



OPSD BIOS ENGINEERING

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TO: OPSD Business Unit

CC: iPG / OPSD BIOS Engineering

FROM: iPG / OPSD BIOS Engineering

SUBJECT: EA81510A.86A Standard D815EEA BIOS Production 09

About This Release

- EA81510A.86A.0040.P09.0011141019
- 815 Video BIOS 6.0A Production Version 2269
- ICH2 PXE Ver. 81

Features/Errata Fixed in This Release

P09-0040

- Added support for programming the back-panel diagnostic LEDs to all green on resume from ACPI Suspend-to-RAM.
- Fixed a SMBIOS issue for the AGP slot where the Type 9 System slot - "current usage" field now shows up as "Available" or "In Use" instead of "unknown".
- Resolved issue where some video cards would hang the human interface of the system when waking up from the ACPI S3 state.
- Made password entries case-insensitive.
- Enabled 2nd USB host controller to respond to wake events.
- Changed some ICH2 register values to match internal self-test recommendations: Delayed Transaction Enable (DTE) set to 0x1; Secondary Master Latency Count set to 0x4.
- Added fix so that resume from S1 (standby) works properly with USB Legacy Keyboard/Mouse support is enabled.
- Fixed PCI subsystem device/vendor ID registers values for onboard video.
- Fixed initialization of OPROM area in RAM. The code wasn't making D8000-DFFFF R/W before writing FFh's to it. Now the memory area from C0000 through DFFFF is properly initialized.
- Fixed string corruption interaction with the floppy interface with ABSCMOS.
- In Multi_Sector_Transfers_Proc and Ultra_Dma_proc added a check to see if ABSCMOS running.
- Added support for a SKU that has no VGA connector.
- Removed unnecessary AMR-specific code.
- Fixed an issue where the SMBIOS information for the onboard Audio (On Board Devices Information TYPE 10) was always returning "Device status" set to Enabled.
- Insured that the PCI Configuration register is always restored when returning from SMI.

P08-0038

- Added audio codec signature.
- Fixed CMOS corruption issue.
- Fixed an issue where hard drives in DMA mode would not return from S3 with the default Microsoft IDE drivers. The reason for this is that the commands that are passed back to the OS to initialize the drive are executed before the drive is ready. To solve the issue we wait for the drive to be ready before passing the values back to the OS. This fix also includes a fix to the timings for ATA-100 drives. This may increase S3 resume time, as we now need to wait for the drives to become ready before we give any IDE data to the OS.

- Resolved an issue with some ATAPI CD-ROMs that were not being seen when an ATAPI Zip drive was attached to the same channel.
- Fixed an issue where an FDC error was displayed during POST if a SCSI/ATA100 adapter card was added to the system and the user did not enter BIOS setup after the card addition.
- Added SMBus information to the Slot Characteristics 2 of PCI slot 2 SMBIOS data structure.
- Updated initialization of ARMD setting beyond ARMD device emulation type of either floppy or hard disk.
- Fixed issue where bootable Windows 98SE CD-ROM would hang during boot if CD-ROM was before hard disk in the BIOS boot order, and the user selects boot hard disk from the Windows 98SE CD-ROM boot menu.
- Fixed USB Keyboard error reporting issue. Previously the CTRL, ALT and SHIFT keys were being reported as stuck keys if held down. Also the shift state bits at 40:17 were being cleared as part of USB initialization. Now, CTRL, ALT and SHIFT keys (6 keys total) will not be recognized as stuck keys, the keyboard error will not be reported if they are held down during POST. The 4 shift state bits at 40:17 are preserved at USB initialization. The OS can use these keys held down during POST to enter Safe Mode, bypass startup files, etc.
- Removed obsolete AC97 code. This code was only needed for AMR support.
- Added ICH2 workaround: Assertion of the ICH2's RTCRST# signal does not reliably reset all RTC-well register bits to their default states as documented. Some RTC-Well configuration bits may not be restored to their expected default states when booting after RTCRST# assertion. BIOS's already should be checking RTC_PWR_STS bit during POST (this bit is not affected by the issue). If this bit is set, BIOS should explicitly reset all RTC-well register bits to the desired default states.
- Added additional fix up for the drive table late in POST so Windows can find everything.
- Fixed CMOS Battery Low Memory error reports so that they do not give the improper "Size Decrease" error.
- Fixed the issue of Bios not displaying date and time error when CMOS battery is corrupted.
- Fixed an issue where the CNR LAN was disabled coming out of POST.
- Added translation for some previously untranslated strings and updated some string translations.
- After all ATA/ATAPI devices are initialized, Security Freeze Lock command is issued to all ATA hard disks if the respective device supports Security Mode Feature Set. After this command is executed, the device rejects all other security mode commands until next power cycle. This may help eliminate the possibility of installing password into the devices by any un-authorized entity.
- Changed the Timer 0 from mode 2 (rate generator) to mode 3 (square wave generator). This is the default AT setting defined by IBM. Awhile back this timer was changed to mode 2, because of possible performance improvements.
- Changed the display of some IDE drive information in BIOS. Under the IDE screen menu for each drive the informative text was always displayed. Now it disappears when a drive is not present, or it is selected as type None.
- Rearranged Power Management Setup Options to clarify under which context each option functions. Setup Options having to do with power management were often confused. This change is to clarify which options are used under ACPI, which are used under APM, and which are used regardless of power management mode.
- This fix obsoletes the MKF_VIDEO_REPOST_OPTION SUPPORT. We will always check Q_VIDEO_REPOST and Q_VIDEO_REPOST will default to disabled.
- Removed an old workaround that breaks current products OS's return from S3.
- Removed the checking NVRAM message from POST screen. This message is not required because the OPSD BIOS always require NVRAM.
- Added AMI BBS 3.0 and USB boot functionality.
- To facilitate BIOS development for all chipset North Bridge and South Bridge combinations, we are separating all South Bridge code and tables from the North Bridge component.
- Fixed an issue where Win98/2K/ME device manager in ACPI mode cannot display COM port IRQ correctly when COM port IRQ is shared in BIOS setup. COM port IRQ sharing in SMSC super I/O needs a special register setting. Added necessary checking to ASL code to meet this specification.

- Fixed an issue where the PS/2 mouse device was disappearing from Device Manager if Windows 2000 was installed with no mouse attached and then a PS/2 mouse was attached after OS installation.
- Fixed an issue where unpopulated DIMM slot is shown as 'Unknown' in type 17 of the SMBIOS structure.
- Modified re-initialization code for the SIO
- Corrected LAN string and DIMM strings in SMBIOS tables to match silk screen.
- Optimized OPROM and PAM registers so ASL can better report to OS (Win2K/WinME) usage regions.
- Modified audio code for S3 audio device wake up. The NO_POP signal mutes audio in an attempt to prevent the user from hearing popping noises as the audio device is initialized. It was being asserted when waking up from S3, but never deasserted.
- To prevent POST code D3h hangs of the SMBus, we clock the SMBus clock so the SPD state machine can finish if it was previously interrupted.
- Removed declaration of PCI Option ROMs as a part of the _CRS structure for the root PCI bus entries. These Option ROMs are shadowed in memory; the memory controller, not the PCI bus, decodes their addresses.

P07-0031

- Fixed game port for boards with hard audio, this was not an issue for soft audio boards.
- Enhanced CD-ROM boot emulation detection.
- Reset SIO keyboard controller early in POST to prevent hangs of D1, 0C, and 15 POST Codes.
- Fixed data issue that would cause "ABstract CMOS" (ABSCMOS) Editor to return corrupted strings.
- Added second COM port to SMBIOS structure. This resolves a LDCM issue.
- Changed the display of IDE devices in setup. Formerly under the IDE screen menu for each drive, informative text was always shown. Now it disappears when a drive is not present, or is selected as type None. This was accomplished by converting the static text items to dynamic text items.

P06-0028

- Removed AUTO as an option for the "Use ARMD drive as" question.
- Allow more audio options when board with PCI audio stuffing is detected. Previously only one onboard audio device was supported. If onboard PCI audio was detected, AC'97 audio was automatically disabled. This prevented CNR audio from ever working on a board with PCI audio stuffed. Now allow the user to enter Setup and select whichever audio device they want to use.
- Updated the Italian setup strings and some help messages.
- Fixed up the drive table late in POST so operating systems can find everything.
- Fixed code to check the Validate command when calling a SMBIOS function 54 subfunction 4006.
- Fixed issue where the AC'97 PCI SSID and SSVID were incorrectly programmed (their locations were swapped).
- Added support for third party Firmware Hub (FWHx).
- Changed AML code to consistent Byte wide access for PS2E.
- Remove code that checks for PnP OS for COMA serial port setup.
- Fixed memory programming issue for some PC 133 DIMMs. The previous method of determining DCT (Tras and Trc) was based on DIMM SPD Data. However, there is ambiguity in the spec in interpreting the SPD Data such that some PC 133 DIMM that are supposed to run Tras=5, Trc=7 will fail randomly. This fix will always programmed PC 133 Memory to Tras=7, Trc=9.
- Fixed an issue of bios not being able to recover from CD-ROM with floppy drive attached to the system.
- Changed code so that removable media size will be returned to the operating system even when no media is present. This allows ATAPI ZIP* drives to return 100MB when no media is present, so these drives can be formatted once the operation system has booted.
- Fixed the issue of BIOS not meeting SMBIOS 2.3.1 spec
- Removed DMA 0 from the list of possible DMA's for the ECP LPT port (ACPI).
- Fixed the issue where the 766Mhz Celeron® processor speed was being displayed as 800Mhz.
- Improved AGP card speed display in setup.

- Fixed the issue of Bios displaying "Memory size decrease", when it should have displayed "Cmos battery low" and date & time error when Cmos battery is corrupted.
- Fixed issue In suspend handler, added code to set PWRBTN_EN so power button will function as expected.
- Added additional processor support.
- Changed the default in BIOS Boot menu for On_Lan to the stay_off option. This resolves the issue where the CMOS mfg defaults do not match the DFT spec.
- Added version 1.1 of EBU to the BIOS Build.
- Changed the Timer 0 from mode 2 (rate generator) to mode 3 (square wave generator). This is the default AT setting defined by IBM.
- Disallow AGP 4X if card is operating at 3.3 Volts

P05-0026

- Fixed an issue where the system would hang if the system has more than 128KB of total option ROM space required.
- VBIOS 5.1 Production Candidate 2.0 2231
- Fix ACPI S3 state that caused certain operating systems shutdown problems.

P04-0014

- Added support for the Express BIOS Update (EBU) application.
- Added support for the New Flash Product (ICH2NS) for the Non-Secure BIOS update.
- Added a BIOS work-around, where the read/write transactions were not considering the A16 inversion, when DTE bit is set in the ICH2.
- Added code to lock SDRAM Read/Write Throttle Control Register.
- Fixed issue that caused USB Legacy mode not to work in DOS.
- Moved location of PnP OS switch in BIOS.
- Limit the amount of Memory Loads to 4 for PC133. For 5 or 6 rows, it will always run at PC 100.
- Fixed an issue where some 66 MHz processors were not configured correctly.
- Added code to restore all segment register after returning from an option ROM execution.
- Added code to look at the number of floppies and hard drives in the BIOS Data Area (BDA) before and after an option ROM execution to determine if a drive was added.
- Changed method of accessing data through SMBUS. The TCO Timer will now be halted so it will not interrupt the SMBUS transaction.
- Altered Flash update monitoring to make it more robust.
- Added fix that will temporarily allow the BIOS to clear RTC, PME, and WOL Status early in POST to prevent a hang while the system is trying to reset.
- Added a flag for ICH2 specific code.
- Add new Video BIOS Production 05 Build 2197
- Fixed reset issue in Windows 2000 where a hard reset was not working as expected.
- Implemented check/fail-safe for Audio Device initialization.
- Added new Processor BIOS Update.
- Added code that allows USB Legacy Support and the second USB controller to work reasonably at boot.
- Add flag for USB ICH2 INF inclusion.

P03-0007

- Changed the Buffer Strength values for PC100 memory. This change is to address Soft DVD Issues.
- Implemented changes to remove unused code that was not being used to implement access level control for user's "VIEW ONLY" access within the Setup utility.
- Updated Buffer Strength and Control Register values for PC133 memory configurations.
- Some bits that were residing in the same CMOS byte as the "Memory Configuration" bits were not included in the checksum. This byte is now included in the CMOS checksum, which allows loading these bits with the CMOS default values. NOTE: this will cause a CMOS checksum error in the first re-boot after flashing in this BIOS revision on a board with a previous BIOS revision.

- Fixed issue where certain AGP Video add-in cards were displayed as “Integrated AGP” if these cards did not report that they supported 1X, 2X, or 4X speeds. These cards will now be displayed as “AGP Speed Unknown”.
- DMA Mode drives now displayed correctly in the IDE Configuration Menu.