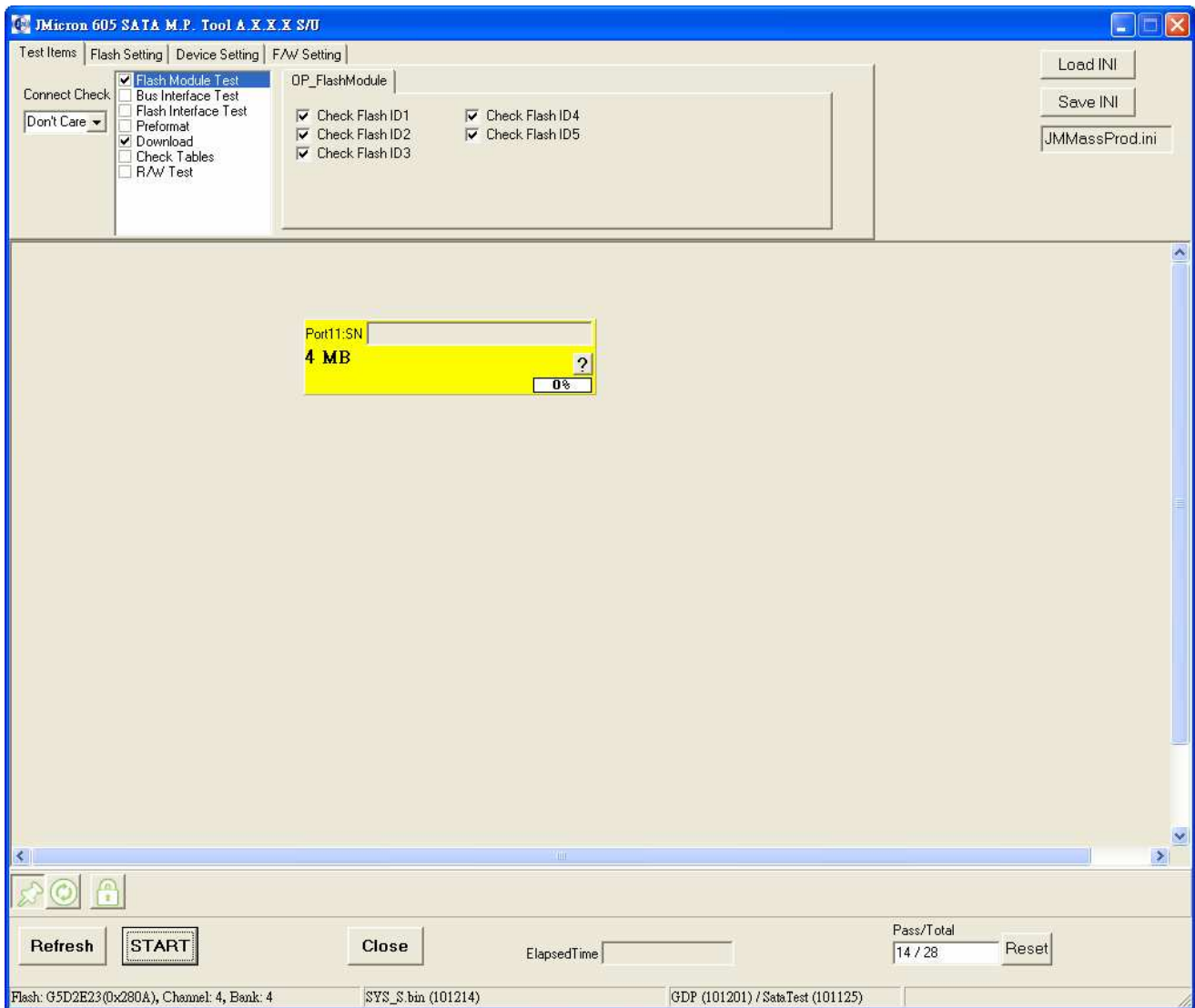
3. Notice:

- On EV board, you can always set GPIO5=0 (flash download) to download and test. But when the downloaded firmware is invalid and can't accept ATA vendor command 0xC1(Jump to loader), you may cause system fail. If you want to download f/w again, you have to set GPIO5=1 (host download) to download a valid firmware.
- Flash test may destroy system blocks existed in flash. Don't use MPTool to test flash only.
- When MPVersion = 0 in INI file, user can modify test setting
- When MPVersion = 1 in INI file, only <Start> <Refresh> <Close> button can be pressed. If you want to unlock the limit, first set on <RDVersion> checkbox and set password "jmicron", then you can select any button.
- If any fail has caused, you can double click the fail line to get error message.
- "Connect check" combo box provide user to check if the number of detected devices do not match the input value.
- "Red circle button" is used to automatically detect and update flash settings on factory mode. The password is "jmicron". If this process is successful, the button will turn to green.
- You can set USB device to removable media device from [UsbRemovable]=1 of INI file.
- If your device is USB, SATA combo device, please turn on IDEMA.



4. Quick Start:

- Insert your device



- Switch to “Flash Setting” tab

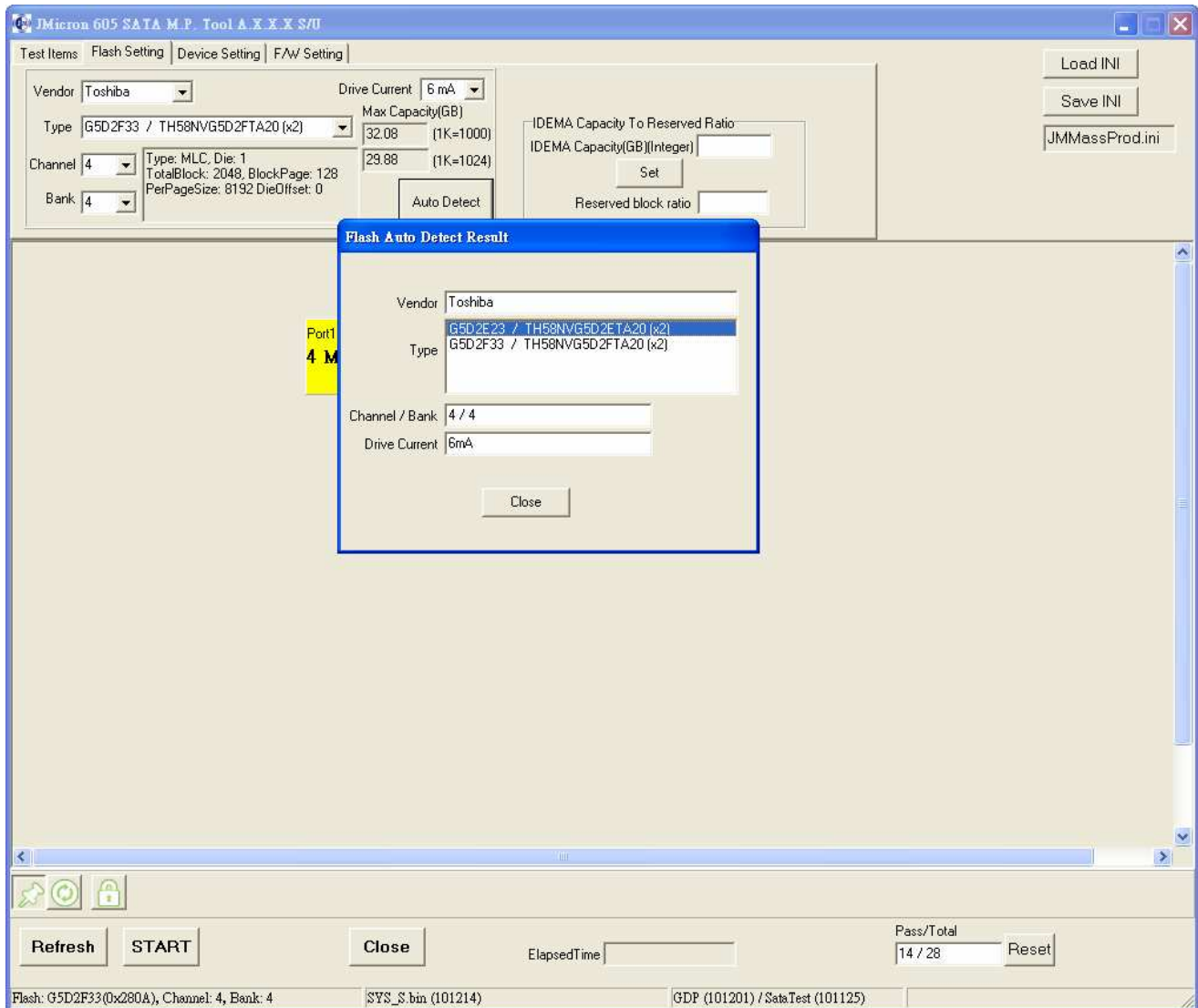


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- Press the “Auto Detect” button and get the flash configuration.



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- Check Test Items and press “Start” button.



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JMicron 605 SATA M.P. Tool A.X.X.S/U

Test Items | Flash Setting | Device Setting | F/W Setting

Connect Check
Don't Care

☒ Flash Module Test
☐ Bus Interface Test
☐ Flash Interface Test
☐ Preformat
☒ Download
☐ Check Tables
☐ R/W Test

OP_FlashModule

☒ Check Flash ID1
☒ Check Flash ID2
☒ Check Flash ID3
☒ Check Flash ID4
☒ Check Flash ID5

Load INI
Save INI
JMMassProd.ini

Port11:SN
4 MB
0%

Refresh START Close ElapsedTime Pass/Total 14 / 28 Reset

Flash: G5D2E23(0x280A), Channel: 4, Bank: 4 SYS_S.bin (101214) GDP (101201) / SataTest (101125)



5. Error code:

Test item	Error code	Description
Check flash module fail	M00	flash chip, channel, bank, don't match setting
Bus interface test	A00	Read/Write fail
Flash interface test	B00	
Flash RESET fail	B01	"Reset" flash
ReadFlashID fail	B02	Read ID of flash
2nd ReadFlashID fail	B03	Read ID of flash
Flash Erase fail	B04	"Erase" Flash
Flash Program fail	B05	"Program" flash when turn on ECC
Flash Program fail(ECC OFF)	B06	"Program" flash when turn off ECC
Flash ECC fail	B07	
Flash redundancy area test fail	B08	
Flash 2nd Erase fail	B09	"Erase" Flash
Test Memory Fail	B10	Read/Write SRAM fail
ECC Test fail	B11	
Check Loader Block Fail	K00	MP can't find loader block
Pre-format	C00	
Table not exist	C01	code block rage, defect table don't exist in flash
Table ecc fail	C02	data of code block rage, defect table are wrong
Number of bad block is over defect ratio	C03	number of bad block is too much on per chip
Number of free block is too large	C04	number of reserved block is too much
Total bad block number (%d) is over (MaxFreeBlcokNum-25)	C05	number of bad block is too much on total system
Build Table Fail	C06	building system table for SSD fail
Write Backup tables Fail	C07	Write remap and defect backup fail.
Check Tables Fail(Ecc error)	C08	Check remap and defect table ecc fail.
Download program	D00	Download program fail
Check Tables Fail	J00	Check defect table data fail.
Check Later bad block's number	J01	Later bad block's number is over than



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		threshold value
Read/write test	E00	LBA read/ write fail
Time Out	T00	Time Out

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6. INI file definition:

	Type	Description
[Setting]		
ProductModel	String	Show the product model. Default value "JM" will hide.
MPVersion	0/1	'1' for Factory MP, 0 for RD setting.
TimeOut	Dec	Value of time out(Unit: Min)
ConnectDevNum	0~50	Check the number of connect device, 0:don't care
EnBarCode	0/1	Enable barcode input
[TestItems]		
EnFlashModule	0/1	Enable flash module test
CheckFlashMask	Dec	flash id's mask
EnSataTest	0/1	Enable Bus Test
EnFlashTest	0/1	Enable flash Test
EnPreFormat	0/1	Enable pre-format process
EnDownload	0/1	Enable download code process
DownloadType	0/1	Download SATA /USB code (SATA: bit0,USB:bit1)
SataLBA48	0/1	LBA mode: LBA28:0, LBA48:1
LEDLightMode	Dec	LED mode
EnCheckTables	0/1	Enable check tables
EnRWTest	0/1	Enable read/write test
EnFormat	0/1	Enable format process
DiskFormat	0/1	Format file system type select (FAT32: 0)
DiskLabel	String	Disk volume label assign (FAT32 at most 11 characters)
[DeviceSetting]		
ModelNum	String	SATA identify model number
FirmwareVer	String	SATA identify firmware version
SerialNum	String	SATA identify/USB serial number



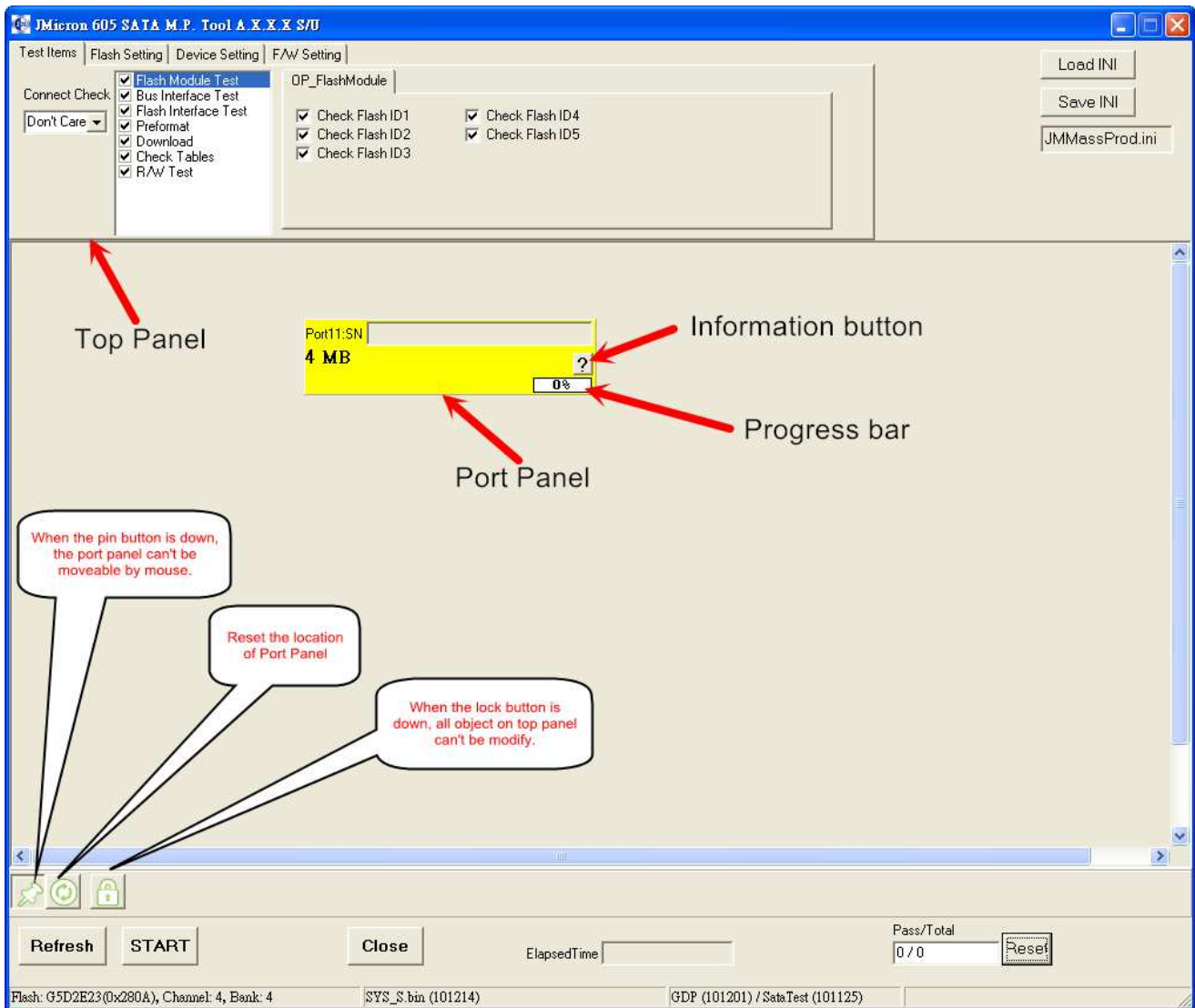
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SNAutoInc	0/1	Serial number auto increase
SNDecimal	0/1	Serial number use hexadecimal(0)/decimal(1)
SNErrReuse	0/1	Reuse serial number of error device. (0: assign new SN for each device. 1: use last fail device's SN if had.)
[FlashSetting]		
Capacity	Dec.	Flash capacity check (2 ⁿ Gbytes)
FlashName	String	Stored flash name selection
Channel	Dec.	Stored channel selection
Bank	Dec.	Stored bank selection
DrvCurrent	Dec.	Store drive current selection
ExtFlashFile	String	Flash attributes setting file (Must have)
[FwSetting]		
DefPercentage	Dec.	Defect block ratio
ResPercentage	Dec.	Reserve block ratio
Bch16ReadErrorThreshold	Dec.	Mark block as defect when ECC fail bits over/equal the threshold in BCH 16
Bch24ReadErrorThreshold	Dec.	Mark block as defect when ECC fail bits over/equal the threshold in BCH 24
Bch16EccErrorCopyThreshold	Dec.	Copy data to good block when ECC fail bits over/equal the threshold in BCH 16
Bch24EccErrorCopyThreshold	Dec.	Copy data to good block when ECC fail bits over/equal the threshold in BCH 24
ScrambleEnable	0/1	Enable scramble feature (Internal mechanism)
RemapEnable	0/1	Enable remap feature (Internal mechanism)
SecurityCounter	Dec	Security counter (default is 5)
EnTrimCmd	0/1	Enable Trim command



7. Illustrations:

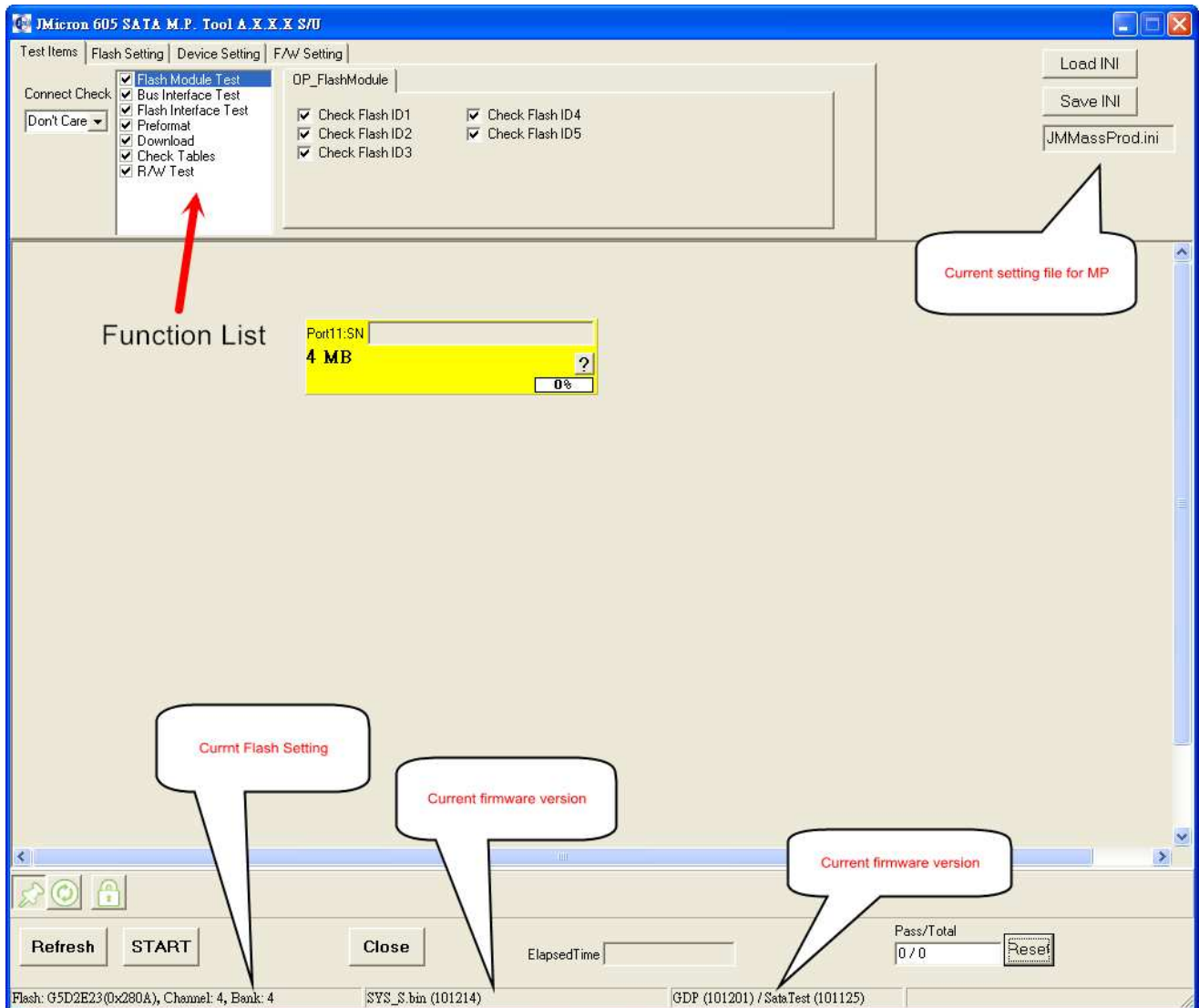
- MPTool Layout



- Test items



User guide for JMicron 605 MP tool



● Flash setting



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Test Items | Flash Setting | **Device Setting** | F/W Setting

Vendor: Toshiba Drive Current: 6 mA
Type: G5D2E23 / TH58NVG5D2ETA20 (x2) Max Capacity(GB): 1.99 (1K=1000)
Channel: 1 Type: MLC, Die: 1 1.86 (1K=1024)
Bank: 1 TotalBlock: 2048, BlockPage: 128
PerPageSize: 8192 DieOffset: 0

Auto Detect

IDEMA Capacity To Reserved Ratio
IDEMA Capacity(GB)(Integer)
Set
Reserved block ratio

Load INI
Save INI
JMMassProd.ini

Current Flash Setting

Port11:SN
4 MB
0%

Press the button to get current flash setting automatically

Refresh START Close ElapsedTime Pass/Total 15 / 15 Reset

Flash: G5D2E23(0x280A), Channel: 1, Bank: 1 SYS_S.bin (101214) GDP (101201) / SataTest (101125)

● Device setting



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JMicon 605 SATA M.P. Tool A.X.X.X S/U

Test Items | Flash Setting | Device Setting | F/W Setting

SATA Firmware Version (8) 101214

Model Number (40) JMicron 605 SSD

Common Serial Number (20) 000000000000 ☐ Auto Increase

Load INI

Save INI

JMMassProd.ini

SATA device info

Port11:SN

4 MB

0%

Automatic increase serial number

Refresh START Close ElapsedTime Pass/Total 15 / 15 Reset

Flash: G5D2E23(0x280A), Channel: 1, Bank: 1 SYS_S.bin (101214) GDP (101201) / SataTest (101125)

- F/W setting



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JMicon 605 SATA M.P. Tool A X X X S/U

Test Items | Flash Setting | Device Setting | F/W Setting

Defect block ratio: 48 (1/1000)
Reserved block ratio: 65 (1/1000)

ECC Correct Threshold
BCH 16: 6 (bits)
BCH 24: 15 (bits)

Read Error Threshold
BCH 16: 13 (bits)
BCH 24: 20 (bits)

Load INI
Save INI
JMMassProd.ini

F/W setting info

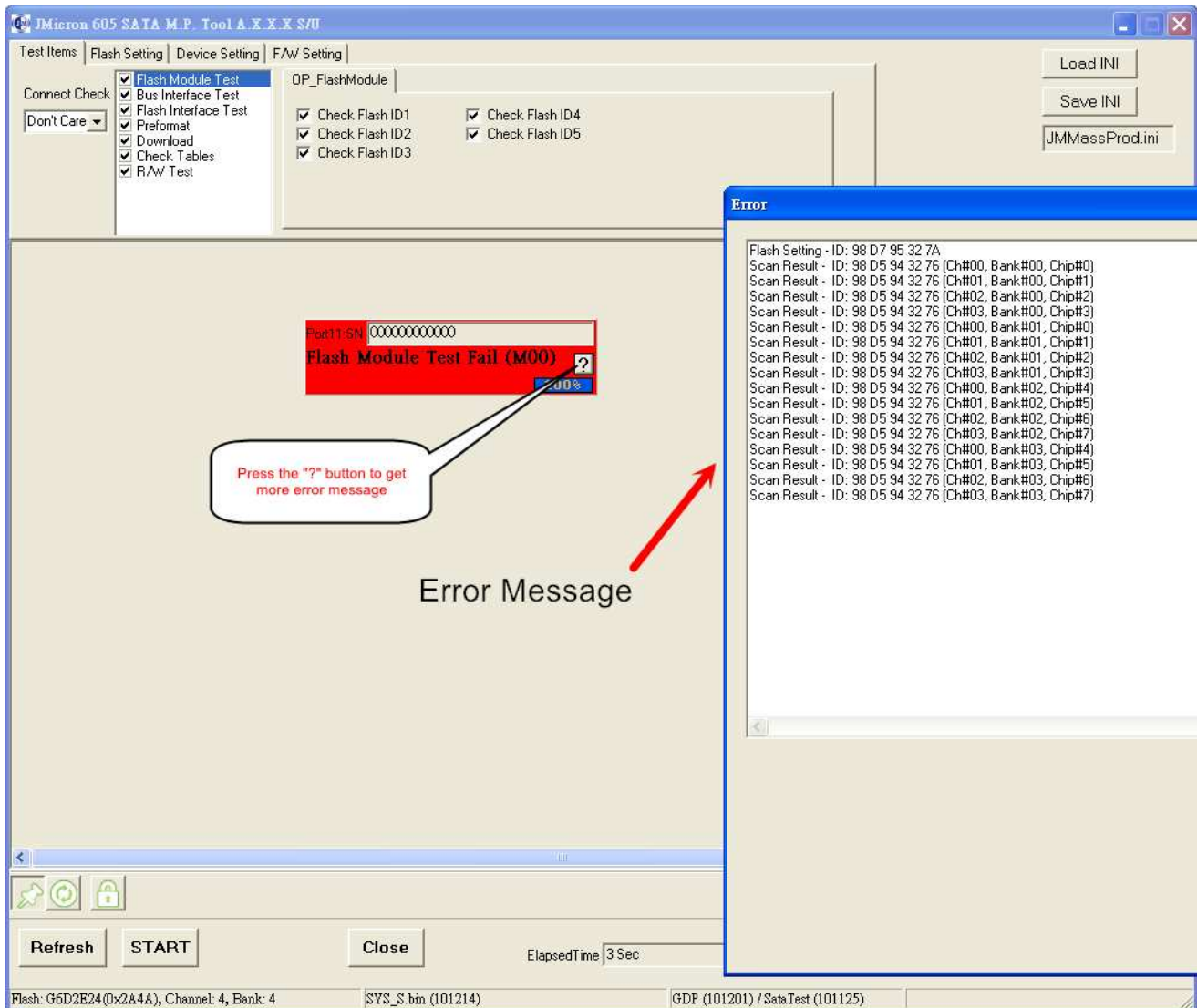
Port11:SN
4 MB
0%

Refresh START Close ElapsedTime Pass/Total 15 / 15 Reset

Flash: G5D2E23(0x280A), Channel: 1, Bank: 1 SYS_S.bin (101214) GDP (101201) / SataTest (101125)



- Get error message





8. Log File:

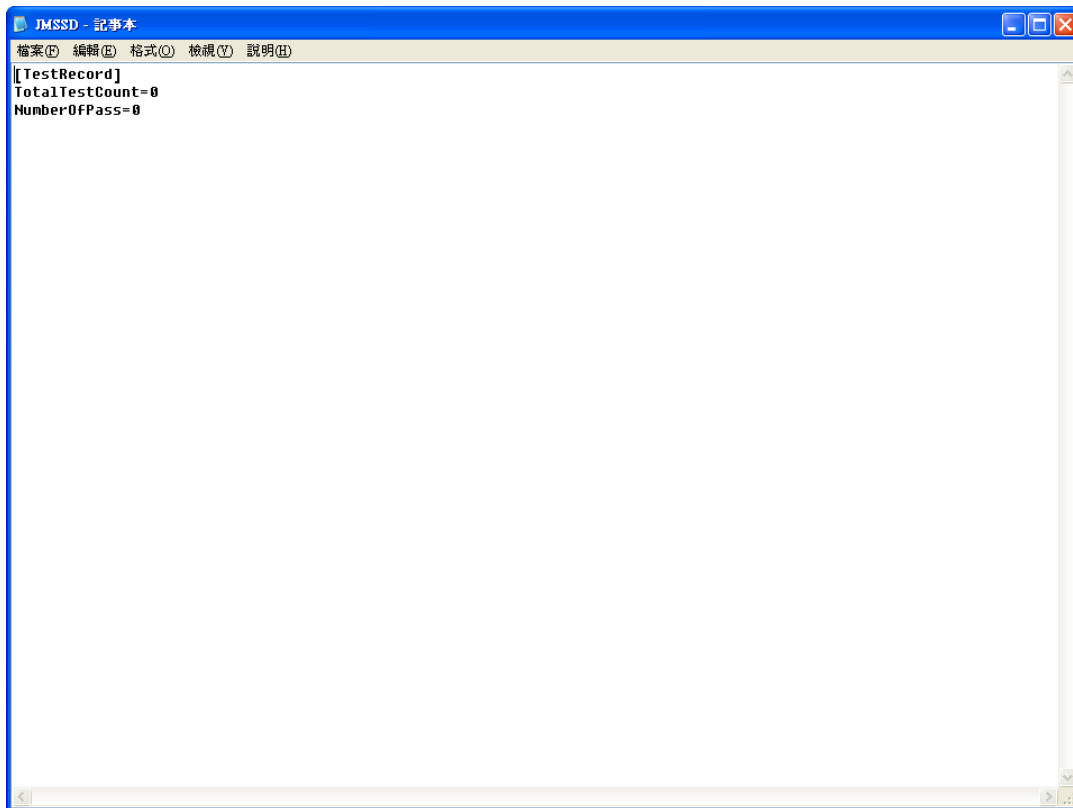
The MP will generate some log files under the “log” directory.

- 8.1 Daily log(filename like as YYYYMMDD_XXX.txt)

Y:Year, M:Month, D:Day X:count


No.	Port.	Date	Time	SerialNumber	Module	SATA	Flash	P_F	Down	R/W	Format	Result
000001	000001	2008/12/12	09:13:16	WWWWWW-WWW-7777A46	Pass	Pass	----	----	----	Pass	Pass	Pass
000001	000001	2008/12/12	09:58:37	WWWWWW-WWW-7777A46	Pass	Pass	----	----	Pass	----	----	Pass

- 8.2 Summary log(filename JMSSD.log)



- 8.3 Error log(filename like as Error_YYYYMMDDHHM1M1_port.txt)

Y: Year, M: Month, D: Day H: Hour M1: Minute Port: Usb port number





9. History:

Version	Date	Firmware version	Remark
A.1.0	20110329	20110329	Initial version

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