

Technical Fax #207

January 20, 1997

Bios Release 8.0

AG430HX Custom (DD04) Bios Release 8.0

- This document details the Bios changes which are backward compatible for Bios Release 8.0. If a Bios release level is not listed; there were no changes under this category for that release.

Features/Errata Fixed In This Release
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Release 8.0

- Corrected an error in Yamaha device node resource allocation which forced a Yamaha audio in static mode (Setup's Advanced Audio configuration screen indicates audio mode as "Manual") to not allocate hardware resources properly. Yamaha audio device in dynamic (Setup's Advanced Audio configuration screen indicates audio mode as "Auto") mode was correctly configured and not affected by this error.

Release 7.0

- Corrected problem where SB and MPU components of the Yamaha OPL3-SA are not properly being reset when RESET# is asserted. This was a recommendation from Yamaha and does not represent an error seen on this platform.

Release 6.0

- Added support for APM 1.2 resume timers Disable/Get/Set functions as specified in the APM 1.2 spec. The resume timer functions previously returned "not supported". The Resume Timer capability is available when the APM BIOS is connected with an APM 1.2 driver. The APM "Get Capabilities" call sub-function 10h now reports that the APM BIOS supports Resume Timer will wake from STANDBY and Resume Timer will wake from SUSPEND. Also corrected a problem that caused the resume timer to return to the OS as scheduled but it left the video off. Video is now turned back on when resuming from a low power state via an APM 1.2 resume timer expiring.
- Changed APM Inactivity Timer posting of the System Suspend Request to a System Standby Request. APM Hot Key and Sleep button now post USER_STANDBY_REQUEST. Inactivity Timer expiring now posts SYSTEM_STANDBY_REQUEST.
- Added an Invalid Interrupt Service Routine that is installed only while the system is in SMM. Some Video BIOS enable interrupts while executing the VBE/PM service routines. Since we were executing from inside SMM we needed to handle the interrupts in a DEFINED fashion.
- Corrected a problem where APM Hot keys were ignored by the APM driver when Win 95 was shutdown and restarted in MS-DOS Mode. Fixed a problem where Win 95 would power down before it was finished with its initialization. This was due to a stale APM event being left around during startup.
- Fixed problems with ECC event logging implementation.
- Resolved extended delay between ATA/ATAPI initialization and floppy initialization during POST. Delay was four seconds if device(s) were present on the primary master IDE controller and eight seconds if device(s) on primary and secondary master IDE controllers.
- Corrected the operation of Setup's "Plug and Play" screen when using configuration mode as "Use BIOS Setup". When Serial port 1 AND serial port 2 both were using IRQ 3, then IRQ 4 was NOT available on this screen. When Serial port 1 AND serial port 2 both were using IRQ 4, then IRQ 3 was NOT available on this screen. The new operation allows either IRQ 4 or IRQ 3 to be shown on this screen if neither serial port 1 or serial port 2 is using the respective IRQ.
- Added additional DMI support for PCI slot reporting. The BIOS will now indicate if each PCI slot is 'in-use' (PCI slot is occupied) or available in the DMI slot instance usage field.

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- Declare the ECP Extended Registers as taken. Win '95 Logo Requirement to declare the ECP Registers (LPT Base Address + 400h) as taken by the device node.
- Changed to prevent WIN 95 and EMM386 from assuming the region of memory left after video BIOS ROM re-sizing is in use. The video BIOS ROM image is resized after initialization to a smaller image size. The unused area is filled with 0FFh to allow the region to be reused.
- Added a check to prevent the parity/ECC event log handler from incorrectly logging errors when parity/ECC checking is disabled. This corrects the case where parity/ECC errors were being logged for non-parity/ECC memory modules.
- Fixed issue where single bit ECC errors could cause the system to either lock up or in the case of Windows NT, cause a Kernel Dump.
- Changed setup's TV Monitor Signal field to include NTSC only. The option PAL option is not needed.

Beta 6.02

- New video BIOS (ATI-264GTB EDO (DUAL CYCLE) BIOS v3.008T) corrects TV Monitor becoming disabled after TV Checkbox is un-checked and Win95 re-started (This is in Display Properties in Win95).
- Closed window between CMOS write and CMOS checksum to reduce possibility of a power down during POST causing a CMOS checksum error. Eliminates many CMOS checksum errors seen from power cycle of board during POST. (DCS #7176)
- Setup update. IDE Translation Mode updated so that only 'Standard CHS' and 'Extended CHS' are offered if the 'IDE Device Configuration' option is set to 'User Definable'. This was done to synch up the Setup code with the drive detection code, which does not allow LBA translations when the drive is set to User Definable. (DCS #5966)
- Changed the implementation of the ISA Shared Memory base and size fields on Setup's Advanced Plug and Play Configuration screen. The choices for the ISA Shared Memory Size and Base address will be limited to options which do not cause the memory to overlap the current video BIOS ROM which will cause a static resource conflict and no video. (DCS #7179)
- Corrected National 306 Get Node issue where the LPT device node indicated the node was disabled when it was not disabled.
- Modified support for enhanced PCI latency timer to correct programming of latency timers when a PCI-to-PCI bridge is present in the system. (DCS #7136)
- When ECC memory is detected, the 32 clock retry feature is disabled and DRAM timings are relaxed to satisfy chipset errata.
- Changed the POST status bar to move linearly based on the elapsed time recorded for the last complete boot.
- Changed to prevent playing the custom wave file (jingle) until a minimum of 3.5 seconds after video initialization has expired. (Customer request) (DCS #7126).
- APM has been changed to monitor hard disk interrupts when determining system inactivity. This will prevent a system from entering a reduced power state when hard disk activity has occurred at any time during the previous APM monitoring interval.

Beta 6.01

- Fixed problem which was causing PCI SIG test fail, when PCI SIG card requested 96K of memory.
- Added the ability to detect MMX capable CPUs and display the capability in setup on the Advanced Chipset screen. Format is "Pentium(R) chip with MMX(TM) Technology"
- Corrected DMI reporting issue where on board bus mastering video was incorrectly reporting a state of disabled.

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- Shadow upper memory from E0000h to E7FFFh, if possible, so memory managers can use these areas for UMBs.
- Made the algorithm that always insure one interrupt is preserved for PCI to be more robust. This failure condition was observed if all IRQs consumed by ISA legacy or multiple PnP cards and on-board video doesn't require an IRQ.
- Corrected another Intel i960RP processor board anomaly observed when writing the ROM space base address register.
- Added ability to display VPD data on the screen during bootup. Also added a new DMI switchboard interface to enable and disable the displaying of the VPD data.
- Added TV out capability support code and video BIOS for those boards containing Tractor Beam hardware support.
- Changed the way that the PCI Latency Timers are programmed. Previously, every latency timer was programmed to the value entered in the setup question. This option was a decimal value that defaulted to 66. Now the option is a pick field with the default value AUTO, and other choices: 16, 24, 32, ... (multiples of 8) ... 120, 128. The BIOS now determines the latency timer value to program into each PCI device. A combination of methods to intelligently determine what to put in each register based on whether the device is on the motherboard and the value in the minimum grant register.

Release 5.0

- Changed value maintained in CMOS Register 0Eh not to reflect CMOS invalid state during boot. The BIOS will always correct the CMOS state during boot if it is invalid. Some versions of DOS (e.g. DOS 6.22) check this status bit and refuse to boot if set.
- Added support for dynamic detection of USB connectors based on stuffing option.
- Corrected chipset registers settings for proper operation of to properly enable Delayed Transactions on the TXC revision A-3 stepping.
- Corrected chipset register settings for proper operation of ECC/Parity memory for the TXC revision A-3.

Release 4.0

- Changed usage of flash memory to prevent possible corruption of customer's logo caused by fault tolerant ESCD flash writes algorithm.

Release 3.0

- Changed to perform a hard reset after completing a flash update using FMUP. Corrects lockup seen intermittently after a FMUP operation.
- Changed the APM timer standard default value from 10 minutes to 20 minutes. Request made by customer.

Release 2.0

- Corrected operation of setup disable jumper and setup prompt disable field in setup. Jumper totally disables the ability to enter setup. The setup prompt field disables the message "Press F1 to enter ..", but not the ability to enter setup.
- Changed the boot jingle player to properly configure the Yamaha Sound Blaster chip after playing the boot jingle.

Release 1.0

- Corrected problem where Yamaha audio configuration mode is set to Disabled in setup, but an IRQ is still reserved in Yamaha device node and in Yamaha hardware.

Beta 1.06

- Changed (per customer request) setup's Boot Option screen for Boot Order to:
 - Boot Device 1: CD-ROM
 - Boot Device 2: Floppy
 - Boot Device 3: Hard Drive
 - Boot Device 4 : Disabled
- Corrected EPP device node for dynamic and static set node functions.

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- Added more robust checking of IRQs in use by Yamaha audio for the Plug and Play Configuration screen in setup. IRQs in use by Yamaha audio should not be displayed as available if Use Setup option is selected on the Plug and Play screen.

Beta 1.05

- Included both Static and Dynamic mouse device nodes. The Dynamic node is active only if the PnP setup option "Win'95" is selected, in which case the static device node is removed. The Dynamic mouse device can be disabled correctly under Windows 95.
- Corrected DMI CPU speed detect field in the DMI processor information structure.
- Changed standard default for USB to disabled (customer request).
- Corrected language file format to allow FMUP to be used for language updates. English (US) is only language file provided.

Beta 1.04

- Added volume control for boot to setup's Advanced Audio Configuration screen. Format is "Boot Volume" with choices of Disabled (no sound), Low, Medium, and High.
- Added APM OEM support and corrected battery return status (APM function 0A will return UNRECOGNIZED DEVICE when a specific battery number is passed in - desktops do not have batteries.)
- Corrected DMI structure data for USB and memory SIMMs. Data from first DMI structure was duplicated in the following structures of the same type.
- Corrected problem with Yamaha on board audio device node which reported incorrect set of available choices for DMA resource to PnP operating systems.

Beta 1.03

- Corrected an APM error so that the Sleep LED now blinks during sleep power down.
- Added the customer string "SONY" to the runtime BIOS image in F000 block.
- Added User Scan Flash capability.
- Corrected situation where flash writes would not happen if initiated from real mode (gate A20 not set).
- Added SIMM type display to Setup's Advanced Chipset Configuration screen. One entry for each of the two SIMM banks with the detected SIMM reported as "Not Installed", "EDO", or "Fast Page".
- Added USB enable/disable field to setup's Advanced Peripheral screen. Format is "USB Interface" with "Enabled" and "Disabled" as choices. When disabled, the USB will not be configured and will obtain no PCI resources (IRQ, I/O address, etc).
- Fixed problem of system hanging when in virtual mode and a jump to the restart vector is executed.
- Masked a problem with XcelleNet RemoteWare V1.42 exhibited as follows:
A key pressed on the host system causes a software generated INT 9 (Hardware keyboard interrupt) on the target system. The software correctly places the key pressed by the host system in the keyboard buffer by an INT 16 function 5. The program should not fake a keyboard hardware interrupt on a system that didn't have the key pressed. Depending upon value in port 60h a bogus key could be seen. Any program in AUTOEXEC.BAT or CONFIG.SYS that modifies port 60h may reintroduce the problem.
- Move BIOS POST scratch buffer above 1MB so add-in cards that search for free memory below 1 MB will find more available memory for initialization.
- Fixed problem where a PnP set static function call could cause a PnP set dynamic function call to be skipped.
- Updated DMI information to reflect latest reference designators on board (-201). Enhanced DMI capabilities by adding information on USB ports, Line In port, Line Out port, Audio Mic In port, CD Audio In port, and Video In port.

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- Corrected setup engine to corrects an error in the leap year algorithm. Also added support for print screen services and masking a Ctrl key aliasing issue. Also fixes a corruption problem with the century byte when saving CMOS settings.
- Updated wave binary file played before video initialization with new binary supplied by customer. Also changed mixer options to provided more even volume over right and left channel speaker output.
- Included corrections for a chipset errata for spurious SERR# being generated during snoop ahead during PCI read cycles.
- Corrected a recovery mode failure related to SMM initialization.

Beta 1.02

- Corrected an APM error by adding a test for device power management enabled for a individual device when executing the set power state command for an individual device.
- Corrected an APM error in setting power state (Function 07h Set Power State) for any individual device beyond the first device to function for all requested devices.

Features Included In This Release
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Release 6.0

- Added support for APM 1.2 resume timers Disable/Get/Set functions as specified in the APM 1.2 spec. The resume timer functions previously returned "not supported". The Resume Timer capability is available when the APM BIOS is connected with an APM 1.2 driver. The APM "Get Capabilities" call sub-function 10h now reports that the APM BIOS supports Resume Timer will wake from STANDBY and Resume Timer will wake from SUSPEND. Also corrected a problem that caused the resume timer to return to the OS as scheduled but it left the video off. Video is now turned back on when resuming from a low power state via an APM 1.2 resume timer expiring.
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- New video BIOS (ATI-264GTB EDO (DUAL CYCLE) BIOS v3.008T) corrects TV Monitor becoming disabled after TV Checkbox is un-checked and Win95 re-started (This is in Display Properties in Win95).
- APM has been changed to monitor hard disk interrupts when determining system inactivity. This will prevent a system from entering a reduced power state when hard disk activity has occurred at any time during the previous APM monitoring interval.

Beta 6.01

- Added the ability to detect MMX capable CPUs and display the capability in setup on the Advanced Chipset screen. Format is "Pentium(R) chip with MMX(TM) Technology"
- Shadow upper memory from E0000h to E7FFFh, if possible, so memory managers can use these areas for UMBs.
- Added ability to display VPD data on the screen during bootup. Also added a new DMI switchboard interface to enable and disable the displaying of the VPD data.
- Added TV out capability support code and video BIOS for those boards containing Tractor Beam hardware support.
- Changed the way that the PCI Latency Timers are programmed. Previously, every latency timer was programmed to the value entered in the setup question. This option was a decimal value that defaulted to 66. Now the option is a pick field with the default value AUTO, and other choices: 16, 24, 32, ... (multiples of 8) ... 120, 128. The BIOS now determines the latency timer value to program into each PCI device. A combination of methods to intelligently determine what to put in each register based on whether the device is on the motherboard and the value in the minimum grant register.

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- Updated DMI information to reflect latest reference designators on board (-201). Enhanced DMI capabilities by adding information on USB ports, Line In port, Line Out port, Audio Mic In port, CD Audio In port, and Video In port.
- Updated wave binary file played before video initialization with new binary supplied by customer. Also changed mixer options to provided more even volume over right and left channel speaker output.

Beta 1.01

- Intel Corporation's Phase 3.25 - Bios™.
- Intel Corporation's POSThaste™.
- Plug and Play BIOS Specification Version 1.0A (May 5, 1994) compliant.
- Plug and Play ISA Specification Version 1.0A (May 5, 1994) compliant/support.
- PCI Bios Specification 2.1 compliant.
- PCI to PCI Bridge Architecture Specification Revision 1.0 (April 5, 1994) compliant.
- Supporting PCI Expansion Bridges, Tim Mostad, PCI SIG Technical Marketing (December 19, 1994) compliant.
- Extended System Configuration Data (ESCD) Specification Version 1.03 (November 30, 1994) compliant.
- Advanced Power Management (APM) BIOS Interface Specification Revision 1.2 (September 1993) compliant (also Revision 1.1 and Revision 1.0 compliant).
- ATA (IDE Hard Disk) interface support (Mode 4 and below timing support).
- ATAPI (IDE CD-ROM, TAPE, etc.) interface support
- "EI Torito" Bootable CD-ROM Format Specification Version 1.0 (July 8, 1994) compliant.
- DMI BIOS Extensions Revision 2.0 compliant
- Keyboard/Mouse Swap support.
- National Semiconductor PC87306B Super I/O support
- AMI Keyboard Controller support
- Intel 82430HX Chipset support.
- Pentium Overdrive Ready (P55CT Socket 7) support
- Graphics mode display during POST and in BIOS setup.
- Graphics mode logo support.
- 2Mbit Flash device with Boot Block Recovery BIOS.
- ATI-264GT/A2 PSEUDO EDO Video BIOS v2.199
- Included Secure Flash circuit support.
- Included SRS device node.
- Changes developed from customer's requested requirements:
 - * Setup has equivalent functionality to standard product except the "Look and Feel" has changed to resemble the customer's other product lines.
 - * Logo and boot screen scenario has been customized to limit amount of technical information displayed unless requested by specific user keystroke (F3).
 - * Short sound jingle is played (using system board's Yamaha audio hardware only) before video initialization.

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Setup Changes

Release 6.0

- Corrected the operation of Setup's "Plug and Play" screen when using configuration mode as "Use BIOS Setup". When Serial port 1 AND serial port 2 both were using IRQ 3, then IRQ 4 was NOT available on this screen. When Serial port 1 AND serial port 2 both were using IRQ 4, then IRQ 3 was NOT available on this screen. The new operation allows either IRQ 4 or IRQ 3 to be shown on this screen if neither serial port 1 or serial port 2 is using the respective IRQ.
- Changed setup's TV Monitor Signal field to include NTSC only. The option PAL option is not needed.

Beta 6.02

- Setup update. IDE Translation Mode updated so that only 'Standard CHS' and 'Extended CHS' are offered if the 'IDE Device Configuration' option is set to 'User Definable'. This was done to synch up the Setup code with the drive detection code, which does not allow LBA translations when the drive is set to User Definable. (DCS #5966)
- Changed the implementation of the ISA Shared Memory base and size fields on Setup's Advanced Plug and Play Configuration screen. The choices for the ISA Shared Memory Size and Base address will be limited to options which do not cause the memory to overlap the current video BIOS ROM which will cause a static resource conflict and no video. (DCS #7179)

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- Added the ability to detect MMX capable CPUs and display the capability in setup on the Advanced Chipset screen. Format is "Pentium(R) chip with MMX(TM) Technology"
- Added TV out capability support code and video BIOS for those boards containing Tractor Beam hardware support.

Release 3.0

- Changed the APM timer standard default value from 10 minutes to 20 minutes. Request made by customer.

Release 2.0

- Corrected operation of setup disable jumper and setup prompt disable field in setup. Jumper totally disables the ability to enter setup. The setup prompt field disables the message "Press F1 to enter ..", but not the ability to enter setup.

Release 1.0

- Corrected problem where Yamaha audio configuration mode is set to Disabled in setup, but an IRQ is still reserved in Yamaha device node and in Yamaha hardware.

Beta 1.05

- Changed standard default for USB to disabled (customer request).

Beta 1.04

- Added volume control for boot to setup's Advanced Audio Configuration screen. Format is "Boot Volume" with choices of Disabled (no sound), Low, Medium, and High.

Beta 1.03

- Added User Scan Flash capability.
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- Corrected setup engine to corrects an error in the leap year algorithm. Also added support for print screen services and masking a Ctrl key aliasing issue. Also fixes a corruption problem with the century byte when saving CMOS settings.

Hard Disk Changes

Release 6.0

- Resolved extended delay between ATA/ATAPI initialization and floppy initialization during POST. Delay was four seconds if device(s) were present on the primary master IDE controller and eight seconds if device(s) on primary and secondary master IDE controllers.

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- Setup update. IDE Translation Mode updated so that only 'Standard CHS' and 'Extended CHS' are offered if the 'IDE Device Configuration' option is set to 'User Definable'. This was done to synch up the Setup code with the drive detection code, which does not allow LBA translations when the drive is set to User Definable. (DCS #5966)
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Plug and Play (Windows 95, ISA Configuration Utility, etc.)

Release 8.0

- Corrected an error in Yamaha device node resource allocation which forced a Yamaha audio in static mode (Setup's Advanced Audio configuration screen indicates audio mode as "Manual") to not allocate hardware resources properly. Yamaha audio device in dynamic (Setup's Advanced Audio configuration screen indicates audio mode as "Auto") mode was correctly configured and not affected by this error.

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Release 5.0

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APM 1.2

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- Corrected a problem where APM Hot keys were ignored by the APM driver when Win 95 was shutdown and restarted in MS-DOS Mode. Fixed a problem where Win 95 would power down before it was finished with its initialization. This was due to a stale APM event being left around during startup.

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- Corrected another Intel i960RP processor board anomaly observed when writing the ROM space base address register.
- Added ability to display VPD data on the screen during bootup. Also added a new DMI switchboard interface to enable and disable the displaying of the VPD data.
- Added TV out capability support code and video BIOS for those boards containing Tractor Beam hardware support.
- Changed the way that the PCI Latency Timers are programmed. Previously, every latency timer was programmed to the value entered in the setup question. This option was a decimal value that defaulted to 66. Now the option is a pick field with the default value AUTO, and other choices: 16, 24, 32, ... (multiples of 8) ... 120, 128. The BIOS now determines the latency timer value to program into each PCI device. A combination of methods to intelligently determine what to put in each register based on whether the device is on the motherboard and the value in the minimum grant register.

Release 5.0

- Changed value maintained in CMOS Register 0Eh not to reflect CMOS invalid state during boot. The BIOS will always correct the CMOS state during boot if it is invalid. Some versions of DOS (e.g. DOS 6.22) check this status bit and refuse to boot if set.
- Added support for dynamic detection of USB connectors based on stuffing option.
- Corrected chipset registers settings for proper operation of to properly enable Delayed Transactions on the TXC revision A-3 stepping.
- Corrected chipset register settings for proper operation of ECC/Parity memory for the TXC revision A-3.

Release 4.0

- Changed usage of flash memory to prevent possible corruption of customer's logo caused by fault tolerant ESCD flash writes algorithm.

Release 3.0

- Changed to perform a hard reset after completing a flash update using FMUP. Corrects lockup seen intermittently after a FMUP operation.

Release 2.0

- Changed the boot jingle player to properly configure the Yamaha Sound Blaster chip after playing the boot jingle.

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Beta 1.05

- Included both Static and Dynamic mouse device nodes. The Dynamic node is active only if the PnP setup option "Win'95" is selected, in which case the static device node is removed. The Dynamic mouse device can be disabled correctly under Windows 95.
- Corrected DMI CPU speed detect field in the DMI processor information structure.

Beta 1.04

- Corrected DMI structure data for USB and memory SIMMs. Data from first DMI structure was duplicated in the following structures of the same type.

Beta 1.03

- Added the customer string "SONY" to the runtime BIOS image in F000 block.
- Added User Scan Flash capability.
- Corrected situation where flash writes would not happen if initiated from real mode (gate A20 not set).
- Fixed problem of system hanging when in virtual mode and a jump to the restart vector is executed.
- Masked a problem with XcelleNet RemoteWare V1.42 exhibited as follows:
A key pressed on the host system causes a software generated INT 9 (Hardware keyboard interrupt) on the target system. The software correctly places the key pressed by the host system in the keyboard buffer by an INT 16 function 5. The program should not fake a keyboard hardware interrupt on a system that didn't have the key pressed. Depending upon value in port 60h a bogus key could be seen. Any program in AUTOEXEC.BAT or CONFIG.SYS that modifies port 60h may reintroduce the problem.
- Move BIOS POST scratch buffer above 1MB so add-in cards that search for free memory below 1 MB will find more available memory for initialization.
- Fixed problem where a PnP set static function call could cause a PnP set dynamic function call to be skipped.
- Updated DMI information to reflect latest reference designators on board (-201). Enhanced DMI capabilities by adding information on USB ports, Line In port, Line Out port, Audio Mic In port, CD Audio In port, and Video In port.
- Updated wave binary file played before video initialization with new binary supplied by customer. Also changed mixer options to provided more even volume over right and left channel speaker output.
- Included corrections for a chipset errata for spurious SERR# being generated during snoop ahead during PCI read cycles.
- Corrected a recovery mode failure related to SMM initialization.

Features Still To Be Added / Comments About This Release
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Note 1:

The various O/Ss either do their own memory detection or issue a series of BIOS interrupts to determine memory size. The most common series of BIOS interrupts are INT 12 to get base memory. Int 15 AH=88h is issued to get extended memory. Int 15h AX=E801h is issued to get memory above 64MB. NT-Daytona Beta 2 and Chicago issue Int 15h AX=E820.

A problem occurs because there is no standard as to what Int 15h AH=88 returns. Microsoft expects up to 63MB UNLESS E801 is supported, when they expect only 15MB maximum. If Microsoft sees greater than 15MB they limit the memory to the AH=88 value and ignore the E801 results. Some O/Ss in the above situation limit memory to 16MB. Some O/Ss except Int 15 AH=88 to return up to 63MB and look at E801 for memory above 64MB.

Eliminating the Int 15h AX=E801 support allows all O/S to handle up to 64MB using the Int 15h AH=88h. Those O/S that support Int 15h AX=E820h will handle memory above 64MB.