

**Proposed  
Draft**

**Serial ATA  
International Organization**

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**Serial ATA Revision 3.2 Technical Proposal 060  
Title : Modify/Cleanup Receive FPDMA Queued to  
support ZAC**

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## Introduction

The proposed content of ZAC intends to use the READ LOG DMA EXT subcommand of RECEIVE FPDMA QUEUED to perform the equivalent of the REPORT ZONES command in ZBC. To do this, the FEATURE command input field needs to be mapped into the RECEIVE FPDMA QUEUED inputs. This is because the proposed Report Zones log uses the FEATURE field in the way that ZBC defines for the REPORTING OPTIONS field. This proposal maps the FEATURE field in to the AUXILIARY field.

In addition, a review of SATA 3.2 Gold shows that the SEND FPDMA QUEUED command definition provides superior generality to that currently in place for the RECEIVE FPDMA QUEUED command. Therefore, this proposal matches RECEIVE FPDMA QUEUED to the better definition.

Removed text is in ~~red strikethrough~~, and inserted text is in blue underline.

# 1 Technical Specification Changes

## 1.1 Changes to be made

### 13.6.7.1 RECEIVE FPDMA QUEUED definition

The 512 Byte Block DMA IN subcommands make use of this transport command. The RECEIVE FPDMA QUEUED command supports LBA mode only and uses 48 bit addressing only. The format of the command is defined in Figure 367.

### 13.6.7.2 Inputs

Field	7	6	5	4	3	2	1	0
Features(7:0)	Sector Count(7:0)							
Features(15:8)	Sector Count(15:8)							
Count(7:0)	TAG				Reserved			
Count(15:8)	PRIO(1:0)		Res	Subcommand				
LBA(7:0)	<del>LBA(7:0)</del> <a href="#">Subcommand Specific</a>							
LBA(15:8)	<del>LBA(15:8)</del> <a href="#">Subcommand Specific</a>							
LBA(23:16)	<del>LBA(23:16)</del> <a href="#">Subcommand Specific</a>							
LBA(31:24)	<del>LBA(31:24)</del> <a href="#">Subcommand Specific</a>							
LBA(39:32)	<del>LBA(39:32)</del> <a href="#">Subcommand Specific</a>							
LBA(47:40)	<del>LBA(47:40)</del> <a href="#">Subcommand Specific</a>							
ICC(7:0)	ICC(7:0)							
Auxiliary(7:0)	<del>Auxiliary(7:0)</del> <a href="#">Subcommand Specific</a>							
Auxiliary(15:8)	<del>Auxiliary(15:8)</del> <a href="#">Subcommand Specific</a>							
Auxiliary(23:16)	<del>Reserved</del> <a href="#">Subcommand Specific</a>							
Auxiliary(31:24)	<del>Reserved</del> <a href="#">Subcommand Specific</a>							
Device(7:0)	Res	1	Res	0	Reserved			
Command(7:0)	65h							

**Figure 367 – RECEIVE FPDMA QUEUED command definition**

**Sector Count** The number of 512 byte blocks to be transferred, 0000h indicates that 65 536 512 byte blocks are to be transferred.

**TAG** The TAG value shall be assigned by host software to be different from all other TAG values corresponding to outstanding commands. The assigned TAG value shall not exceed the value specified in IDENTIFY DEVICE data Word 75.

**PRIO** The Priority (PRIO) value shall be assigned by the host based on the priority of the command issued. The device shall make a best effort to complete High priority requests in a more timely fashion than Normal and Isochronous priority requests. The device shall make a best effort to complete each Isochronous request prior to its associated deadline (see Table 105).

**Subcommand** ~~See [Subcommand specific \(see 13.6.7.5\)](#)~~

**LBA** ~~See [Subcommand specific \(see 13.6.7.5\)](#)~~

**ICC** The Isochronous Command Completion (ICC) field shall be assigned by the host based on the intended deadline associated with the command issued. By default, if deadline is expired, the device shall continue to complete the command as soon as possible.

**Auxiliary** ~~See [Subcommand specific \(see 13.6.7.5\)](#)~~

...

### 13.6.7.5 RECEIVE FPDMA QUEUED subcommands

Subcommands for the RECEIVE FPDMA QUEUED commands are contained within the Count(12:8) field. The allowed values are defined in Table 110.

**Table 110 – Subcommands for RECEIVE FPDMA QUEUED**

Value	Subcommand
00h	Reserved
01h	READ LOG DMA EXT (see 13.6.7.6)
02h..1Fh	Reserved

### 13.6.7.6 READ LOG DMA EXT

#### 13.6.7.6.1 READ LOG DMA EXT overview

The READ LOG DMA EXT subcommand functionality and behavior is dependent on all requirements of the READ LOG DMA EXT command and the IDENTIFY DEVICE command defined in ACS-3.

#### 13.6.7.6.2 Inputs

Field	7	6	5	4	3	2	1	0
Features(7:0)	Contents of READ LOG DMA EXT Count(7:0) field							
Features(15:8)	Contents of READ LOG DMA EXT Count(15:8) field							
LBA(7:0)	Contents of READ LOG DMA EXT LBA(7:0) field							
LBA(15:8)	Contents of READ LOG DMA EXT LBA(15:8) field							
LBA(23:16)	Contents of READ LOG DMA EXT LBA(23:16) field							
LBA(31:24)	Contents of READ LOG DMA EXT LBA(31:24) field							
LBA(39:32)	Contents of READ LOG DMA EXT LBA(39:32) field							
LBA(47:40)	Contents of READ LOG DMA EXT LBA(47:40) field							
Auxiliary(7:0)	<del>Reserved</del> Contents of READ LOG DMA EXT Feature(7:0) field							
Auxiliary(15:8)	<del>Reserved</del> Contents of READ LOG DMA EXT Feature(15:8) field							
Auxiliary(23:16)	Reserved							
Auxiliary(31:24)	Reserved							

**Figure 371 – RECEIVE FPDMA QUEUED subcommand = 01h**

See ACS-3 for the definition of LBA(47:0) of the READ LOG DMA EXT command.

#### 13.6.7.6.3 Success outputs

See 13.6.7.3

#### 13.6.7.6.4 Error outputs

See 13.6.7.4

## 1.2 Included solely for reference

### 13.6.8.1 SEND FPDMA QUEUED definition

The 512 Byte Block DMA OUT subcommands make use of this transport command. The SEND FPDMA QUEUED command supports LBA mode only and uses 48 bit addressing only. The format of the command is defined in Figure 372.

### 13.6.8.2 Inputs

Field	7	6	5	4	3	2	1	0
Features(7:0)	Sector Count(7:0)							
Features(15:8)	Sector Count(15:8)							
Count(7:0)	TAG					Reserved		
Count(15:8)	PRIO(1:0)		Res	Subcommand				
LBA(7:0)	LBA(7:0)							
LBA(15:8)	Subcommand Specific							
LBA(23:16)	Subcommand Specific							
LBA(31:24)	Subcommand Specific							
LBA(39:32)	Subcommand Specific							
LBA(47:40)	Subcommand Specific							
ICC(7:0)	ICC(7:0)							
Auxiliary(7:0)	Subcommand Specific							
Auxiliary(15:8)	Subcommand Specific							
Auxiliary(23:16)	Subcommand Specific							
Auxiliary(31:24)	Subcommand Specific							
Device(7:0)	Res	1	Res	0	Reserved			
Command(7:0)	64h							

**Figure 372 – SEND FPDMA QUEUED command definition**

**Sector Count** The number of 512 byte blocks to be transferred, 0000h indicates that 65 536 512 byte blocks are to be transferred.

**TAG** The TAG value shall be assigned by host software to be different from all other TAG values corresponding to outstanding commands. The assigned TAG value shall not exceed the value specified in IDENTIFY DEVICE data Word 75.

**PRIO** The Priority (PRIO) value shall be assigned by the host based on the priority of the command issued. The device shall make a best effort to complete High priority requests in a more timely fashion than Normal and Isochronous priority requests. The device shall make a best effort to complete each Isochronous request prior to its associated deadline (see Table 105).

**Subcommand** Subcommand specific (see 13.6.8.5)

**LBA** Subcommand specific (see 13.6.8.5)

**ICC** The Isochronous Command Completion (ICC) field shall be assigned by the host based on the intended deadline associated with the command issued. By default, if deadline is expired, the device shall continue to complete the command as soon as possible.

**Auxiliary** Subcommand specific (see 13.6.8.5)