

**Proposed
Draft**

**Serial ATA
International Organization**

**Version 3
April 29, 2013**

TPR049 SATA31 Add QPM to SATA Logs

Title: Add QPM to SATA Logs

Proposed change, new functionality, or behavior to Serial ATA Revision 3.1

This is an internal working document of the Serial ATA International Organization. As such, this is not a completed standard and has not been approved. The Serial ATA International Organization may modify the contents at any time. This document is made available for review and comment only.

Permission is granted to the Promoters, Contributors and Adopters of the Serial ATA International Organization to reproduce this document for the purposes of evolving the technical content for internal use only without further permission provided this notice is included. All other rights are reserved and may be covered by one or more Non Disclosure Agreements including the Serial ATA International Organization participant agreements. Any commercial or for-profit replication or republication is prohibited. Copyright © 2005 to 2013 Serial ATA International Organization. All rights reserved.

This Draft Specification is NOT the final version of the Specification and is subject to change without notice. A modified, final version of this Specification ("Final Specification") when approved by the Promoters will be made available for download at this Web Site: <http://www.serialata.org>.

THIS DRAFT SPECIFICATION IS PROVIDED "AS IS" WITH NO WARRANTIES WHATSOEVER, INCLUDING ANY WARRANTY OF MERCHANTABILITY, NON-INFRINGEMENT, FITNESS FOR ANY PARTICULAR PURPOSE OR ANY WARRANTY OTHERWISE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE. Except for the right to download for internal review, no license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted or intended hereunder.

THE PROMOTERS DISCLAIM ALL LIABILITY, INCLUDING LIABILITY FOR INFRINGEMENT OF ANY PROPRIETARY RIGHTS, RELATING TO USE OF INFORMATION IN THIS DRAFT SPECIFICATION. THE PROMOTERS DO NOT WARRANT OR REPRESENT THAT SUCH USE WILL NOT INFRINGE SUCH RIGHTS.

THIS DOCUMENT IS AN INTERMEDIATE DRAFT FOR COMMENT ONLY AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

* Other brands and names are the property of their respective owners.

Copyright © 2005 to 2013 Serial ATA International Organization. All rights reserved.

Author Information

Author Name	Company	e-mail address
Curtis E. Steven	Western Digital	Curtis.Stevens@wdc.com

Workgroup Chair Information

Workgroup	Chairperson Name	e-mail address
Digital	Jim Hatfield	james.c.hatfield@seagate.com

Document History

Version	Date	Comments
00	1-Mar-2013	Initial draft
01	March 18, 2013	Added Supports to Read Log and Write Long
02	March 18, 2013	Member review
03	April 29, 2013	Ratified

1 Introduction

TPR043 did not allocate entries in the logs to provide a way for the device to indicate support for the new commands.

2 Summary of the problem

Logs were introduced into SATA rev 3.1 to indicate that SEND FPDMA QUEUED, RECEIVE FPDMA QUEUED, and NCQ NON-DATA QUEUED support various opcodes. These logs have not been updated to indicate support for Queued Read Log, Queued Write Log, and Queued SET FEATURES command.

3 Summary of the solution

This proposal adds proper reporting in the logs mentioned in Clause 2.

4 Proposed changes

Editor's note TPR042 Hybrid Information changed the name of NCQ QUEUE MANAGEMENT to NCQ NON-DATA. The shall changed to may and the i.e., were added in TPR042.

1.1.1 [Editor's note 13.7.5] NCQ NON-DATA~~QUEUE MANAGEMENT~~ Log (12h)

To determine the supported NCQ ~~NON-DATA~~~~QUEUE MANAGEMENT~~ subcommands and their respective features, host software ~~shall~~may read log 12h.

This log shall be supported if the NCQ ~~NON-DATA~~~~QUEUE MANAGEMENT~~ command is supported (i.e., IDENTIFY DEVICE word 77 bit 5 is set to one.)

Editor's note TPR042v14 Hybrid Information changed Table 253 to the black text.

Dword	Bits	Description
0	Subcommand 0h	
	31..5	Reserved
	4	Supports Abort Selected TTag
	3	Supports Abort Non-Streaming
	2	Supports Abort Streaming
	1	Supports Abort All
	0	Supports Abort NCQ
1	Subcommand 1h	
	31..3	Reserved
	2	Supports Read Data Not Continue
	1	Supports Write Data Not Continue
	0	Supports DEADLINE HANDLING
2	Subcommand 2h	
	31..1	Reserved
	0	Supports HYBRID DEMOTE BY SIZE
3	Subcommand 3h	
	31..1	Reserved
	0	Supports HYBRID CHANGE BY LBA RANGE
4	Subcommand 4h	
	31..1	Reserved
	0	Supports HYBRID CONTROL
5	Subcommand 5h	
	31..1	Reserved
	0	Supports Set Features (Editor's note see 13.7.6.13)
...
15	31..1	Reserved
	0	Supports subcommand Fh
16..128	31..0	Reserved

Figure 253 – NCQ **NON-DATA** **QUEUE MANAGEMENT** Log (12h) data structure definition

Editor's note TPR042v14 Hybrid Information added multiple subsections and text to describe the Hybrid subcommands. Add Supports Set Features below TPR042v14 13.7.6.12 Supports HYBRID CONTROL.

13.3.1.1 [Editor's note 13.7.6.13] [Supports Set Features](#)

[If the Supports Set Features bit is set to one, then the device supports the SET FEATURES subcommand \(see Editor's note SATA rev 3.1 section 13.3\) of the NCQ NON-DATA command. If the Set Features bit is cleared to zero, then the device does not support the SET FEATURES subcommand of the NCQ NON-DATA command.](#)

Editor's note TPR042v14 Hybrid Information added 13.7.7.1 NCQ Send and Receive Log overview. The shall changed to may, page change to log, and the i.e., were added in TPR042.

1.1.2 [Editor's note 13.7.7] NCQ Send and Receive Log (13h)

13.3.1.2 [Editor's note 13.7.7.1] NCQ Send and Receive Log overview

To determine the supported SEND FPDMA QUEUED and RECEIVE FPDMA QUEUED subcommands and their respective features, host software ~~shall~~[may](#) read log 13h.

This ~~page~~[log](#) shall be supported if the SEND FPDMA QUEUED and RECEIVE FPDMA QUEUED command is supported ([i.e.](#), IDENTIFY DEVICE word 77 bit 6 is set to one.)

Editor's note TPR042v14 Hybrid Information modified Table 254 to the black text.

Dword	Bits	Description
0	31..2	Reserved
	1	Supports HYBRID EVICT (see Editor's note TPR042v14 section 13.7.10.5)
	0	Supports Data Set Management (see Editor's note TPR042v14 section 13.7.10.6)
1	Data Set Management	
	31..1	Reserved
	0	Supports Trim (see Editor's note TPR042v12 section 13.7.10.7)
2	Supports Read Log	
	31..1	Reserved
	0	Supports Read Log (see Editor's note 13.7.7.4+1)
3	Supports Write Log	
	31..1	Reserved
	0	Supports Write Log (See Editor's note 13.7.7.4+2)
42 ..127		Reserved

Figure 254 – Log 13h – NCQ SEND and RECEIVE Log

Editor's note TPR042v14 Hybrid Information added subsections and text. Place Supports Read Log after TPR042v14 section 13.7.7.4 Supports Trim.

13.3.1.3 [Editor's note TPR042v14 13.7.7.4+1] [Supports Read Log](#)

[If the Supports Read Log bit is set to one, then the device supports the READ LOG DMA EXT subcommand \(see Editor's note TPR043v5 section 13.6.7+1\) of the RECEIVE FPDMA QUEUED command. If the Supports Read Log bit is cleared to zero, then the device does not support the READ LOG DMA EXT subcommand of the RECEIVE FPDMA QUEUED command.](#)

13.3.1.4 [Editor's note TPR042v14 13.7.7.4+2] [Supports Write Log](#)

[If the Supports Write Log bit is set to one, then the device supports the WRITE LOG DMA EXT subcommand \(see Editor's note TPR043v5 section 13.6.7.5\) of the SEND FPDMA QUEUED command. If the Supports Write Log bit is cleared to zero, then the device does not support the WRITE LOG DMA EXT subcommand of the SEND FPDMA QUEUED command.](#)