

Application Note:

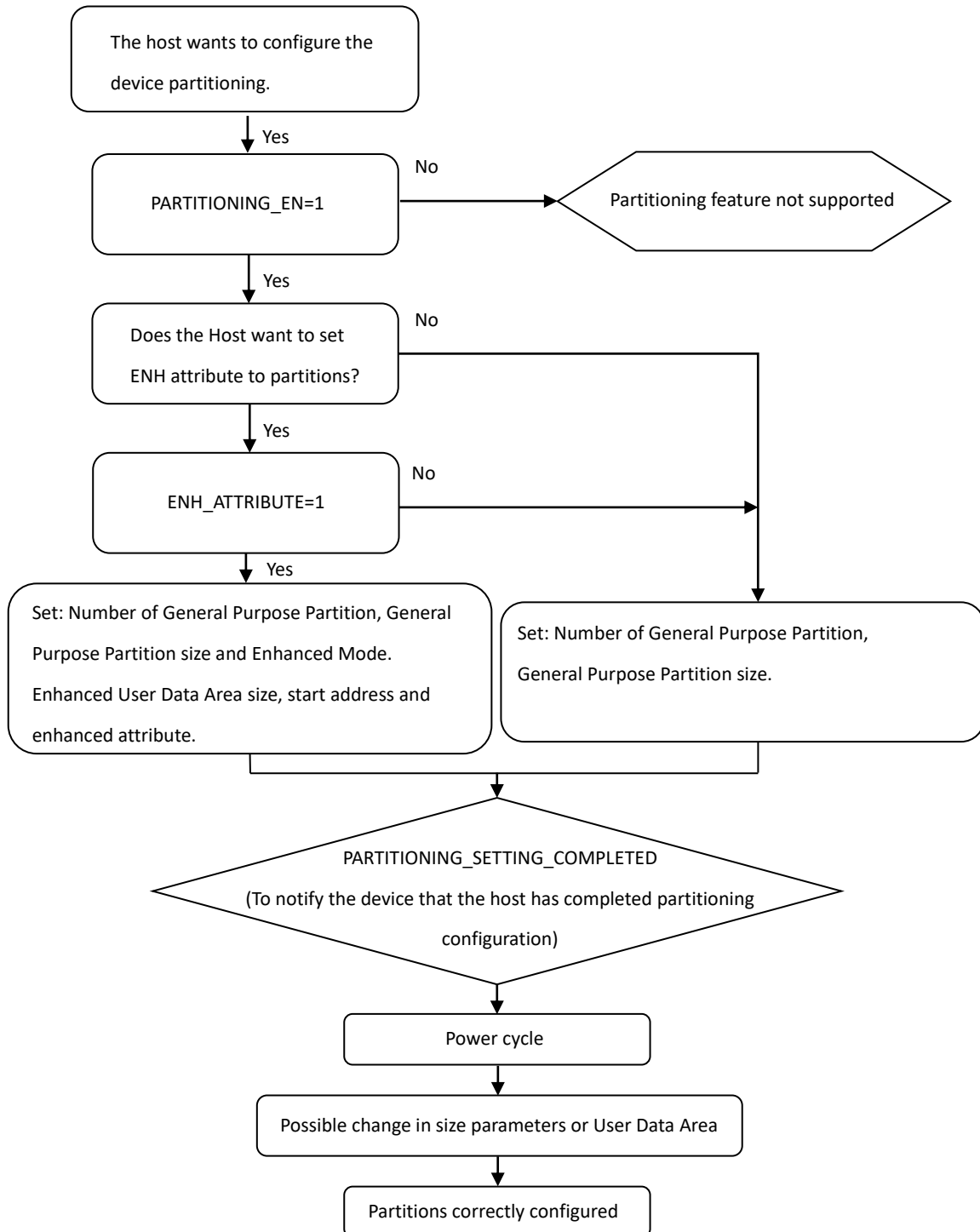
eMMC Detailed Settings in Dediware

V1.0

Description

This application note illustrates the setting of extCSD in eMMC. This note will introduce how to set Enhanced Mode and General Purpose Partition in Dedware and NuProg software. Get more information from JEDEC document (JESD84-B51).

The configure partitions of Enhanced Mode and General Purpose Partition



Step4. Please click on the **Config** function and set Enhanced and General Purpose Partition command:

1.High-density erase group definition(0xaf): This is the first value that you need to set, since Dediware will use this value to determine whether the user needs to write 0x01 to the extCSD. Once the power has been restarted, the default register will be "0".

2.Partitions attribute(0x9c) : This command is for telling the chip that it needs to set Enhanced Attribute in user data area or General Purpose Partition. The default is 0x00.

3.General Purpose Partition Size(0x8f to 0x9a) : This command is for generating General Purpose Partition 1 to General Purpose Partition 4, if you are not going to use General Purpose Partition, please skip this step. The setting of each size is shown as below:

General Purpose Partition1	size	General Purpose Partition3	size
ExtCSD[145/0x91]	size2	ExtCSD[151/0x97]	size2
ExtCSD[144/0x90]	size1	ExtCSD[150/0x96]	size1
ExtCSD[143/0x8f]	size0	ExtCSD[149/0x95]	size0
General Purpose Partition2	size	General Purpose Partition4	size
ExtCSD[148/0x94]	size2	ExtCSD[154/0x9a]	size2
ExtCSD[147/0x93]	size1	ExtCSD[153/0x99]	size1
ExtCSD[146/0x92]	size0	ExtCSD[152/0x98]	size0

4.Enhanced User Data Area Size(0x8c to 0x8e) : This register defines enhanced user data area size.

5.Enhanced User Data Area Start Address(0x88 to 0x8b) : Set the enhanced start address, if you want to start from the beginning, then you do not need to set this value.

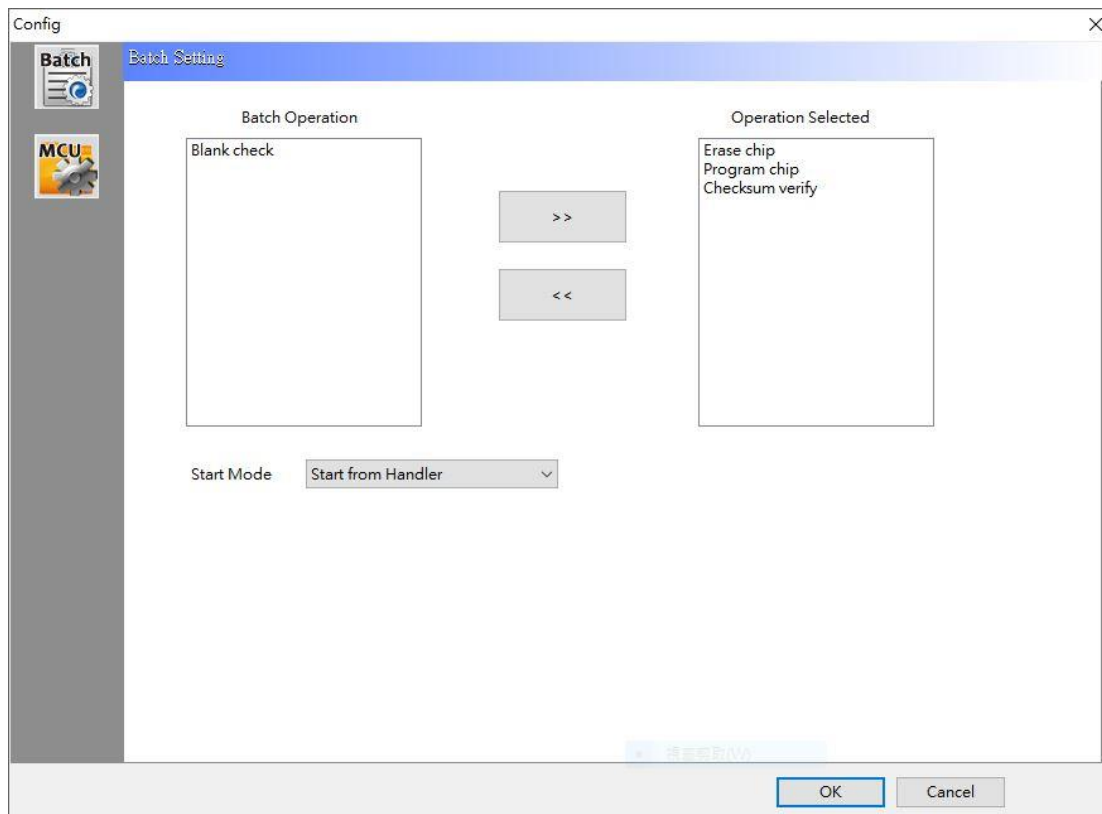
6.Partitioning Setting(0x9b) : The register is set to notify the device that the definition of parameters has been completed and the device can start its internal configuration activity.

Address	Value	Description
0xAF	0x1	setting in the beginning
0x9C	0x1	set Enhanced attribute
0x8F	0x1	set GPP1
0x92	0x1	set GPP2
0x95	0x1	set GPP3
0x98	0x1	set GPP4
0x8C	0xE9	set Enhanced User Data Area Size
0x9B	0x1	set to notify the device that has been completed

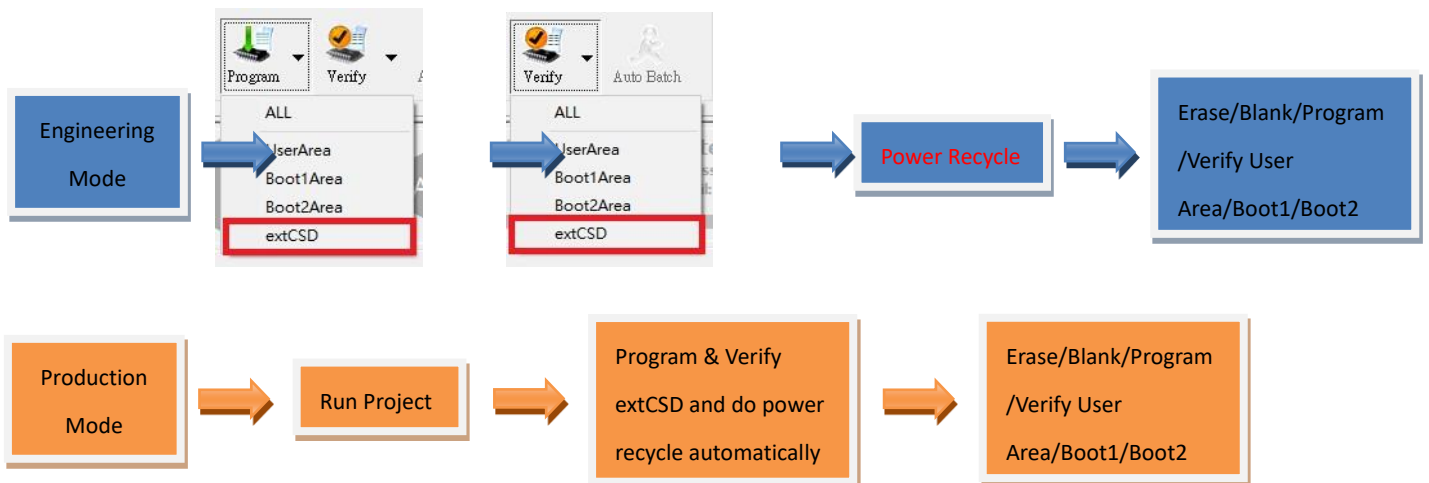
Note1 : All the steps have sequence, so please make sure the command is in order.

Note2 : Please note that the Max Enhanced Area must be less than Enhanced General Partition Size + Enhanced user data area.

Step5. After finishing the ExtCSD settings, please click **Batch** to set the batch operation if you would like to use them in the Production Mode:

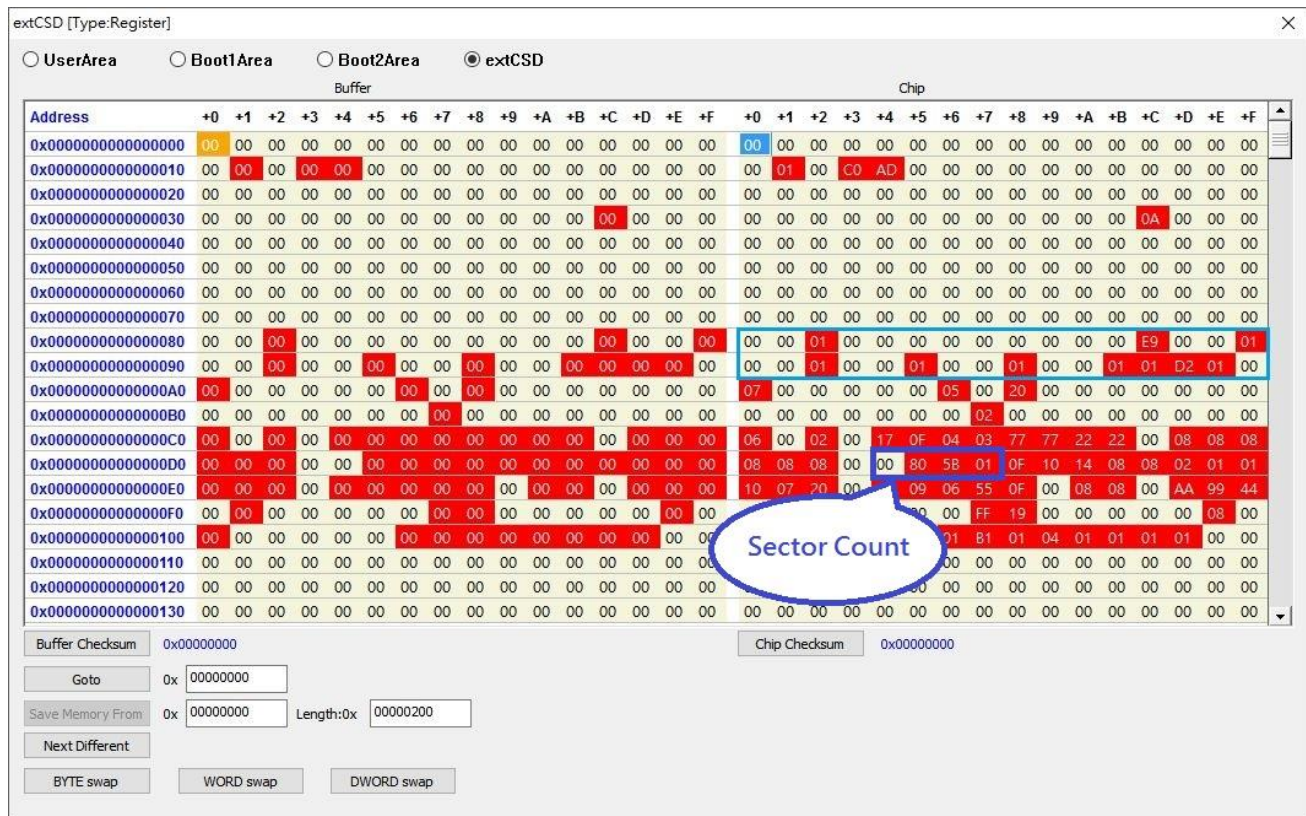


Step6. Please use **SavePrj** to generate the project, and switch to **Production Mode** to execute the project that you just saved. If you only want to remain in the Engineering Mode, please use program and verify function, and must do **power recycle*** after verification has finished.



* Power recycle means it is required to take out the chip from the IC socket, and then put it back again.

Step7. After finishing programming in the Production Mode, you can switch back to the Engineering Mode and use **Read IC** for checking:



You can see the General Purpose Partitions and the Enhanced Attribute have been written (framed in blue), and the Sector Count (0xD7 to 0xD7) will reduce.

Note :

1. ProgMaster series and StarProg-F/U series only support creating General Purpose Partition, but not supporting Read/Write in the General Purpose Partitions.
2. StarProg-F/U does not support Production Mode for eMMC.
3. ProgMaster supports eMMC Enhanced Mode setting and write images at the same time, but please note that the firmware version has to be 2.1.79 or above.

2.Partitions attribute(0x9c): This command is for telling the chip that it needs to set Enhanced Attribute in user data area or General Purpose Partition. The default is 0x00.

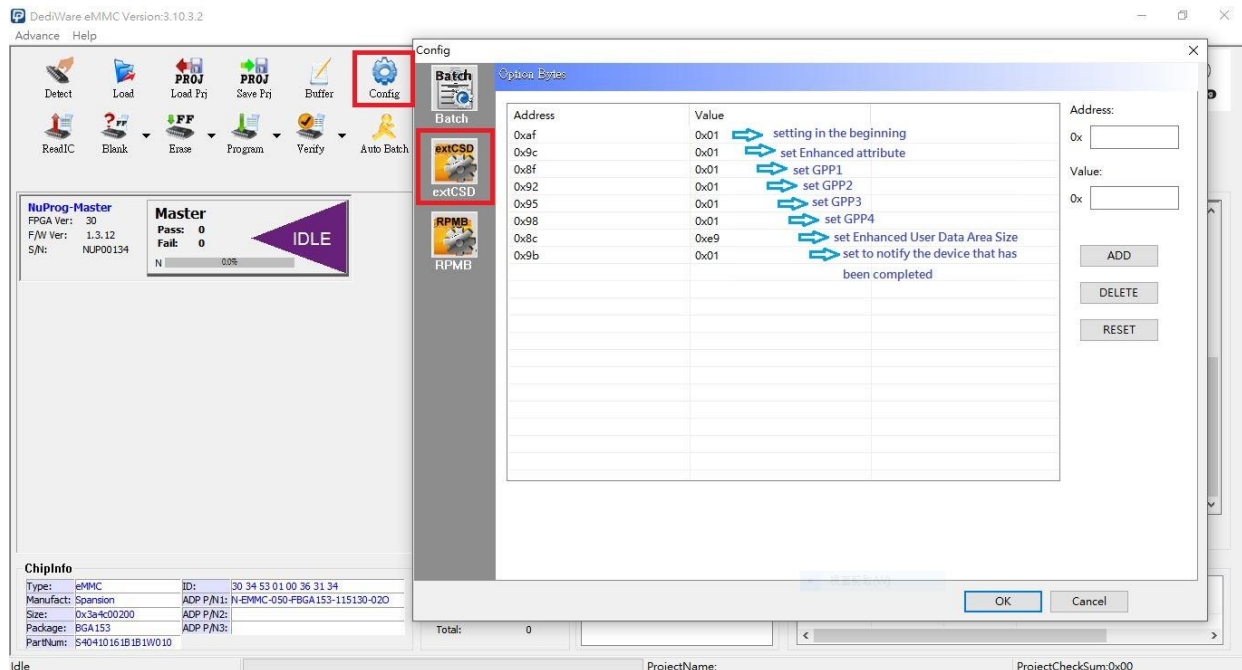
3.General Purpose Partition Size(0x8f to 0x9a): This command is for generating General Purpose Partition 1 to General Purpose Partition 4, if you are not going to use General Purpose Partition, please skip this step. The setting of size is shown as below:

General Purpose Partition1	size	General Purpose Partition3	size
ExtCSD[145/0x91]	size2	ExtCSD[151/0x97]	size2
ExtCSD[144/0x90]	size1	ExtCSD[150/0x96]	size1
ExtCSD[143/0x8f]	size0	ExtCSD[149/0x95]	size0
General Purpose Partition2	size	General Purpose Partition4	size
ExtCSD[148/0x94]	size2	ExtCSD[154/0x9a]	size2
ExtCSD[147/0x93]	size1	ExtCSD[153/0x99]	size1
ExtCSD[146/0x92]	size0	ExtCSD[152/0x98]	size0

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5.Enhanced User Data Area Start Address(0x88 to 0x8b): Set the enhanced start address, if you would like to start from the beginning, then you do not need to set this value.

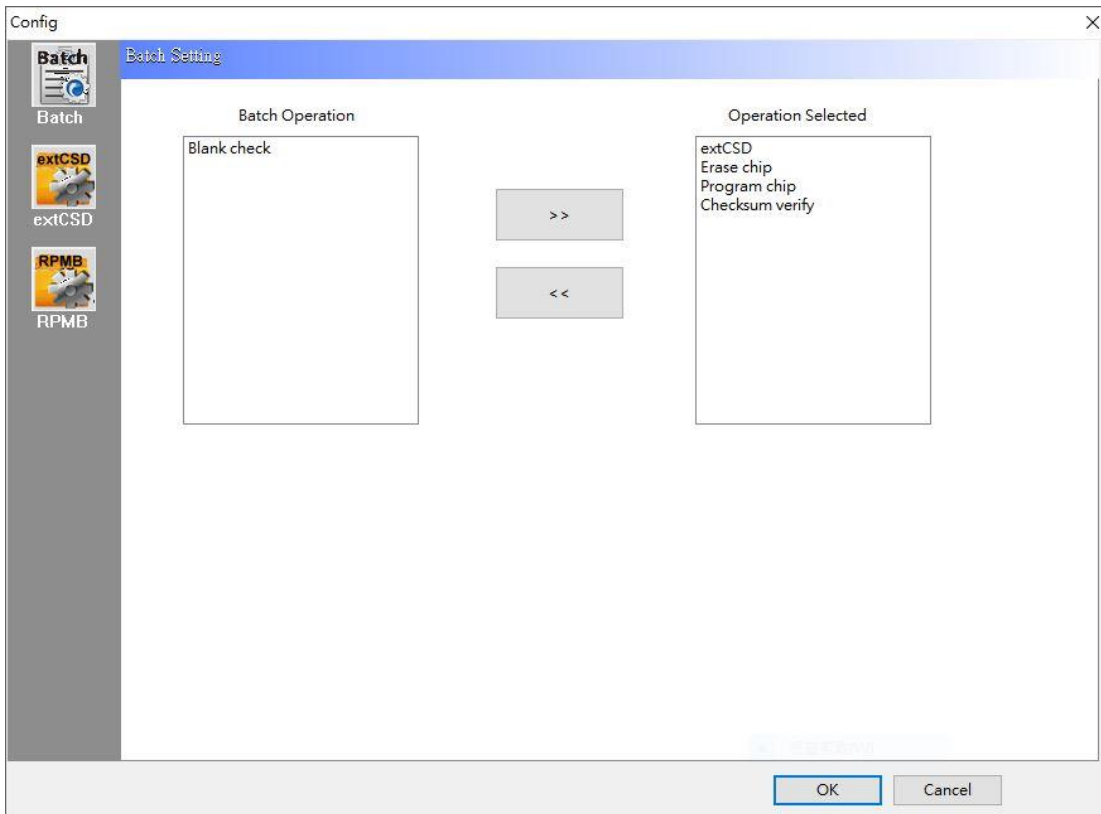
6.Partitioning Setting(0x9b): The register is set to notify the device that the definition of parameters has been completed and the device can start its internal configuration activity.



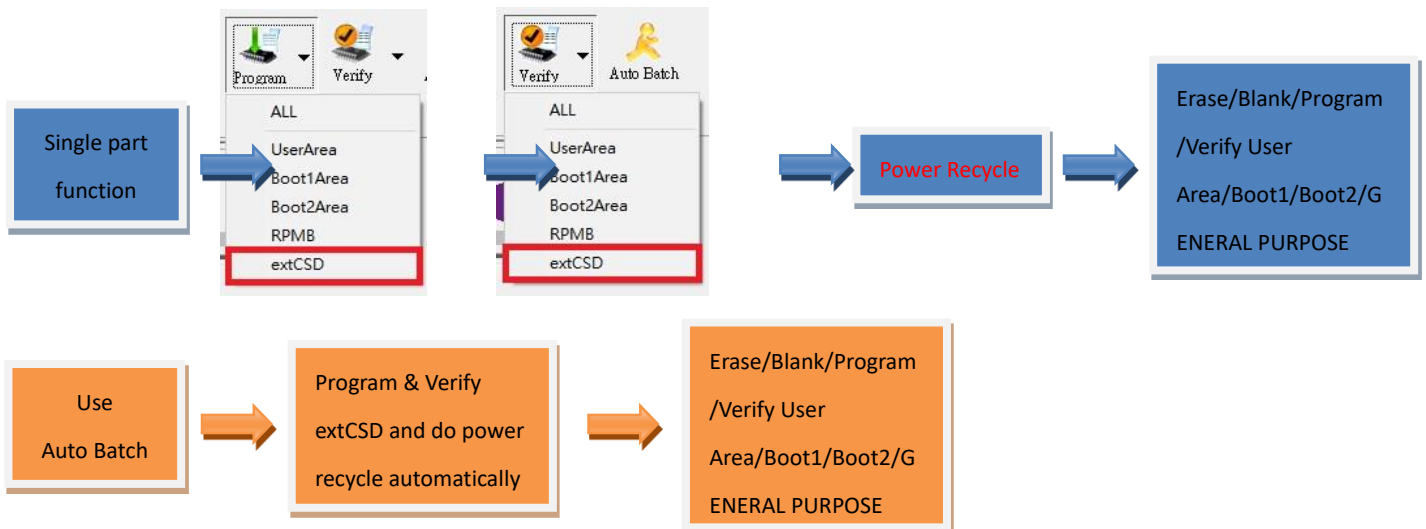
Note 1 : All the steps have sequence, so please make sure the command is in order.

Note 2 : Please note that Max Enhanced Area must be less than Enhanced General Partition Size+ Enhanced user data area.

Step5. After finishing the ExtCSD settings, please click **Batch** to set the batch operation, then use **Auto Batch** function to program.



Step6. Please use **Auto Batch** function to program the extCSD and the programming file. If you only want to use a single part function, please use **program** and **verify** function, and must do a **power recycle*** after verification has finished.



* Power recycle means it is required to take out the chip from the IC socket, and then put it back again.

Step7. After finish programming , you can use **Read IC** for checking :

The screenshot shows the 'extCSD [Type: Register]' window with the following data:

Address	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F	Chip	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
0x00000000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	00	C0	AD	00	00	00	00	00	00	00	00	00	00	00	
0x00000020	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000050	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000080	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	00	00	00	00	00	00	00	00	00	E9	00	00	01	
0x00000090	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	00	00	01	00	00	01	00	00	01	01	D2	01	00	
0x000000A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	07	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x000000B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x000000C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	06	00	02	00	17	0F	04	03	77	77	22	22	00	08	08	08	
0x000000D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	08	08	08	00	00	80	5B	01	0F	10	14	08	08	02	01	01	
0x000000E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	10	07	20	00	00	09	06	55	0F	00	08	08	00	AA	99	44	
0x000000F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000100	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000110	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000120	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x00000130	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	

You can see the General Purpose Partitions and Enhanced Attribute have been written (framed in blue), and the Sector Count (0xD7 to 0xD7) will reduce.

Step8. If you need to use **copy function**, please also complete step 1 to step 7, and only use **copy function** to scan the master chip, please refer to the NuProg-E/F8 User Manual.

Revision History

Date	Version	Changes
2017/08/04	1.0	Initial release.

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