



User guide for JMicon 61X MP tool

Version B.0.9.5

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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. RD: can get special information to analyze.

2-6. H/W setting:

2-1. Test item

- Check flash module
- sata interface test.
- Flash interface test.
- Dram interface test
- Pre-format.
- Download program.
- Check Tables
- Read/write test
-

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



- 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. RD

- Get defect table from flash.
- Put defect table to flash.
- Rebuild bad block mark

2-6. 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 ↑



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

The screenshot shows the 'Test Items' tab of the JMicron 612 SATA M.P. Tool. The interface includes a 'Connect Check' dropdown set to 'Don't Care'. Several checkboxes are selected: 'Check Flash Module', 'Sata Interface Test', 'Flash Test', 'Dram Test', 'Pre-Format', 'Download Program', 'Check Table', and 'R/W Test'. A 'Bin File' section has 'SATA' and 'USB' selected. The 'Flash' field shows 'G5D(0x280A), Channel: 8, Bank: 4'. The 'SYS' field shows 'SYS_S_8K.bin (090908) / SYS_U_8K.bin (090908)'. On the right, there are buttons for 'Load INI', 'Save INI', and 'JMMassProd.ini', along with a 'JM SSD' label. Below the settings is a table with 12 rows and 11 columns: Port, Connect, Cap. / Serial Number, Module, SATA, Flash, Dram, Pre-Format, Download, Che..., R/W, and Status (Error Code). Row 8 shows 'YES' in the Connect column and '4 MB' in the Cap. / Serial Number column. At the bottom, there are 'Refresh', 'START', and 'Close' buttons, an 'ElapsedTime' field, a 'Pass/Total' field showing '0 / 0', and a 'Reset' button with a red indicator light. The progress bar at the bottom shows '0%'.

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	4 MB									
9											
10											
11											
12											

- Switch to "Flash Setting" tab

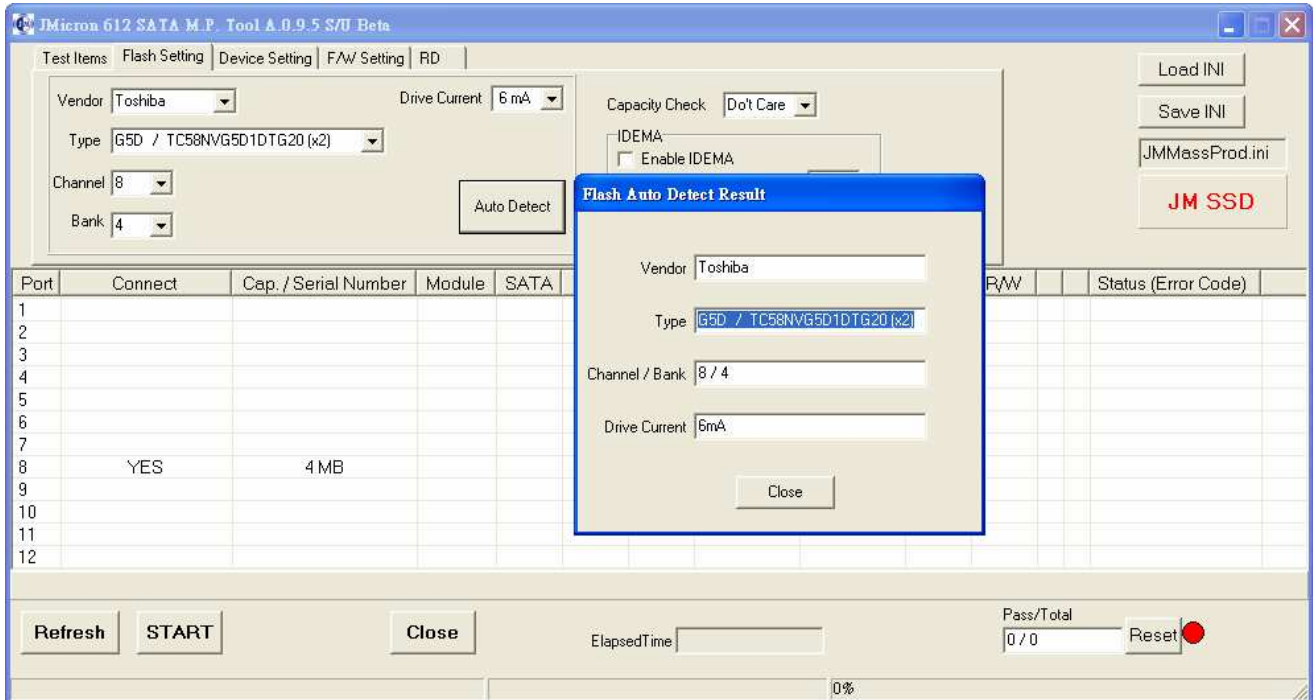
The screenshot shows the 'Flash Setting' tab of the JMicron 612 SATA M.P. Tool. The 'Vendor' is set to 'Toshiba' and 'Drive Current' is '8 mA'. The 'Type' is 'G5D / TH58NVG5D2ETA20 (x2)'. The 'Channel' is '8' and 'Bank' is '4'. There is an 'Auto Detect' button. The 'Capacity Check' is set to 'Do't Care'. The 'IDEMA' section has 'Enable IDEMA' unchecked, 'IDEMA Capacity(GB)(Integer)' set to '0', and 'Max Capacity(GB)' set to '62.88'. On the right, there are buttons for 'Load INI', 'Save INI', and 'JMMassProd.ini', along with a 'JM SSD' label. Below the settings is a table with 12 rows and 11 columns: Port, Connect, Cap. / Serial Number, Module, SATA, Flash, Dram, Pre-Format, Download, Che..., R/W, and Status (Error Code). Row 8 shows 'YES' in the Connect column and '4 MB' in the Cap. / Serial Number column. At the bottom, there are 'Refresh', 'START', and 'Close' buttons, an 'ElapsedTime' field, a 'Pass/Total' field showing '0 / 0', and a 'Reset' button with a red indicator light. The progress bar at the bottom shows '0%'.

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	4 MB									
9											
10											
11											
12											

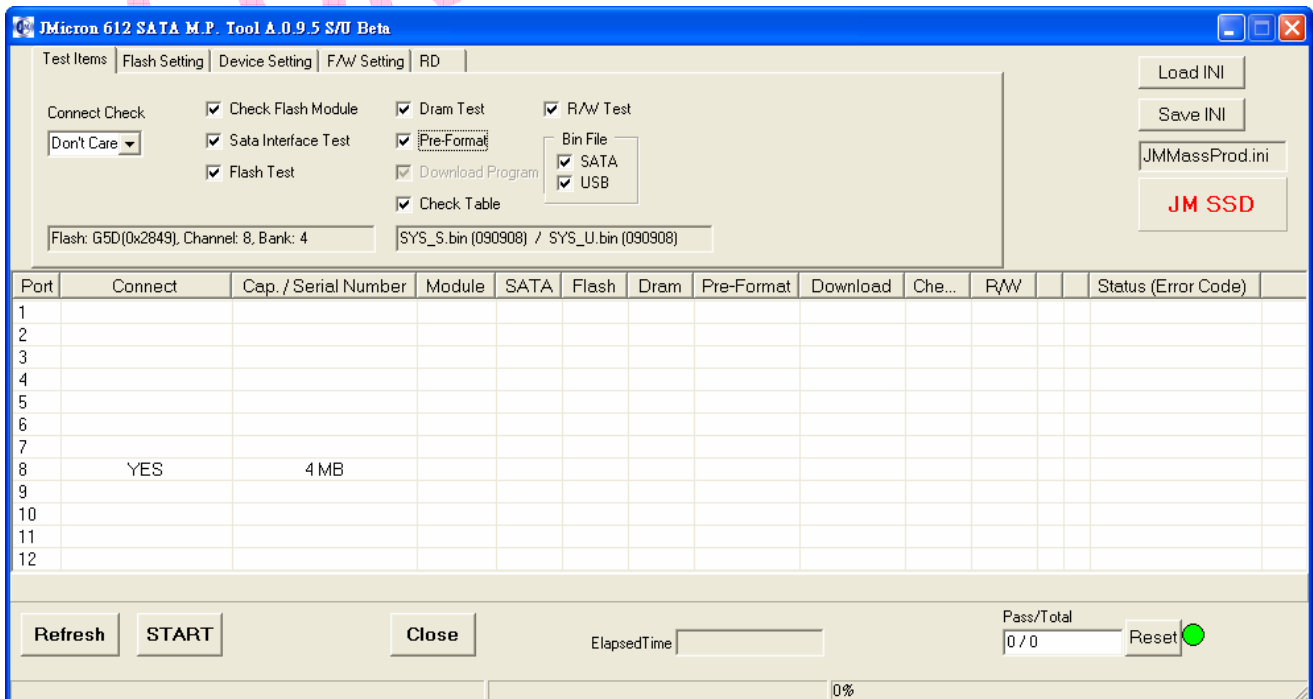


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- Press the “Auto Detect” button and get the flash configuration.



- 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
ECC Test fail	B11	
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 in 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 in 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	
Check Tables Fail	J00	Check defect table data fail.
Read/write test	E00	LBA read/ write fail
Time Out	T00	Time Out



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.
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
[TestItems]		
EnFlashModule	0/1	Enable flash module test
EnSataTest	0/1	Enable Sata 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)
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
[DeviceSetting]		
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
SNDecimal	0/1	Serial number use hexadecimal(0)/decimal(1)



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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=152D	String	USB VID
PID=0602	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
[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=flash.ini	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
WearLevelFrequency	Dec.	Difference of average and max erase count is the value x2
SmartEnable	0/1	Enable SMART feature
SecurityEnable	0/1	Enable security feature



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SlumberEnable	0/1	Enable slumber feature
InterleaveEnable	0/1	Enable interleave feature
ScrambleEnable	0/1	Enable scramble feature (Internal mechanism)
RemapEnable	0/1	Enable remap feature (Internal mechanism)
ParallelMemEnable	0/1	Enable parallel memory feature (Internal mechanism)
SecurityEraseEnable	0/1	Erase all addressable data when GPIO 1 = 0
UsbRemovable	0/1	1=Set USB device to removable media device.
UsbLedP14	0/1	1=set GPIO#14 as USB LED, 0=set HDDA as USB LED.
SecurityCounter	Dec	Security counter (default is 5)
IDEMA_Capacity_Enable	0/1	Enable IDEMA capacity
IDEMA_Capacity	Dec	Value of IDEMA capacity
[RDSetting]		
TableIn	String	Defect table save to
TableOut	String	Defect table write from



7. Illustrations:

- Test items

You can select partial test items to execute.

Current selected configuration file name

Load INI
Save INI
JMMassProd.ini
JM SSD

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											

Refresh START Close ElapsedTime Pass/Total 0 / 0 Reset

Double click this line to get original firmware version.

Identify tested device first.

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

- 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.

Vendor: Micron

Drive Current: 8 mA

Capacity Check: Do't Care

Type: FAA / MT29F64G08CFAAA (x2)

Channel: 8

Bank: 4

Auto Detect

IDEMA

☐ Enable IDEMA

IDEMA Capacity(GB)(Integer): 0

Max Capacity(GB): 125.83

Load INI

Save INI

JMMassProd.ini

JM SSD

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

Refresh

START

Close

ElapsedTime

Pass/Total
0 / 0

Reset

0%

- Device setting



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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	wwwwww-77777F0		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
9											
10											
11											

Automatic increase serial number

- F/W setting



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See section 2-5.

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

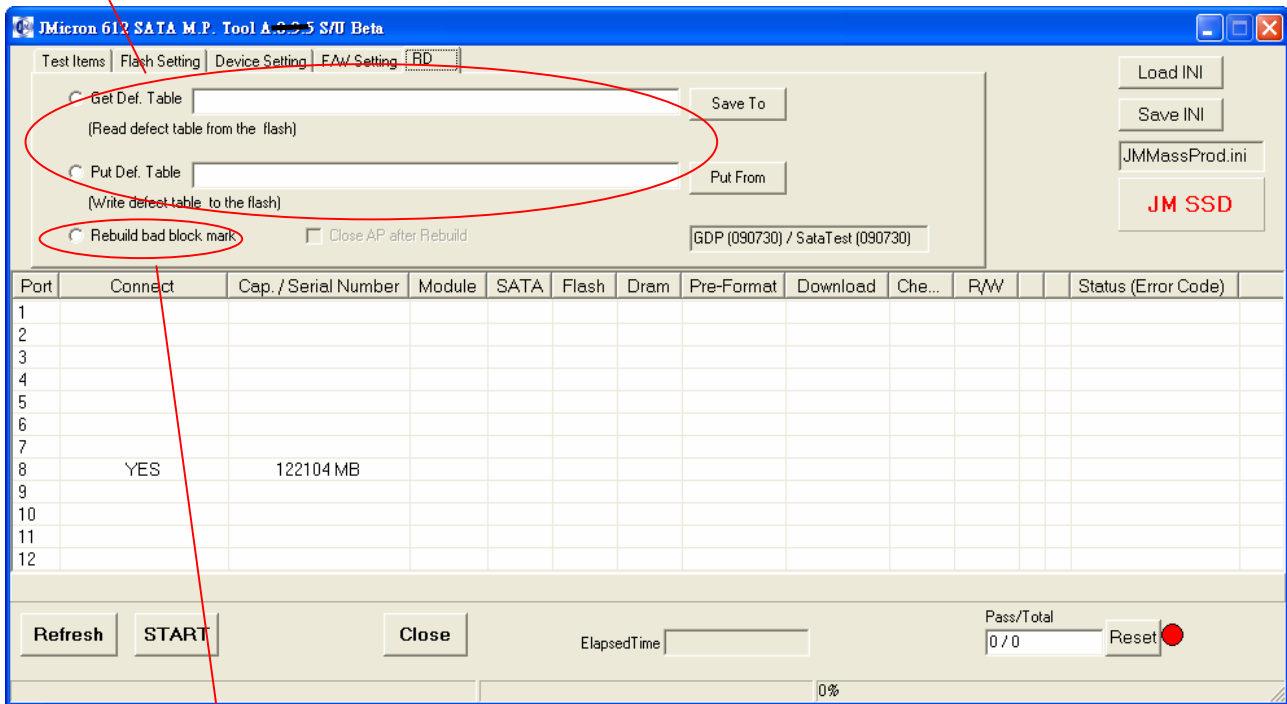
Refer to .INI definition.

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



- RD setting

Read/write defect table



Rebuild flash map with bad block mark for defect table creation.

- Get error message



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Double click this line to get the detailed message

The screenshot shows the JMicron 612 SATA M.P. Tool A.0.9.5 S/U Beta interface. The 'Test Items' tab is active, showing various test options. A red circle highlights the 'Fail' status in the 'Status (Error Code)' column for Port 8. An 'Error' dialog box is open, displaying 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#08, Bank#00, Chip#8)
Scan Result - ID: 98 D7 95 32 7A (Ch#09, Bank#00, Chip#9)
```

The interface also includes a table with columns: Port, Connect, Cap./Serial Number, Module, SATA, Flash, Dram, Pre-Format, Download, Che..., R/W, and Status (Error Code). The 'Status (Error Code)' column shows 'Fail' for Port 8. A red arrow points from the text 'Double click this line to get the detailed message' to the 'Fail' status in the table.



8. Log File:

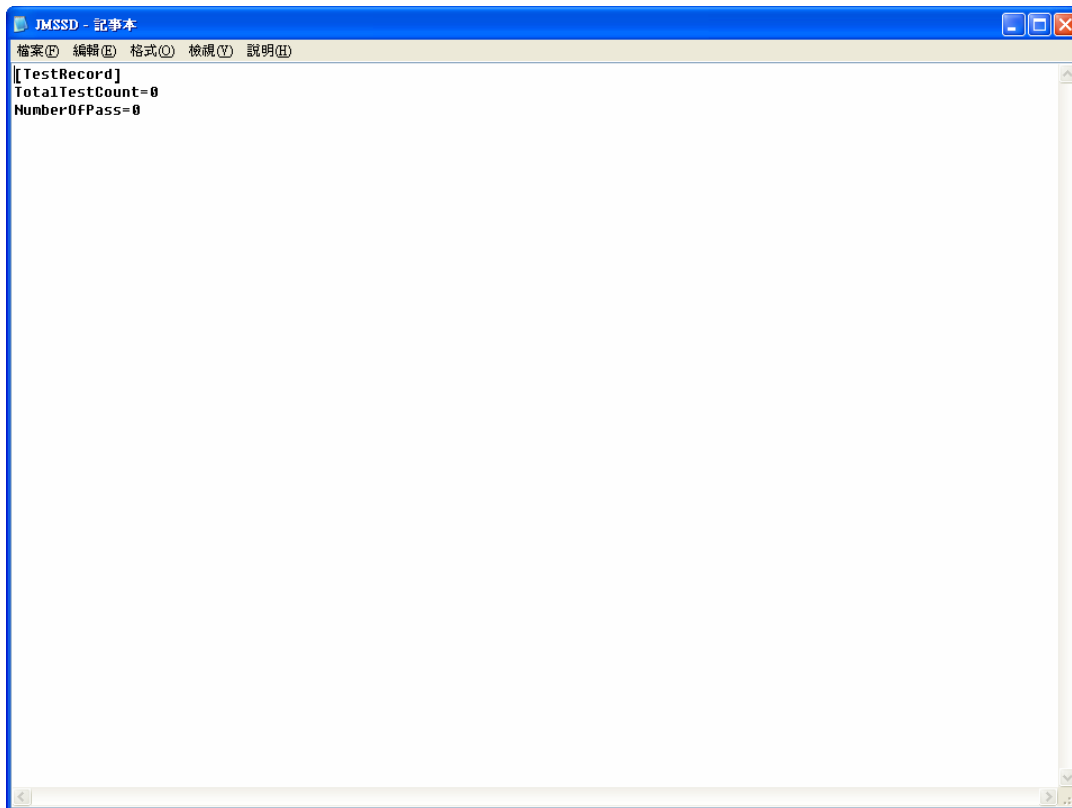
The MP will generate some log files under the “log” directory.

- 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_YYYYMMDDHHMM1M1_port.txt)

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





9. History:

Version	Date	Firmware version	Remark
B.0.9.5	09/09/11	080911	

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