Release Notes

Rev G • June 2016

CloudSpeed Eco/Ascend/Ultra
2.5" SATA, SSD Product Line Generic

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Revision History

Date	Revision	Description
June 2016	G	Legal Disclaimer updated and Western Digital branding
May 2016	F	ZZ39
August 2015	E	ZZ38
January 2015	D	ZZ37
January 2015	C	ZZ35
May 2014	B	ZZ1S
April 2014	A	ZZ1P
February 2014	1	ZZ1I Initial Release.

Part Number - SKU	Product Description	Firmware Code Name
SDLFNDAR-240G-1HA2	CloudSpeed Eco 2.5” 240GB (<1 DWPD)	ZZ39RC23
SDLFNDAR-480G-1HA2	CloudSpeed Eco 2.5” 480GB (<1 DWPD)	ZZ39RC43
SDLFNCAR-960G-1HA2	CloudSpeed Eco 2.5” 960GB (<1 DWPD)	ZZ39RC93
SDLFOEAR-120G-1HA1	CloudSpeed Ascend 2.5” 120GB (1 DWPD)	ZZ39RC12
SDLFODAR-240G-1HA1	CloudSpeed Ascend 2.5” 240GB (1 DWPD)	ZZ39RC22
SDLFODAR-480G-1HA1	CloudSpeed Ascend 2.5” 480GB (1 DWPD)	ZZ39RC42
SDLFOCAR-960G-1HA1	CloudSpeed Ascend 2.5” 960GB (1 DWPD)	ZZ39RC92
SDLFOEAM-100G-1HA1	CloudSpeed Ultra 2.5” 100GB (3 DWPD)	ZZ39RE12
SDLFODAM-200G-1HA1	CloudSpeed Ultra 2.5” 200GB (3 DWPD)	ZZ39RE22
SDLFODAM-400G-1HA1	CloudSpeed Ultra 2.5” 400GB (3 DWPD)	ZZ39RE42
SDLFOCAM-800G-1HA1	CloudSpeed Ultra 2.5” 800GB (3 DWPD)	ZZ39RE92

ESD Caution – Handling

Static electricity may be discharged through this disk subsystem. In extreme cases, this may temporarily interrupt the operation or damage components. To prevent this, make sure you are working in an ESD- safe environment. For example, before handling the disk subsystem, touch a grounded device, such as a computer case.

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Overview

This document describes the fixes and known issues for the CloudSpeed Eco SATA firmware.

ZZ39 Firmware

The ZZ39 firmware contains the following fixes:

- Made a modification to the how SCRAM data was prioritized during a host power off situation and increased the timeout waiting period to complete SCRAM.
- Addressed an issue that could cause a drive to became format corrupt due to Valid Page Count mismatch during DESCRAM.
- Addressed a situation where no recycle buffer was available and the scheduler could not schedule a host write.
- Fixed an issue where the drive could receive "Failed to get NCQ Send/Recv Log Emask 0x1" in the system dmesg log.
- Fixed an issue for Log 03h Device Error Count that could change values between power cycles.
- Modify Read Log Ext - DCh command to allow transfer greater than 256 sectors.
- Fixed an incorrect error reason value reported during Sanitize State.
- Fixed an incorrect status of completed SCT Write Same in Read Log (SCT Status Response).
- Fixed an issue of not returning the current LBA written field in the SCT response log during the Write Same command when writing the whole drive.
- Fixed the issue of not updating the current LBA during erasing whole disk by the SCT Write Same command.
- Fixed the failure of IDLE to SLEEP mode.
- Added SMART attribute 198 - offline scan uncorrectable count.
- Fixed a mismatch between the SMART Read Data and IDENTIFY DEVICE data concerning the SMART Error Logging capability.
- Fixed the issue of Sanitize Antifreeze Lock not aborted when reported as unsupported.
- Fixed the issue of Sanitize Block Erase not aborted when reported as unsupported.
- Reduced short DST time to 2 minutes.
- Fixed an issue were the firmware was not being initialized properly, leading to security-set-password failing sporadically.
- Addressed an issue when FLUSH CACHE command, while DST-Short is in progress could result in a drive hang condition.
- Fixed an issue where Long DST was not getting completed if a drive is power cycled.
- Added 2 decimal points to SMART Attribute: SSD Life Left.
- Fixed an issue where the Read Log Ext Command fails after send FPDMA queued command gets aborted.
- Fixed an issue to defer the internal communication messaging between SATA and FTL CPU until initialization completes. Improved the data retention background task to reduce initialization times.
- Added a check for NOP abort to not add an entry to SMART error log.
- Reversed the ordering of erasure blocks during the erase process, to ensure that the section will be erased again if a power failure occurs.
- Fixed an issue where the NOP command was reporting a 50/00 status and should have been reporting a 51/04 status.
- Fixed an issue when the drive is in the sanitize operation, the SMART DST command should be aborted by the drive.
- Fixed an issue where the SMART Read Log did not ABORT on retrieving SMART log 04h, 30h, and E0h with an invalid page count.
- Created a vendor unique command for enabling/disabling DLOG feature over SATA interface.
- Corrected an issue when the Identify Device data is reporting that the Write Uncorrectable data is supported when the drive is configured to not support it.
- Resolved an issue where a drive failed for Data Integrity showing a buffer miscompare.
- Fixed an issue where a drive failed when testing corrupted LBA’s and did not report the correct status and error.
- Fixed an issue where a drive doesn’t respond to the host after encountering a flash media error during a READ FPDMAQ command with more than 100h sector count.
- Fixed a drive hang after COMRESET during DST offline collection routine 01h.
- Fixed percentage of remaining DST in self-test execution status. It was not updating when in progress or finishes.
- Resolved an issue when a drive times out after issuing heavy NCQ commands.
- Fixed an issue of not reporting the DST Completion time properly in the SMART data.
- Fixed the incorrect value at the word 222 of IDENTIFY DEVICE data for the Transport major version numbers.

- Fixed the issue that the Security freeze lock is not aborted when the drive is in the security locked state.
- Fixed an issue when Read/Write Buffer DMA commands do not execute when the drive is in its security locked state.
- Fixed an issue where SCT commands are not aborted when the drive is in its security locked state.
- Fixed a problem that SANITIZE STATUS EXT command is not executed when the drive is in its security locked state.
- Fixed a drive hang condition when executing SCT Write Same command with multi sector data transfer.
- Fixed a problem when a drive hangs on COMRESET while SCT Write Same operation is in progress.
- Fixed the problem of Security erase fails to restart after a power cycle.
- Fixed the drive hang after SCT DATA Transfer command.
- Fixed an issue that background SCT operation is not terminated on receiving a non-SCT command.
- Fixed an issue that the drive does not report the correct Extended Status Code for the SCT Status Log after a SCT Error Recovery Control command is aborted.
- Fixed an incorrect Extended Status Code if an SCT Write Same command is aborted.
- Fixed an incorrect Extended Status Code for the SCT Error Recovery Timeout.
- Fixed a drive hang on s SCT Write Same command with an incorrect Function Code.
- Fixed an issue of missing all the Counter Identifiers in Log 11h.
- Fixed a drive hang on antifreeze lock after COMRESET.
- Fixed an invalid number for the supported pages in Log Address 30h Page 0.
- Fixed an issue of Sanitize OVERWRITE EXT command not reporting errors correctly during overwrite operation.
- Fixed an issue where the required time for the normal security erase is not specified.
- Fixed an issue of erase progress not being updated for Sanitize Block Erase.

Known Issue:

The drive may become format corrupt after repeating firmware download while issuing IO.

ZZ38 Firmware

IMPORTANT NOTE: Downgrading from ZZ38 to ZZ37 or earlier firmware will cause the drive to go format corrupt
The ZZ38 firmware contains the following fixes:

- Fixed an issue where a miscompare on NCQ and DMA commands were seen in Power Interruption Testing.
- Fixed an issue where a Download Microcode command could fail, but return good status to the host.
- Fixed an issue where Drive-Self-Test Extended continues Offline Immediate after a reset.
- Added support for Sanitize Block Erase and Sanitize Antifreeze commands by default.
- Fixed an issue where the Sanitize Crypto Scramble did not complete successfully.
- Fixed an issue when a Write Sector Ext command could cause the drive to hang when the NCQ slots are full. A power cycle was required to recover from this event.
- Added support for IDENTIFY DEVICE data log (Log Address 30h) Page 02h, Page 03h, Page 04h, Page 05h, Page 06h and Page 08h.
- Added an improvement to allow connecting multiple SSDs in read/write streaming commands as long as chunks are ready for a host transfer when a new host transfer gets started or resumed.
- Implemented read performance improvements.
- Fixed an issue where multiple SATA Write commands arrived with their priority field set, and the firmware did not handle them correctly.
- Fixed an issue that caused SPI corruption due to a power fail during a SPI write.
    - This issue will display the drives serial number as all “Z’s” in the Identify Device command.

ZZ37 Firmware

IMPORTANT NOTE: Downgrading from ZZ37 to ZZ1S or earlier firmware will cause the drive to go format corrupt. If this happens, secure erase the drive to recover it (i.e., send a Security Erase Prepare command followed by a Security Erase Unit command).
The ZZ37 firmware contains the following fixes:

- Fixed an issue where the drive may become format corrupt if the drive is undergoing continuous power cycling while running writes.
- Fixed an issue where a miscompare can occur on large unaligned reads.

ZZ35 Firmware

IMPORTANT NOTE: Downgrading from ZZ35 to ZZ1S or earlier firmware will cause the drive to go format corrupt. If this happens, secure erase the drive to recover it (i.e., send a Security Erase Prepare command followed by a Security Erase Unit command).
The ZZ35 firmware contains the following fixes:

- Made performance improvements to read IOPS.
- Fixed an issue where the Write Uncorrectable bitmask did not reset for unaligned writes.
- Fixed an issue where the drive erroneously reported SATA transfer errors after reporting an error on Read and Write Queued commands.
- Added support for the Sanitize Crypto Erase command.
- Improved error handling during data transfers.
- Fixed an issue where write/read overlaps were causing miscompares.
- Fixed an issue where the drive would hang if a command caused an error while certain internal activities were being requested simultaneously. A COMRESET clears this condition.
- Modified the behavior such that the drive rejects a code load if the code overprovisioning setting does not match the current value in the drive.
- Corrected an issue that may have resulted in an increase in the Unrecoverable Read Error rate on some drives as the life left reached 50%.
- Fixed an issue where write interrupts were causing failures.
- Added support for log page 0Dh (Long Physical Sector (LPS) mis-alignment log).
- Fixed an issue where the drive was aborting commands after receiving an NCQ command.
- Resolved an issue where a properly aborted command caused subsequent non-NCQ commands to be aborted.

ZZ1S Firmware

The ZZ1S firmware contains the following fixes:

- Change SMART attributes to match smartctl tool (All thresholds count down from 100).

  ***NOTE: All upgrades from previous codes REQUIRE the bootloader to be flashed along with the application.

ZZ1P Firmware

The ZZ1P firmware contains the following fixes:

- Improved latency.
- Added support for segmented download microcode.
- Modified the Smart Read Thresholds command so that it reports the correct thresholds for each smart attribute.
- Fixed the SMART checksum.
- Fixed interaction between Writes and Trim commands where the trim would not erase all of the requested LBA's.
- Fixed an issue with Trim ending on an unaligned boundary.
- Fixed a DDR corruption issue in bootloader.