Generic MPF256 BCH18 BBT User Manual

This is a Multiple Partition format scheme allowing up to 256 partitions to be used. Any pre-exiting factory marked bad block found within any of the partitions will **not** cause relocation to the starting block # of the follow up partitions.

Relevant User Options

The following special features on the special features tab apply to this scheme. The default values might work in some cases but please make sure to set the right value according to your system.

Please note only the below special feature items are related to this scheme and ignore any others. If any of below items doesn't exist, please check whether the right version has been installed or contact Data I/O for support by submitting Device Support Request through this address: http://www.dataio.com/support/dsr.asp

Bad Block Handling Type: "Generic MPF256 BCH18 BBT, Default: None"

Spare Area: "Enabled, Default = Disabled"

   Enabled is the only option for this BBM and the binary file must contain ECC data.

PartitionTable File: YourPartitionTable.mbn file

   Format of the table is described with below

Required good block area: Start Block: "0, Default = 0"

   All the blocks starting with this block # must be good or the device will get rejected at start of programming.

Required good block area: Number of Blocks Block: "160, Default = 0"

   All the blocks UP TO this block # must be good or the device will get rejected at start of programming operation.

Note - As an example, when it is **desired** to have the first **20** megabytes to be good:
-   Since each block is 128 Kbytes (0..0x1FFFF)
-   Each megabytes of data contains 8 blocks,
-   So this value has to be set as **160** (=20 * 8) blocks.

Check BB Marker in Data file: "**Disabled**. Default = Enabled"

   This setting is necessary since the binary file has data that over-writes the device manufacturer's Bad Block Marker area.

Bad block detection: "BBM then BB marker, Default = semi vendor BB marker"
This setting is optional for "fresh" samples but it is necessary when re-processing of a pre-processed sample (that contains Bbt tables).

Image Preparation: The binary file must be the same size as the device (including Spare/OOB/ECC) area, padded with "FF" when necessary, and:

- Contain spare (OOB) area data that contains BCH18 ECC information and
- *Optionally* can have two signatures:
  - "*Bbt0*" at **last** page # (63th) of the (**n)th** last device block plus ECC
  - "*1tbB*" at **last** page # (63th) of the (**n-1**)th device block plus ECC

Note – When/if the "Bbt0/1tbB" signatures are **not** pre-exiting/present in the binary file, the algorithm will **add** them (along with their ECC) with the following contents:
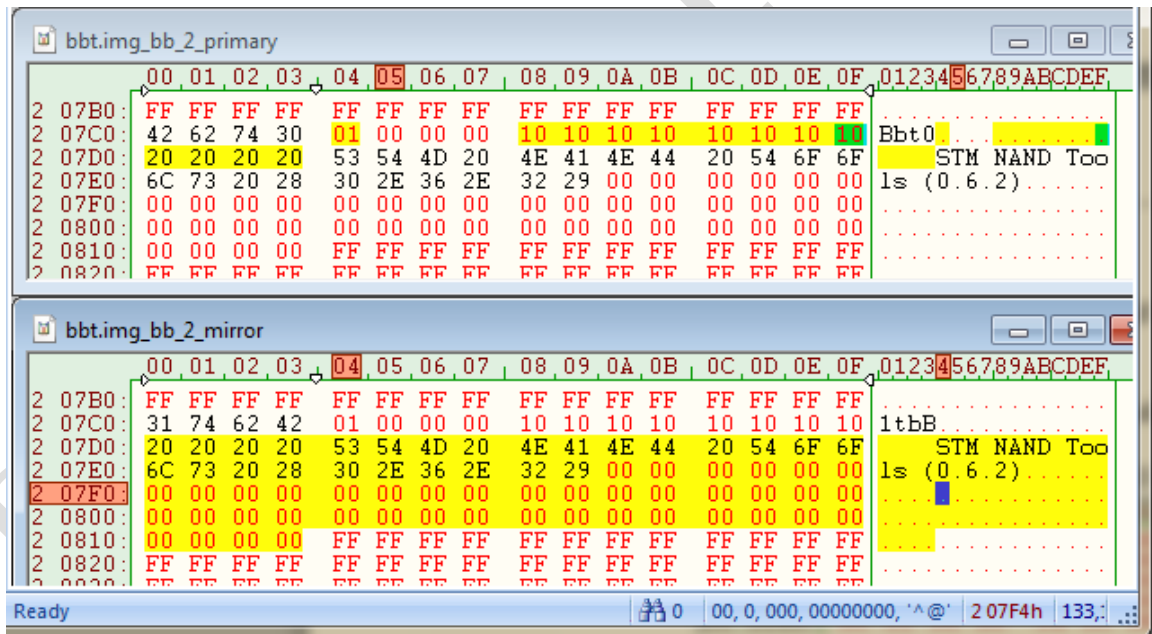
Bbt Table Formats: The algorithm generates Bad Block tables, calculates their ECCs, and inserts two copies into the **1st pages** of the **last two** blocks.

This is an example of a Bbt table with Block # 2 marked as bad.

This is ECC of the Bbt table
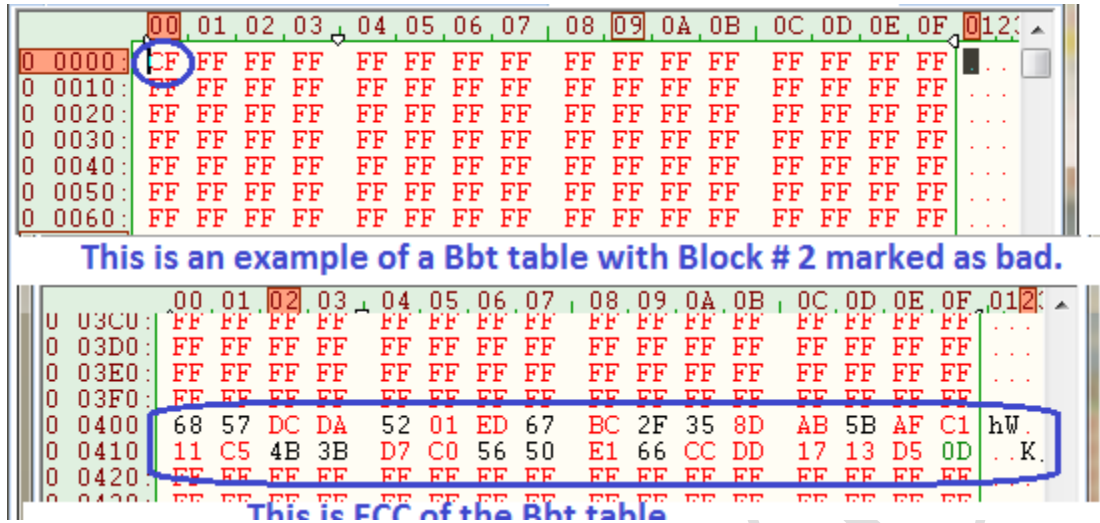
Note – The programmer supports programming 4 DUTs in parallel. During **re**-processing of DUTs, mixing fresh and pre-processed samples **is not** supported and the DUTs that contain pre-exiting Bbt tables will be rejected. Fresh and pre-processed devices should be handled separately.

Partition Table Format Partition.mbn
- A binary file of YourFile.MBN with fixed length of 256 bytes.
- Organization: 256 rows x 4 columns. Each table item is 32-bits hex number, little endian byte ordering. For example, a value of 0x12345678 is saved as 78 56 34 12.
- Each row of the table describes configuration for one partition. Up to 256 partitions can be used.
- Partition table configuration:
    i. **Start Adr**: address of start of partition in flash blocks. The programmer will set the binary file read pointer and the programmer write pointer to Start Adr. If Start Adr is 0xFFFFFFFF, programmer will stop processing the follow up partitions.
    ii. **End Adr**: The **last** valid block in the current partition. The last data block programmed must be equal to or less than **End Adr**, otherwise the programmer will reject the flash device.
    iii. **Actual Data Length**: number of blocks of data to read from the input file and write to the flash in the current partition. This number normally should be about **End Adr**– **Start Adr** + 2% of the **Data Length** within the partition.
    iv. **Note**: It is necessary that the LAST partition be allocated for the Bbt tables and its size needs to be 4 blocks.
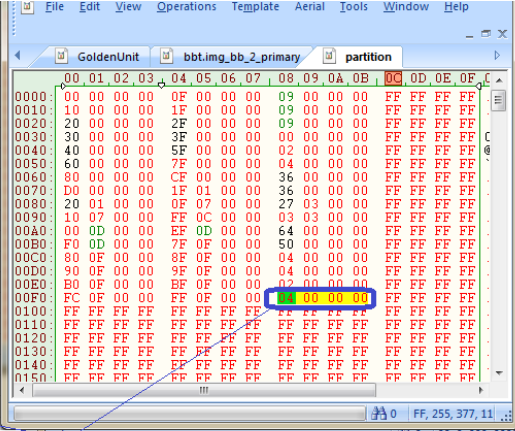
partition.mbn

Typical Example of a Partition Table -

Date							
7/13/2017							
Version 8832_01710	Please enter these values(Decimal)			These values are generated(Hex)			
0,15,9	0	15	9	0	F	9	
16,31,9	16	31	9	10	1F	9	
32,47,9	32	47	9	20	2F	9	
48,63,0	48	63	0	30	3F	0	
64,95,2	64	95	2	40	5F	2	
96,127,4	96	127	4	60	7F	4	
128,207,54	128	207	54	80	CF	36	
208,287,54	208	287	54	D0	11F	36	
208 287 54	288	1807	807	120	70F	327	
1808 3327 771	1808	3327	771	710	CFF	303	
3328 3567 100	3328	3567	100	D00	DEF	64	
3568,3967,80	3568	3967	80	DF0	F7F	50	
3968,3983,4	3968	3983	4	F80	F8F	4	
3984,3999,4	3984	3999	4	F90	F9F	4	
4016,4031,2	4016	4031	2	FB0	FBF	2	
4092,4095,4	4092	4095	4	FFC	FFF	4	

Note:*** The size MUST be End - Start (exactly)

This partition is for Bbt signatures and its size MUST be 4 blocks.

Typical Programmer Job Settings –

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Appendix

You can get the file "Description of common NAND Special Features.pdf" from
http://ftp.dataio.com/FCNotes/BBM/