

# Micron<sup>®</sup> RealSSD<sup>™</sup> Embedded USB Reliability Status Reporting

## Introduction

The Micron embedded USB SSD provides commands that enable the host controller to determine the useful life remaining on the device and to retrieve Flash ID information. Bad block count, spare block count, erase count, and FlashIDBuf data can be obtained using these commands.

## Bad Block Reporting

To obtain the bad block count, the READ FLASHID command retrieves 512 bytes of FlashIDBuf data. The FlashIDBuf [0x00] is saved logical unit (LUN) values for the drive. The state of each LUN is saved in FlashIDBuf [0x1C0]–[0x1DF]. After obtaining the block information, the READ INFOBLOCK command retrieves the 512-byte INFOBLOCKBUF for each LUN. The BadBlock quantity is saved in InfoBlockBuf [0x100, 0x101]. TotalBadBlockCount is the sum of the BadBlock quantity on every LUN.

**Table 1: Bad Block Reporting Command Sequence**

Command	Byte 0x0	Byte 0x1	Byte 0x2	Byte 0x3	Byte 0x6	Byte 0xB
READ FLASHID (16 bytes)	0xF0	0x20	–	–	–	0x01
READ INFOBLOCK (16 bytes)	0xF0	0x0A	0x03	ReadFlashIDBuf [0x180 + XX]	XX	0x01

Notes: 1. XX = 0x00 ReadFlashIDBuf [0x00]

## Spare Block Reporting

To obtain the spare block count, the READ FLASHID command is used to obtain 512 bytes of FlashIDBuf data. The FlashIDBuf [0x00] is saved LUN values for the drive. The state of each LUN is saved in FlashIDBuf [0x1C0]–[0x1DF]. If the value is 0x80, the LUN is unable to be used (that is, the LUN is disabled or damaged). After getting the block information, use the READ INFOBLOCK command to get the 512-byte InfoBlockBuf data for each LUN. The DataBlock quantity is saved in InfoBlockBuf [0x112, 0x113]. SpareBlockCount is calculated as follows:

SpareBlock on this LUN =  
 $[1024 - 12(\text{FW used})] - [\text{Total BadBlock on this LUN}] - [\text{Total DataBlock on this LUN}]$

TotalSpareBlockCount will be the sum of SpareBlock on every LUN.



**Table 2: Spare Block Reporting Command Sequence**

Command	Byte 0x0	Byte 0x1	Byte 0x2	Byte 0x3	Byte 0x6	Byte 0xB
READ FLASHID (16 bytes)	0xF0	0x20	–	–	–	0x01
READ INFOBLOCK (16 bytes)	0xF0	0x0A	0x03	ReadFlashIDBuf [0x180 + XX]	XX	0x01

Notes: 1. XX = 0x00 ReadFlashIDBuf [0x00]

## Erase Count Reporting

To obtain the erase count, the READ FLASH command is used. The READ FLASH command returns 1536 bytes of FlashBuf data. FlashBuf [0x7A, 0x7A] is the saved base count.

FlashBuf [0x200]–[0x5FF] is the saved BlockEraseCount. The TotalEraseCount of each block will be the sum of BaseCount and BlockEraseCount.

**Table 3: Erase Count Reporting Command Sequence**

Command	Byte 0x0	Byte 0x1	Byte 0x7	Byte 0xB
READ FLASH (16 bytes)	0xF0	0x2A	0xF1	0x03

## READ FLASHID Command

The READ FLASHID command is used to obtain 512 bytes of FlashIDBuf data:

- FlashIDBuf [0x20-0x23] stores the first Flash ID number
- FlashIDBuf [0x28-0x2B] stores the second Flash ID number
- FlashIDBuf [0x30-0x33] stores the third Flash ID number
- FlashIDBuf [0x38-0x3B] stores the fourth Flash ID number
- FlashIDBuf [0x40-0x43] stores the fifth Flash ID number
- FlashIDBuf [0x48-0x4B] stores the sixth Flash ID number
- FlashIDBuf [0x50-0x53] stores the seventh Flash ID number
- FlashIDBuf [0x58-0x5B] stores the eighth Flash ID number

**Table 4: READ FLASHID Command Sequence**

Command	Byte 0x0	Byte 0x1	Byte 0xB
READ FLASHID (16 bytes)	0xF0	0x20	0x01

8000 S. Federal Way, P.O. Box 6, Boise, ID 83707-0006, Tel: 208-368-3900  
www.micron.com/productsupport Customer Comment Line: 800-932-4992

Micron and the Micron logo are trademarks of Micron Technology, Inc. All other trademarks are the property of their respective owners.



## Revision History

Rev. B .....	11/10
<ul style="list-style-type: none"><li>• Changed ReadFlashIDBuf for byte 0x3 from [0x108 + XX] to [0x180 + XX].</li></ul>	
Rev. A .....	12/08
<ul style="list-style-type: none"><li>• Initial release.</li></ul>	