Q
Quantum

DATE:	Dec 15, 1994
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SUBJECT:	Proposal to ATA Committee on Dynamic Power Selection using Set Features Command

Introduction:

This document describes a proposal to program the power consumption of a drive by setting the power mode using ATA Set Features command. Implementation of this feature allows the drive to operate in platforms with limited current and in platforms that can support higher current, at an optimal performance level.

Using ATA Set Features Command:

Set Features is an optional ATA Class 1 command designed for use by the host to establish certain parameters which affect the execution of the drive. In addition to the parameters currently defined in the ATA-2 specification, this proposal would add the "Dynamic Power Selection" feature.

9Ah	Set the host power supply current using Sector Count Register Value.

To adjust the current the drive draws, the host issues the Set Features command with the Feature register set to 9Ah and the Sector Count register set to a current value which is equal to 4mA times the value in the Sector Count register. If the drive supports this feature, the drive will set its average operating current to the nearest supported current that does not exceed the specified current until there is a reset or another 9Ah feature issued. For example, if the Sector Count is set to 32 which is equivalent to 128mA and the nearest possible current less than the selected current that the drive can support is 100mA, the drive then will set its average operating current to 100mA.

However, if the selected current is greater than the minimum value the drive can support, the drive will still operate only at its minimum value. For example, if the Sector Count is set to 5 which is equivalent to 20mA but the minimum drive current is 50 mA, the drive will still operate at its minimum value at 50mA. If the host wants to operate at the drive's lowest possible current, the Sector Count value should be set to 1. Similarly the drive will use its maximum operating current for any Sector Count value which is greater than the maximum current it can use.

At the completion of this command, the drive will update the Cylinder Low register with the minimum valid operating current of the drive and the Cylinder High register with the maximum valid operating current.

	7	6	5	4	3	2	1	0
Command	EFh							
Drive/Head	1	X	1	Drive	X			
Cylinder High	X (Return maximum valid operating current of the drive)							
Cylinder Low	X (Return minimum valid operating current of the drive)							
Sector Number	X							
Sector Count	Host current source capability/4mA							
Feature	Feature = 9Ah							

Sector Count = 0 is invalid. Therefore, this command allows the host to support current range from 4mA to 1A.

Sector Count	Current Value (mA)
0	Invalid
1	4
2	8
3	12
4	16
.	.
.	.
FDh	1012
FEh	1016
FFh	1020

If a drive does not support this feature, it shall post an Aborted Command error.

Error Register							
BBK	UNC	MC	IDNF	MCR	ABRT	TKONF	AMNF
0	0	0	0	0	V	0	0

Status Register							
BSY	DRDY	DWF	DSC	DRQ	CORR	IDX	ERR
0	V	V	V	0	0	0	V

V = valid on this command