



# User guide for JMicron 612 MP tool

*Version B.2.5*

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

For more information on JM micron products, please visit the JM micron web site at <http://www.JM micron.com> or send email to [sales@jm micron.com](mailto:sales@jm micron.com)



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## 1. Feature

- Integrate download firmware & read/write testing.
- Concurrent multi-port process.
- Jumperless 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.

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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

- Check flash module: scan all nand flash's id of SSD, and compare with user setting value.
- Sata interface test: Read /write data from PC to SRAM of controller through SATA bus.
- Flash interface test: Read/write data from PC to each flash of the SSD.
- Dram interface test: Read/write data from PC to DRAM of the SSD.
- Pre-format: scan all blocks of SSD to build defect table and system table.
- Download program: Download firmware to the SSD.
- 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
- 

### 2-3. Device setting

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

### 2-4. FW setting

- Later to early: add early bad blocks to early bad blocks when create defect table.
- Erase rebuild early bad : 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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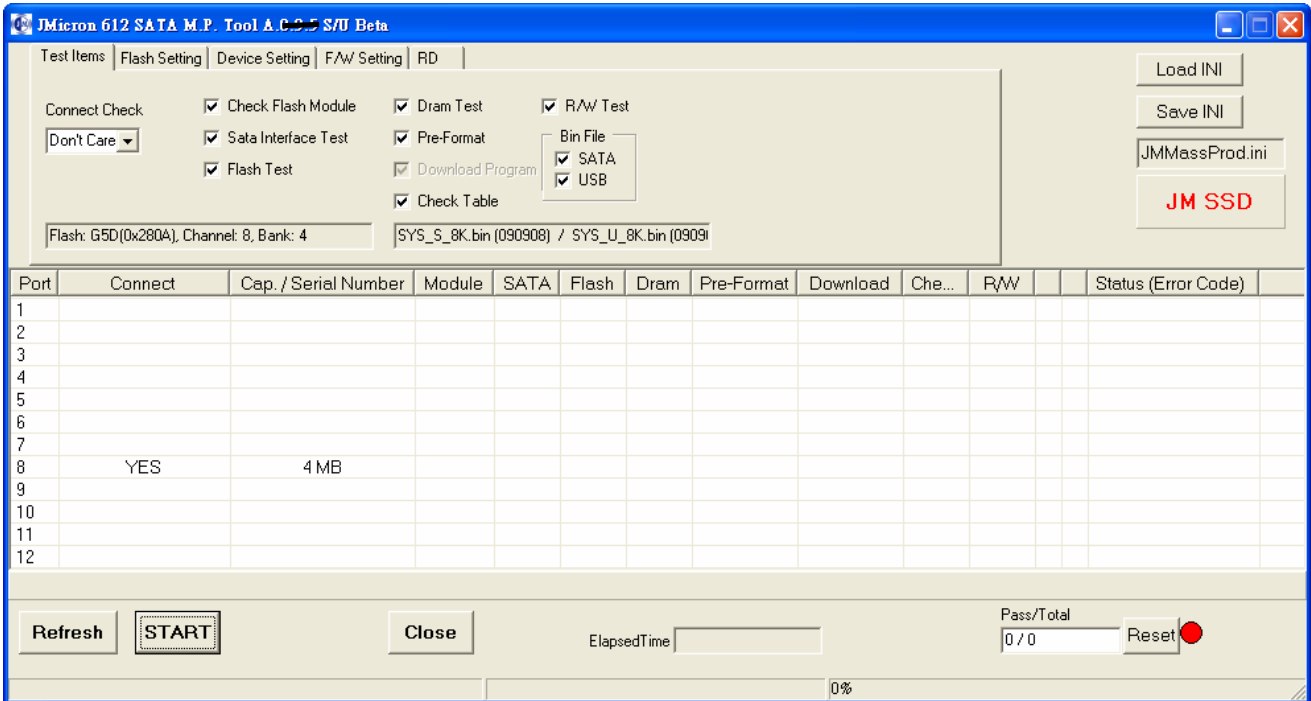
### 3. Notice:

- 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.

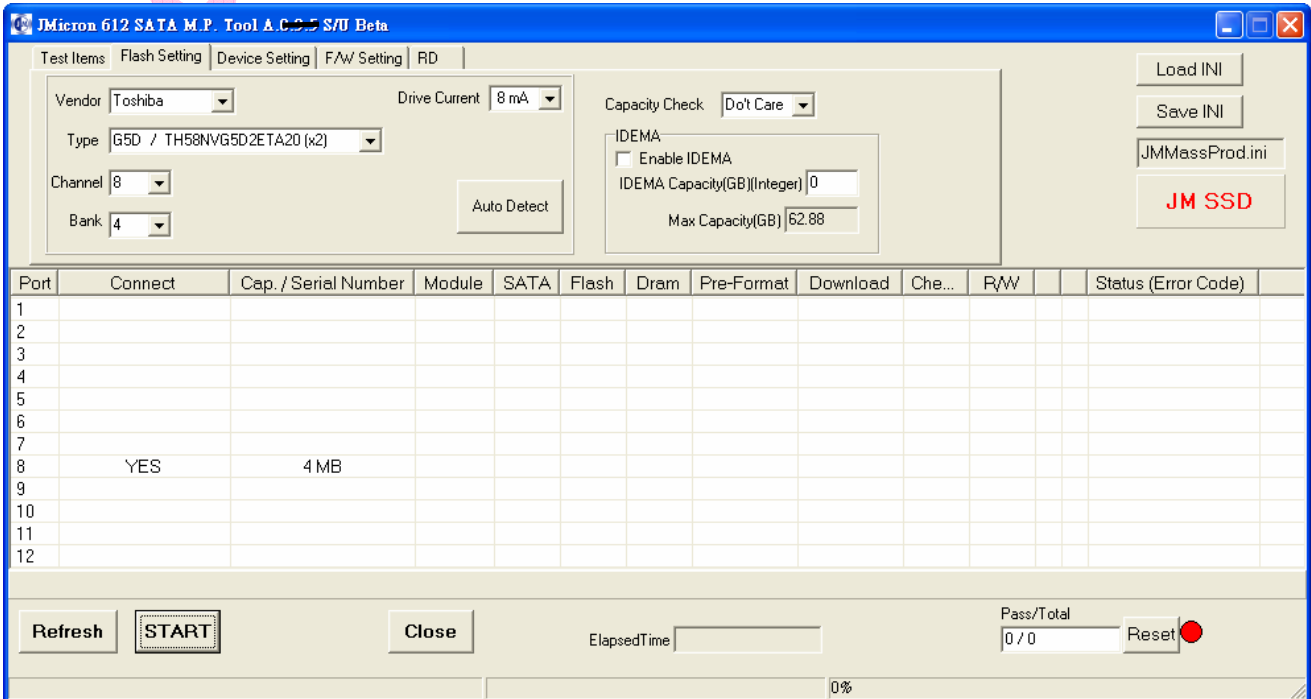


#### 4. Quick Start:

- Insert your device



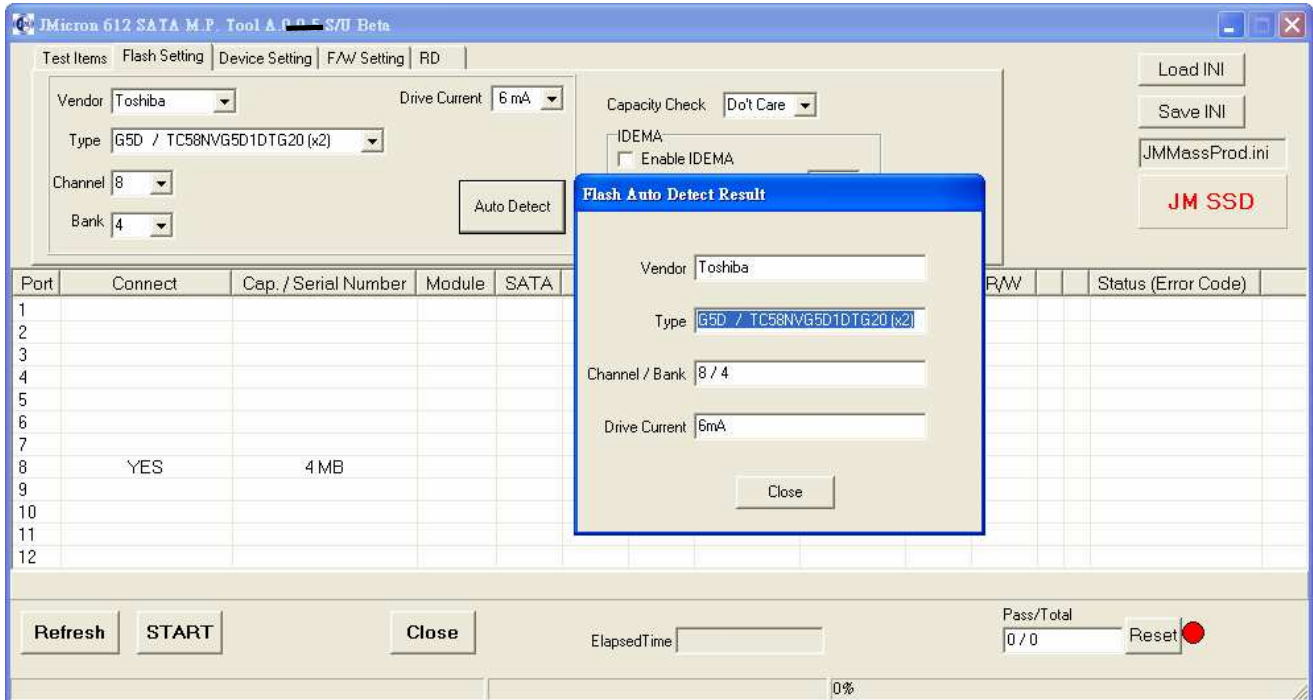
- Switch to "Flash Setting" tab



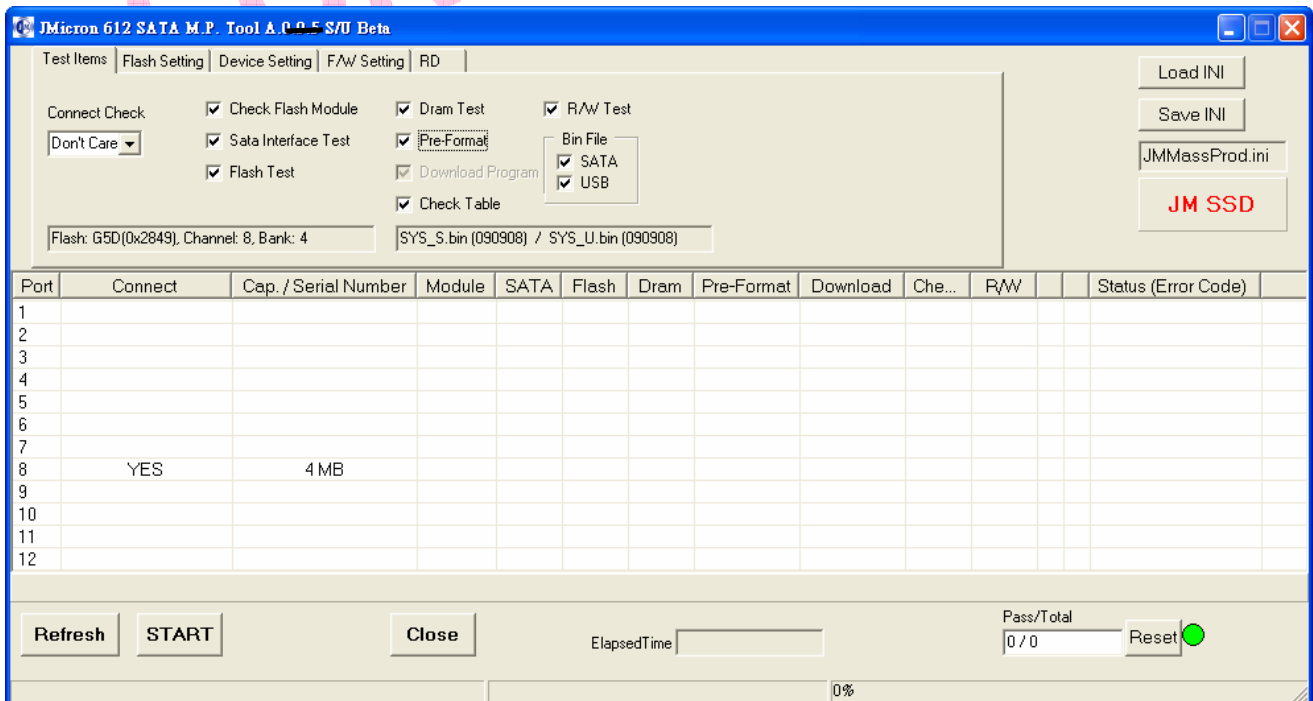


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- Press the “Auto Detect” button and get the flash configuration.



- Check Test Items and press “Start” button.





5. Error code:

Test item	Error code	Description
Check flash module fail	M00	flash chip, ch, bank, don't match setting
Sata 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	
Dram Test	H00	Read/Write Dram fail
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 threshold value



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

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## 6. INI file definition:

	Type	Description
<b>[Setting]</b>		
ProductModel	String	Show the product model. Default value "JM" will hide.
MPVersion	0/1	'1' for Factory MP, 0 for RD setting.
ShowTitle	0/1	
TimeOut	Dec	Value of time out(Unit: Min)
EnBarCode	0/1	Enable barcode input
ConnectDevNum	0~12	Check the number of connect device, 0:don't care
<b>[TestItems]</b>		
EnFlashModule	0/1	Enable flash module test
EnSataTest	0/1	Enable Sata Test
EnFlashTest	0/1	Enable flash Test
EnDramTest	0/1	Enable dram 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)
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)
SaveDefTable=0	0/1	Save Def. Table
<b>[DeviceSetting]</b>		
ModelNum	String	SATA identify model number
FirmwareVer	String	SATA identify firmware version
SerialNum	String	SATA identify/USB serial number
SNAutoInc	0/1	Serial number auto increase



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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.)
VendorName	String	USB vendor name
ProductName	String	USB product name
VID	String	USB VID
PID	String	USB PID
ManufString	String	USB manufacture string
ProductString	String	USB product string
IDE_UDMA5	0/1	Cable type report on IDE bus. 0:UDMA2, 1:UMDA5
<b>[FlashSetting]</b>		
Capacity	Dec.	Flash capacity check (2 <sup>n</sup> 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)
<b>[FwSetting]</b>		
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)
UsbRemovable	0/1	1=Set USB device to removable media device.



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UsbLedP14	0/1	1=set GPIO#14 as USB LED, 0=set HDDA as USB LED.
SecurityCounter	Dec	Security counter (default is 5)
EnTrimCmd	0/1	Enable Trim command
EnSizeAlignment	0/1	Enable Size alignment

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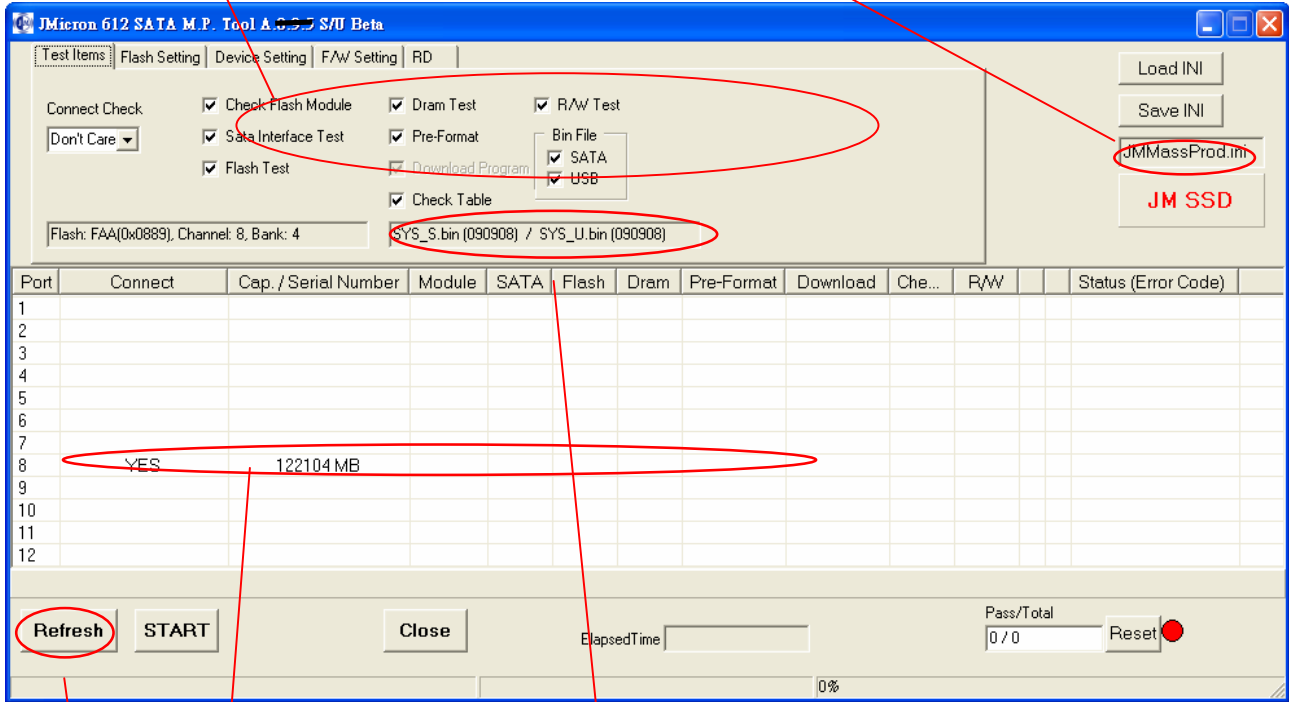


## 7. Illustrations:

- Test items

You can select partial test items to execute.

Current selected configuration file name



Double click this line to get original firmware version.

Download file name (SATA file/USB file) & version

Identify tested device first.

- Flash setting



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Select correct flash setting

Select correct capacity depended on flash setting.  
If you don't want to check it, select "don't care" item.

Auto detects flash array configuration.

The screenshot shows the 'Flash Setting' tab of the JMicron 612 SATA M.P. Tool. The 'Vendor' is set to 'Micron' and the 'Type' is 'FAA / MT29F64G08CFAAA (x2)'. The 'Capacity Check' is set to 'Do't Care'. The 'Auto Detect' button is visible. The table below shows the results of the flash array configuration.

Port	Connect	Cap. / Serial Number	Module	SATA	Flash	Dram	Pre-Format	Download	Che...	R/W	Status (Error Code)
1											
2											
3											
4											
5											
6											
7											
8	YES	122104 MB									
9											
10											
11											
12											

- Device setting



SATA device info

USB device info

Port	Connect	Cap./Serial Number	Module	SATA	Flash	Dram	Pre-Format	Download	Che...	R/W	Status (Errc)
1											
2											
3											
4											
5											
6											
7											
8	YES	wwwwwwww-wwww-77777F0		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
9											
10											
11											

Automatic increase serial number

- F/W setting



See section 2-5.

These setting don't save to INI file when close application.

Refer to .INI definition.

Port	Connect	Cap./Serial Number	Module	SATA	Flash	Dram	Pre-Format	Download	Che...	R/W	Status (Error Code)
1											
2											
3											
4											
5											
6											
7											
8	YES	122104 MB									
9											
10											
11											
12											



- Get error message

Double click this line to get the detailed message

The screenshot shows the JMicron 612 SATA M.P. Tool A interface. The 'Test Items' tab is active, showing various test options like 'Check Flash Module', 'Dram Test', 'R/W Test', etc. The 'Flash' field is set to 'G5D(Dx280A), Channel: 8, Bank: 4'. The 'Bin File' section has 'SATA' and 'USB' selected. The 'Test Results' table has the following data:

Port	Connect	Cap. / Serial Number	Module	SATA	Flash	Dram	Pre-Format	Download	Che...	R/W	Status (Error Code)
1											
2											
3											
4											
5											
6											
7											
8	YES	XXXXXXXXXX-W...	Fail								Fail (M00)
9											
10											
11											
12											

An 'Error' dialog box is open, showing the following text:

```
Flash Setting - ID: 98 D5 94 32 76
Scan Result - ID: 98 D7 95 32 7A (Ch#00, Bank#00, Chip#0)
Scan Result - ID: 98 D7 95 32 7A (Ch#01, Bank#00, Chip#1)
Scan Result - ID: 98 D7 95 32 7A (Ch#02, Bank#00, Chip#2)
Scan Result - ID: 98 D7 95 32 7A (Ch#03, Bank#00, Chip#3)
Scan Result - ID: 98 D7 95 32 7A (Ch#04, Bank#00, Chip#4)
Scan Result - ID: 98 D7 95 32 7A (Ch#05, Bank#00, Chip#5)
Scan Result - ID: 98 D7 95 32 7A (Ch#06, Bank#00, Chip#6)
Scan Result - ID: 98 D7 95 32 7A (Ch#07, Bank#00, Chip#7)
Scan Result - ID: 98 D7 95 32 7A (Ch#00, Bank#02, Chip#8)
Scan Result - ID: 98 D7 95 32 7A (Ch#01, Bank#02, Chip#9)
```



## 8. Log File:

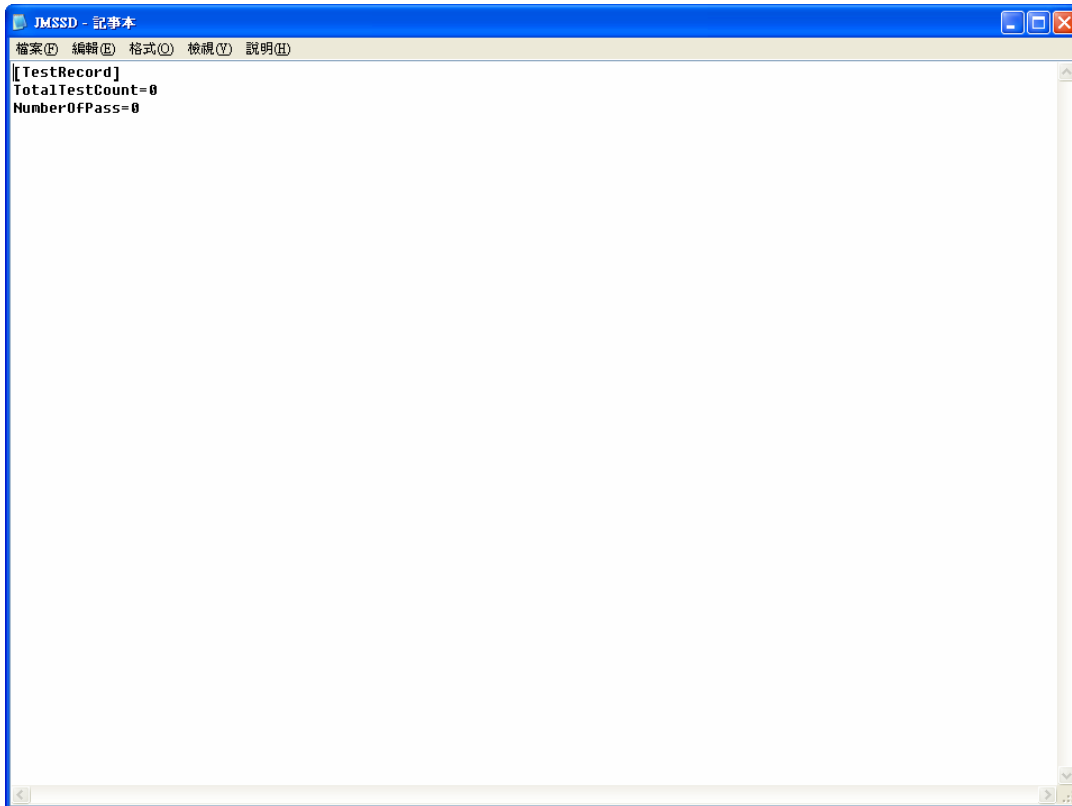
The MP will generate some log files under the “log” directory.

- 7.1 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

- 7.2 Summary log(filename JMSSD.log)



- 7.3 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
B.2.0	10/05/27	100527	Initial version
B.2.1	10/06/01	100601	Added: error handling of build table.
B.2.2	10/06/03	100603	Fixed: check table fail on USB
B.2.3	10/06/11	100611	Added: support Samsung flashes.
B.2.4	10/06/25	100625	Added: size alignment.
B.2.5	10/07/08	100708	Added: support more flashes.

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