ONFI Technical Errata

Errata ID	**004**
Affected Spec Ver.	**ONFI 2.0**
Corrected Spec Ver.	

Submission info

Name	Company	Date
Amber Huffman	Intel	11/28/2007

Description of the specification technical flaw (add space as needed)

Some host controllers have difficulty with the manufacturer's defect mark being in any location other than the first byte/word of the spare area. This errata requires that the manufacturer's defect marking be placed in the first byte/word of the spare area, rather than any byte/word location in the spare area.

Description of the correction

Modify section 3.2.1 as shown:

3.2.1 Device Requirements

If a block is defective and 8-bit data access is used, the manufacturer shall mark the block as defective by setting the first ~~at least one~~ byte in the defect area, as shown in Figure 19, of the first or last page of the defective block to a value of 00h. If a block is defective and 16-bit data access is used, the manufacturer shall mark the block as defective by setting the first ~~at least one~~ word in the defect area of the first or last page of the defective block to a value of 0000h.

Figure 19 Area marked in factory defect mapping

Modify section 3.2.2 as shown:

3.2.2 Host Requirements

The host shall not erase or program blocks marked as defective by the manufacturer, and any attempt to do so yields indeterminate results.

Figure 19 outlines the algorithm to scan for factory mapped defects. This algorithm should be performed by the host to create the initial bad block table prior to performing any erase or programming operations on the target. The initial state of all pages in non-defective blocks is FFh (or FFFFh for 16-bit access) for all page addresses, although some bit errors may be present if they are correctable via the required ECC reported to the host. A~~n~~ defective block is indicated by a byte value equal to 00h for 8-bit access or a word value equal to 0000h for 16-bit access being present at the first ~~any~~ page byte/word location in the defect area of either the first page or last page of the block. The host shall check the first byte/word of the defect area of both the first and last past page of each block to verify the block is valid prior to any erase or program operations on that block.

Note: Over the lifetime use of a NAND device, the defect area of defective blocks may encounter read disturbs that cause values to change. The manufacturer defect markings may change value over the lifetime of the device, and are expected to be read by the host and used to create a bad block table during initial use of the part.

```
for (i=0; i<NumLUNs; i++)
{
    for (j=0; j<BlocksPerLUN; j++)
    {
        Defective=FALSE;

        ReadPage(lun=i; block=j; page=0; DestBuff=Buff);
        for (column=PageSize; column<PageSize+SpareBytes; column++)
        {
            if (Buff[PageSizecolumn] == 00h)    // Value checked for is 0000h for 16-bit access
                Defective=TRUE;
        }

        ReadPage(lun=i; block=j; page=PagesPerBlock-1; DestBuff=Buff);
        for (column=PageSize; column<PageSize+SpareBytes; column++)
        {
            if (Buff[PageSizecolumn] == 00h)    // Value checked for is 0000h for 16-bit access
                Defective=TRUE;
        }

        if (Defective)
            MarkBlockDefective(lun=i; block=j);
    }
}
```

Figure 20 Factory defect scanning algorithm

Disposition log

11/28/2007	Erratum captured.
2/7/2008	Erratum ratified for ONFI 1.0.
3/11/2008	Erratum duplicated to apply for ONFI 2.0, with figure numbers updated.
3/19/2008	Erratum ratified for ONFI 2.0.

Technical input submitted to the ONFI Workgroup is subject to the terms of the ONFI contributor's agreement.