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AWARD Test Sequence up to Version 4.2

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AWARD BIOS Text Error Messages

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AWARD EISA BIOS

AWARD ISA/EISA BIOS Version 4.0

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AWARD Elite (Version 4.51PG) BIOS

AWARD Version 6.0 (i810)

EISA POST Codes are typically output to port address 30h

ISA POST Codes are typically putput to port address 80h

AWARD Test Sequence up to Version 4.2:

CPU	BIOS sets, verifies and resets the error flags in the CPU. Failure here is normally due to the CPU or system clock
POST Determination	BIOS determines whether the motherboard is set for normal operation or a continuous loop of POST. If the POST test is cycled 1-5 times over and over either the jumper for this function is set to burn-in or the circuitry involved has failed

BIOS Beep Codes:
AMI BIOS Beep Codes
AST BIOS Beep Codes
Award BIOS Beep Codes
Compaq BIOS Beep Codes
IBM BIOS Beep Codes
Mylex BIOS Beep Codes
Phoenix BIOS Beep Codes
Quadtel BIOS Beep Codes

System Specific Diagnostic and POST Error Messages:
IBM Diagnostic Error Codes
Compaq Desktop Systems Diagnostic and POST Errors

BIOS Related Pages:
Bios Data Area
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Microid Research/Mr BIOS Post Codes
NCR BIOS Post Codes
Olivetti BIOS Post Codes
Phillips BIOS Post Codes
Phoenix BIOS Post Codes
Quadtel BIOS Post Codes
Supersoft BIOS Post Codes
Tandon BIOS Post Codes
Zenith BIOS Post Codes

Intel Motherboards:
CA810E
CC820
SE440BX-2
D810E2CB
D810EMO
D815BN
D815EEA
D815EPEA
D820LP
SE440BX
SR440BX
JN440BX
LB440GX/L440GX
N440BX/NA440BX
OR840
T440BX
RC440BX
VC820

Keyboard Controller	BIOS tests the internal operations of the keyboard controller chip (8042). Failure here is normally due to the keyboard chip
Burn In Status	1-5 will repeat if the motherboard is set to burn in. If you haven't set the motherboard for burn-in mode, there is a short in the circuitry
Initialize Chipset	BIOS clears all DMA registers and CMOS status bytes 0E and 0F. BIOS then initializes 8254 timer, Failure of this test is probably due to the timer chip
CPU	A bit-pattern is used to verify the functioning of the CPU registers. Failure here is normally down to the CPU or clock chip
RTC	BIOS verifies that the real time clock is updating CMOS at normal intervals. Failure is normally the CMOS/RTC or the battery
ROM BIOS Checksum	BIOS performs a checksum of itself against a predetermined value that will equal 00. Failure is down to the ROM BIOS
Initialize Video	BIOS tests and initializes the video controller. Failure is normally the video controller (6845) or an improper setting of the motherboard or CMOS
PIT	BIOS tests the functionality of channels 0, 1, and 2 in sequence. Failure is normally the PIT chip (8254/53)
CMOS Status	Walking bit pattern tests CMOS shutdown status byte 0F. Failure normally in CMOS
Extended CMOS	BIOS checks for any extended information of the chipset and stores it in the extended RAM area. Failure is normally due to invalid information and can be corrected by setting CMOS defaults. Further failure indicates either the chipset or the CMOS RAM
DMA	Channels 0 and 1 are tested together with the page registers of the DMA controller chip (8237). Failure is normally due to the DMA chips
Keyboard	The 8042 keyboard controller is tested for functionality and for proper interfacing functions. Failure is normally due to the 8042 chip
Refresh	Memory refresh is tested; the standard with walking - bit patterns. Failure is normally the PIT chip in AT's or the DMA chip in AT's
Memory	The first 64K of memory is tested with walking bit patterns. Failure is normally due to the first bank of ram or a data line
Interrupt Vectors	The BIOS interrupt vectors table is loaded to the first bank of RAM. Failure here is not likely since memory in the area has been tested. If failure does occur suspect the BIOS or RTC
Video ROM	Video ROM is initialized which performs an internal diagnostic before returning control to the system BIOS. Failure is normally the video adapter or the BIOS
Video Memory	This is tested with a bit pattern. This is bypassed if there is a ROM on the video adapter. Failure is normally down to the memory on the adapter

BIOS Basics
BIOS and Computer Links
BIOS Int 13 Error Codes
BIOS Services
CMOS Memory Map
Debug Routines
Interrupts

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PIC	The functionality of the interrupt controller chip(s) is tested (8259). Failure is normally due to the 8259 chips but may be the clock
CMOS Battery	BIOS verifies that CMOS byte 0D is set which indicates the CMOS battery power. Suspect the battery first and the CMOS second
CMOS Checksum	A checksum is performed on the CMOS. Failure is either incorrect setup, the CMOS chip or battery. If the test is passed, the information is used to configure the system
Determine System Memory	Memory up to 640K is addressed in 64K blocks. Failure is normally due to an address line or DMA chip. If all the memory is not found there is a bad RAM chip or address line in the 64K block above the amount found
Memory Test	Tests are performed on any memory found and there will normally be a message with the hex address of any failing bit displayed at the end of boot
PIC	Further testing is done on the 8259 chips
CPU Protected Mode	The processor is placed in protected mode and back into real mode; the 8042 is used for this. In case of failure suspect the 8042, CPU, CMOS, or the BIOS in that order
Determine Extended Memory	Memory above 1MB is addressed in 64K blocks. The entire block will be inactive if there is a bad RAM chip on a block
Test Extended Memory	Extended memory is tested with a series of patterns. Failure is normally down to a RAM chip, and the hex address of the failed bit should be displayed
Unexpected Exceptions	BIOS checks for unexpected exceptions in protected mode. Failure is likely to be a TSR or intermittent RAM failure
Shadow Cache	Shadow RAM and cache are activated. Failure may be due to the cache controller or chips. Check the CMOS first for invalid information
8242 Detection	BIOS checks for an Intel 8242 keyboard controller and initializes it if found. Failure may be due to an improper jumper setting or the 8242
Initialize Keyboard	Failure could be the keyboard or controller
Initialize floppy	All those set in the CMOS. Failure could be incorrect CMOS setup or floppy controller or the drive
Detect Serial Ports	BIOS searches for and initializes up to four serial ports at 3F8, 2F8, 3E8, and 2E8. Detection failure is normally due to an incorrect jumper setting somewhere or an adapter failure
Detect Parallel Ports	BIOS searches for and initializes up to four parallel ports at 378, 278, 3BC, and 2BC. Detection failure is normally due to an incorrect jumper setting somewhere or an adapter failure
Initialize Hard Drive	BIOS initializes any hard drive(s) set in the CMOS. Failure could be due to invalid CMOS setup, hard drive or controller failure

Detect NPU Coprocessor	Initialization of any NPU coprocessor found. failure is due either to invalid CMOS setup or the NPU is failing
Initialize Adapter ROM	Any Adapter ROM's between C800 and EFFF are initialized. The ROM will do an internal test before giving back control to the system ROM. Failure is normally due to the adapter ROM or the attached hardware
Initialize External Cache	Any external cache to the 486 is enabled. Failure would indicate invalid CMOS setup, cache controller or chip failure
NMI Unexpected Exceptions	A final check for unexpected exceptions before giving control to the Int 19 boot loader. Failure is normally due to a memory parity error or an adapter failure
Boot Errors	Failure when the BIOS attempts to boot off the default drive set in CMOS is normally due to invalid CMOS drive setup or as given by an error message. If the system hangs there is an error in the Master Boot Record or the Volume Boot Record

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AWARD Test Sequence after version 4.2:

CPU	BIOS sets, verifies and resets the error flags in the CPU then performs a register test by writing and reading bit patterns. Failure is normally due to the CPU or clock chip
Initialize Support Chips	Video is disabled as is parity, DMA and NMI. Then the PIT, PIC, and DMA chips are initialized. Failure is normally the DMA or PIT chips
Initialize Keyboard	Keyboard and controller are initialized
ROM BIOS Test	A checksum is performed by the ROM BIOS on the data within itself and is compared to a preset value of 00. Failure is normally due to the ROM BIOS
CMOS Test	A test of the CMOS chip which should also detect a bad battery. Failure is due to either the CMOS chip or the battery
Memory Test	First 356K of memory tested with any routines in the chipsets. Failure is normally due to defective memory
Cache Initialization	Any external cache to the chipset is activated. Failure is normally due to the cache controller or chips
Initialize Vector Table	Interrupt vectors are initialized and the interrupt table is installed into low memory. Failure is normally due to the BIOS or low memory
CMOS RAM	CMOS RAM checksum tested and BIOS defaults loaded if invalid. Failure would indicate CMOS RAM failure
Keyboard Initialization	Keyboard initialized and Num Lock set on. Check the keyboard or controller if a failure occurs
Video Test	Video adapter tested and initialized
Video Memory	Tested for Mono and CGA adapters. Failure could be the adapter card

DMA Test	DMA controllers and page registers are tested. Failure could indicate bad DMA chips
PIC Tests	8259 PIC chips are tested. Failure would indicate a bad PIC
EISA Mode Test	A checksum is performed on the extended data area of CMOS where EISA information is stored. If passed the EISA adapter is initialized
Enable Slots	Slots 0-15 doe EISA adapters are enabled if the above test is passed
Memory Size	Memory addresses above 256K written in 64K blocks and addresses found are initialized. If a bit is bad, the entire block containing it and those above will not be seen
Memory Test	Read and write tests are performed on memory above 256K. Failure is due to bad bit in RAM
EISA Memory	Memory tests on any adapters initialize previously. Check the memory chips if a failure occurs
Mouse Initialization	Checks for a mouse and installs the appropriate interrupt vectors if one is found. Check the mouse adapter if a failure occurs
Cache Initialized	The cache controller is initialized if present
Shadow RAM Setup	Any Shadow RAM present according to the CMOS is enabled
Floppy Test	Test and initialize floppy controller and drive
Hard Drive Test	Test and initialize hard disk controller and drive. You may have an improper setup or a bad controller/hard drive if a failure occurs
Serial and Parallel Ports	Amy serial and parallel ports are found and initialized
Math Coprocessor	The coprocessor is initialized if found. Check the CMOS setup or the math coprocessor if a failure occurs
Boot Speed	Set the default speed at which the computer boots
POST Loop	Reboot occurs if the loop pin is set for manufacturing purposes
Security	Ask for a password if one has been set in the CMOS.
Write CMOS	The BIOS is waiting to write the CMOS values from Setup to CMOS RAM. Failure is normally due to an invalid CMOS configuration
Pre-Boot	The BIOS is waiting to to write the CMOS values from Setup to CMOS RAM
Adapter ROM Initialization	Adapter ROM's between C800 and EFFF are Initialized. The ROM will do an internal test before giving back control to the system ROM. Failure is normally due to the adapter ROM or the adapter card
Setup Time	Set CMOS time to the value located at 40h of the BIOS data area
Boot System	Control is given to Int 19 boot loader

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AWARD BIOS Text Error Messages:

BIOS ROM checksum error - System halted	The checksum of the BIOS code in the BIOS chip is incorrect, indicating the BIOS code may have become corrupt. Replace the BIOS
CMOS battery failed	CMOS battery is no longer functional. Replace the battery
CMOS checksum error - Defaults loaded	Checksum of CMOS is incorrect, so the system loads the default values. A checksum error may indicate that CMOS has become corrupt. This error might have been caused by a weak battery
CMOS CHECKSUM ERROR DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER	Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak CMOS battery
CPU at nnn	Displays the running speed of the CPU
DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP	Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly
Display switch is set incorrectly	The display switch on the motherboard can be set to either monochrome or color. This message indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct and then either turn off the system and change the jumper or enter Setup and change the video selector
DISPLAY TYPE HAS CHANGED SINCE LAST BOOT	Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type
EISA Configuration Checksum Error	The EISA nonvolatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA nonvolatile memory has become corrupted or the slot has been configured incorrectly. Also, be sure the card is installed firmly in the slot
EISA Configuration Is Not Complete	The slot configuration information stored in the EISA nonvolatile memory is incomplete
ERROR ENCOUNTERED INITIALIZING HARD DRIVE	Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup
ERROR INITIALIZING HARD DISK CONTROLLER	Cannot initialize controller. Make sure the card is correctly and firmly installed in the bus. Be sure the correct hard drive type is installed in Setup. Also check to see if any jumper needs to be set correctly on the hard drive
FLOPPY DISK CONTROLLER ERROR OR NO CONTROLLER PRESENT	Cannot find or initialize the floppy disk controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to None
Floppy disk(s) fail	Cannot find or initialize the floppy drive controller or the drive. make sure the controller is installed correctly. If no floppy drives are installed, be sure the Diskette Drive selection in Setup is set to None or Auto
HARD DISK initializing	Please wait for a moment... Some hard drives require some extra time to initialize

HARD DISK INSTALL FAILURE	Cannot find or initialize the hard drive controller or the drive. Make sure the controller is installed correctly. If no hard drives are installed, be sure the Hard Drive selection in Setup is set to None
Hard disk(s) diagnosis fail	The system may run specific disk diagnostic routines. this message appears if one or more hard disks return an error when the diagnostics run
Invalid EISA Configuration	The nonvolatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Rerun EISA configuration utility to correctly program the memory
Keyboard error or no keyboard present	Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot. If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot
Keyboard is locked out - Unlock the key	This message usually indicates that one or more keys have been pressed during the keyboard tests. Be sure no objects are resting on the keyboard
Memory Address Error at...	Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips
Memory parity Error at...	Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.
MEMORY SIZE HAS CHANGED SINCE LAST BOOT	Memory has been added or removed since the last boot. In EISA mode, use configuration utility to reconfigure the memory configuration. In ISA mode, enter Setup and enter the new memory size in the memory field
Memory Test	The message displays during a full memory test, counting down the memory areas being tested
Memory Test Fail	If POST detects an error during memory testing, additional information appears giving specifics about the type and location of the memory error
Memory Verify Error at...	Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip
No boot device was found	This could mean that either a boot device was not detected or the drive does not contain proper system boot files. Insert a system disk into drive A: and press Enter. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system
OFFENDING ADDRESS NOT FOUND	The message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated

OFFENDING SEGMENT:	This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated
Override enabled - Defaults loaded	If the system cannot boot using the current CMOS configuration, the BIOS can override the current configuration with a set of BIOS defaults designed for the most stable, minimal-performance system operations
PRESS A KEY TO REBOOT	This will be displayed at the bottom of the screen when an error occurs that requires you to reboot. Press any key to reboot the system
Press ESC to skip memory test	You can press ESC to skip the full memory test
PRESS F1 TO DISABLE NMI, F2 TO REBOOT	When BIOS detects a non-maskable interrupt condition during boot, this will allow you to disable the NMI and continue to boot; or you can reboot the system with the NMI enabled
Press TAB to show POST screen	System OEM's may replace the Award BIOS POST display with their own proprietary display. Including this message in the OEM display permits the operator to switch between the OEM display
Primary master hard disk fail	POST detects an error in the primary master IDE hard drive
Primary slave hard disk fail	POST detects an error in the secondary master IDE hard drive
RAM PARITY ERROR - CHECKING FOR SEGMENT...	Indicates a parity error in RAM
Resuming from disk, Press TAB to show POST screen	Award offers a save-a-disk feature for notebook computers. This message may appear when the operator restarts the system after a save-to-disk shutdown. See the Press Tab...message earlier for a description of this feature
Secondary master hard disk fail	POST detects an error in the secondary master IDE hard drive
Secondary slave hard disk fail	POST detects an error in the secondary slave IDE hard drive
Should Be Empty But EISA Board Found	A valid board ID was found in a slot that was configured as having no board ID
Should Have EISA Board But Not Found	The board installed is not responding to the ID request, or no board ID has been found in the indicated slot
Slot Not Empty	Indicates that a slot designated as empty by the EISA configuration utility actually contains a board
SYSTEM HALTED. (CTRL-ALT-DEL) TO REBOOT...	Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the Ctrl and Alt keys and press Del
Wrong Board In Slot	The board ID does not match the ID stored in the EISA nonvolatile memory

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AWARD BIOS (Original XT):

03	Flag register test
06	CPU register test
09	System hardware initialization
0C	BIOS checksum
0F	DMA page register initialization
12	Test DMA address and count registers
15	DMA initialization
18	Timer test
1B	Timer initialization
1E	Start RAM initialization
21	Test base 64K of RAM
24	Setup init. and temp stack
27	Initialize PIC
2A	Interrupt mask register test
2D	Hot interrupt test
30	V40 DMA if present
33	Verify system clock initialization
36	Keyboard test
39	Setup interrupt table
3C	Read system configuration switches
3F	Video test
42	Serial port determination
45	Parallel port determination
48	Game port determination
4B	Copyright message display
4E	Calculation of CPU speed
54	Test of system memory
55	Floppy drive test
57	System initialized before boot
5A	Call to Int 19

[Return to Top](#)**AWARD XT Version 3.1 BIOS:**

01	Processor test fail; Processor status verification #1
02	Type of POST/keyboard buffer; Failed if the keyboard interface buffer is filled with data
06	Initialize 6845 video controller, 8237 DMA controller, 8259 PIC, 8253 timer channel channel 1 initialized; Reset math coprocessor; Disable color and mono video, parity circuits and DMA chips; Clear DMA chips and page registers
07	Process registers except SS, SP, BP with data patterns 00 and FF; Processor status verification #2
09	ROM checksum for 32K tested
0A	Initialize the 6845 video controller

15	Test first 64K of system memory
16	Set up interrupt table in first 64K
17	Set up video I/O operations
18	Test video memory
19	8259 mask bits-channel 1
1A	8259 mask bits-channel 2
1D	Setup configuration byte from CMOS
1E	Size memory and compare with CMOS
1F	Test base memory; Test found system memory
20	Test stuck 8259's Interrupt bits
21	Test stuck NMI parity I/O bits
22	8259 Interrupt functionality tested
2A	Keyboard initialized
2B	Floppy drive controller and drive initialized
2C	Initialize COM ports
2D	Initialize LPT ports
2F	Initialize math coprocessor
31	Initialize option ROM's
FF	Int. 19 boot attempt

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AWARD Version 3.3 BIOS:

01-05	Keyboard controller 8042 tested
06	On-board LSI initialized
07	CPU flags tested
08	Calculate CMOS checksum
09	Initialize the 8254 PIT
0A	8254 PIC tested
0B	DMA controller tested
0C	8259 PIC initialized
0D	8259 PIC tested
0E	ROM BIOS checksum tested
0F	Extended CMOS tested
10	8259 PIC tested
11	8259 PIC tested
12	8259 PIC tested
13	8259 PIC tested
14	8259 PIC tested
15	First 64K RAM tested
16	Interrupt vector tables initialized
17	Video initialization
18	Video memory tested
19	Interrupt line mask 8259 PIC tested
1A	Interrupt line mask 8259 PIC tested
1B	Battery good
1C	CMOS checksum verified

1D	CMOS chip/RTC verified
1E	Memory size checked
1F	Memory verified
20	DMA initialized
21	PIC initialized
22	PIT initialized
24	Extended memory size checked
25	Extended memory tested
26	Protected mode entered
27	Shadow RAM, cache controller initialized
28	Shadow RAM, cache controller tested
29	Reserved
2A	Initialize keyboard
2B	Floppy drive initialization
2C	Serial port initialization
2D	Parallel port initialization
2E	Hard disk initialization
2F	Math coprocessor
30	Reserved
31	Optional ROM's checked for
FF	Boot from Int 19

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AWARD EISA BIOS:

01	CPU flags
02	CPU registers
03	Initialize DMA, PIC, PIT
04	Memory refresh
05	Keyboard initialization
06	ROM checksum
07	CMOS, battery
08	256K memory
09	Cache
0A	Set Interrupt table
0B	CMOS checksum
0C	Keyboard initialization
0D	Video adapter
0E	Video memory
0F	DMA channel 0
10	DMA channel 1
11	DMA page register
14	Timer chip
15	PIC controller 1
16	PIC controller 0
17	PIC stuck bits
18	PIC maskable IRQ's

19	NMI bit check
1F	CMOS XRAM
20	Slot 0
21	Slot 1
22	Slot 2
23	Slot 3
24	Slot 4
25	Slot 5
26	Slot 6
27	Slot 7
28	Slot 8
29	Slot 9
2A	Slot 10
2B	Slot 11
2C	Slot 12
2D	Slot 13
2E	Slot 14
2F	Slot 15
30	Memory size 256K
31	Memory test over 256K
32	EISA memory
3C	CMOS setup
3D	Mouse/adaptor, CMOS
3E	Cache RAM
3F	Shadow RAM
41	Floppy drive
42	Hard drive
43	RS232 parallel
45	NPU
47	Speed
4E	Manufacturing loop
4F	Security
50	CMOS update
51	Enable NMI, cache
52	Adapter ROM's
53	Set time
60	Virus protection setup
61	Boot speed
62	Numlock setup
63	Boot
B0	NMI in protected
B1	Disable NMI
BE	Chipset default initialization
BF	Chipset program
C0	Cache on/off
C1	Memory size
C2	Base 256K test
C3	DRAM page select

C4	Video switch
C5	Shadow RAM
C6	Cache program
C8	Speed switch
C9	Shadow RAM
CA	OEM chipset
FF	Boot

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AWARD ISA/EISA BIOS Version 4.0:

01	CPU flags tested; Processor test #1
02	CPU registers tested; Processor test #2; Verify all CPU registers except SS, SP, BP with data patterns 00 and FF
03	Initialize DMA, PIC, PIT; Calculate BIOS EPROM and sign on message checksum (fail if not 0)
04	Memory refresh initialized; Test CMOS RAM interface
05	Keyboard initialization; Initialize NMI, PIE, AIE, UEI, SQWV; Disable video, parity checking and DMA; Math coprocessor reset; Clear all page registers and CMOS RAM shutdown byte; Initialize timers 0, 1, 2 and set EISA timer to a known state; Initialize DMA controllers 0 and 1; Initialize interrupt controllers 0 and 1; Initialize EISA extended registers
06	ROM checksum; Memory refresh tested
07	Low memory setup; Initialize chipset and test the presence of memory; OEM chipset initialization; Lower 256K of memory cleared; Enable parity checking and test parity in lower 256K memory
08	Setup Interrupt vector table; Initialize the first 120 Interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00-1F according to INT_TBL
09	Cache; CMOS checksum tested
0A	Set interrupt table; Initialize keyboard; Detect keyboard controller
0B	CMOS checksum; Video interface initialized
0C	Keyboard initialization; Video memory tested
0D	Video adapter initialized; OEM specific initializations
0E	Reserved
0F	DMA channel 0 tested with AA, 55, FF, 00 bit patterns
10	DMA channel 1 tested with AA, 55, FF, 00 bit patterns
11	DMA page register tested
12	Reserved
13	Reserved
14	Timer chip 8254 PIT timer 0 counter 2 tested
15	Verify 8259 PIC channel 1
16	Verify 8259 PIC channel 2
17	8259 PIC stuck bits tested; Turn Interrupt bits off and verify no Interrupt mask register is on
18	8259 PIC maskable IRQ's tested
19	NMI bit check tested and parity I/O checked

1A	Reserved
1B	Reserved
1C	Reserved
1D	Reserved
1E	Reserved
1F	CMOS XRAM checked for
20	Slot 0 EISA initialized and enabled
21	Slot 1 EISA initialized and enabled
22	Slot 2 EISA initialized and enabled
23	Slot 3 EISA initialized and enabled
24	Slot 4 EISA initialized and enabled
25	Slot 5 EISA initialized and enabled
26	Slot 6 EISA initialized and enabled
27	Slot 7 EISA initialized and enabled
28	Slot 8 EISA initialized and enabled
29	Slot 9 EISA initialized and enabled
2A	Slot 10 EISA initialized and enabled
2B	Slot 11 EISA initialized and enabled
2C	Slot 12 EISA initialized and enabled
2D	Slot 13 EISA initialized and enabled
2E	Slot 14 EISA initialized and enabled
2F	Slot 15 EISA initialized and enabled
30	Memory size below 256K
31	Memory test over 256K
32	EISA memory tested found during slot initialization
3C	CMOS setup; Enter protected mode
3D	Mouse/adaptor, CMOS
3E	Cache RAM
3F	Shadow RAM
41	Initialize floppy drive
42	Initialize hard drive
43	RS232 parallel
45	NPU
47	Speed for boot set
4E	Manufacturing loop; display any soft errors
4F	Security; ask for password if security is enabled
50	CMOS update
51	Enable NMI, cache memory
52	Adapter ROM's from C8000h to EFFFFH or F7FFFh initialized
53	Set time value for address 40 of BIOS
60	Virus protection setup
61	Boot speed
62	Numlock setup
63	Boot from Int 19
B0	NMI in protected
B1	Disable NMI
BE	Chipset default initialization
BF	Chipset program; initialization of system specific chipsets

C0	Cache on/off
C1	Memory size checked
C2	Base 256K tested
C3	DRAM page select tested
C4	Video switch
C5	Shadow RAM tested
C6	Cache program; configure cache memory
C8	Speed switch
C9	Shadow RAM tested
CA	OEM chipset initialized
FF	Boot from Int 19

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AWARD PnP BIOS:

01	Reserved
02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	Keyboard controller self-tested
06	Reserved
07	Verify CMOS Read/Write
09	OEM specific initialization; Configure Cyrix CPU register
0A	Issue CPU ID instruction; Initialize the first 32 interrupt vectors, initialize Int.'s 33 to 120, power management initialization
0B	PnP initialization; verify the RTC time, detect bad battery, read the CMOS data into the BIOS stack area, assign I/O and memory for any PCI devices
0C	Initialization of BIOS data area
0D	Program some of chipset's value; Measure the CPU for display, initialize the video
0E	Initialize APIC (multiprocessor BIOS only); Show startup screen message
0F	DMA channel 0 tested
10	DMA channel 1 tested
11	DMA page registers tested
12	Reserved
13	Reserved
14	Test 8254 0 counter 2
15	Test 8259 interrupt mask bit for channel 1
16	Test 8259 interrupt mask bit for channel 2
17	Reserved
19	Test 8259 functionality
1A	Reserved
1B	Reserved
1C	Reserved
1D	Reserved

1E	If an EISA NVM
1F-29	Reserved
30	Get size of base and extended memory
31	Test base and extended memory, Test base memory from 256K to 640K , test extended memory above 1MB
32	Test all on-board super I/O ports
33	Reserved
3A	Reserved
3B	Reserved
3C	Set flag to allow CMOS setup utility
3D	Install PS/2 mouse
3E	Try to turn on level 2
3F	Reserved
40	Reserved
41	Initialize floppy drive controller
42	Initialize hard drive controller
43	Initialize serial & parallel ports (PnP BIOS only)
45	Initialize math coprocessor
46-4D	Reserved
4E	Show all error messages on screen
4F	Ask for password, if needed
50	Write all CMOS values located in the BIOS stack back to CMOS
51	Reserved
52	Initialize all ISA ROM's; PCI initializations (PCI BIOS only), PnP initialization (PnP BIOS Only), setup shadow RAM, initialize power management
53	If not PnP BIOS, initialize ports; Initialize time in BIOS data area
54-5F	Reserved
60	Setup virus protection for the boot sector
61	Try to turn on level 2 cache
62	program numlock & typematic speed
63	Boot system via Int 19h
B0	Unexpected interrupt in protected mode
B1	Unclaimed NMI occurred
BE	Program defaults into chipset
BF	Program remaining chipset values
C0	Init. all standard devices with defaults
C1	Auto detect on-board DRAM & cache
C3	Test first 26K DRAM
C5	Copy ROM BIOS to E000-FFFF
FF	System booting

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AWARD Elite (Version 4.51PG) BIOS:

01	Processor test; Processor status verification
02	Processor test 2; Read/Write and verify all CPU registers

03	Initialize chips; Disable NMI, PIE, AIE, UEI, SQWV. Disable video, parity checking, DMA. Reset math coprocessor. Clear all page registers and CMOS shutdown. Initialize DMA controller 0 and 1. Initialize interrupt controllers 0 and 1.
04	Test memory refresh toggle
05	Blank video, initialize keyboard; Keyboard controller initialization
07	Test CMOS interface and battery
08	Set up low memory; Early chipset initialization, memory presence test, OEM chipset routines, clear low 64K memory, test first 64K memory
09	Early cache initialization; Cyrix CPU specific, CPU and cache initialization
0A	Set up interrupt vector table; Initialize first 120 interrupt vectors
0B	Test CMOS RAM checksum
0C	Initialize keyboard; Detect the type of keyboard controller
0D	Initialize video interface; Detect CPU clock, read CMOS location 14h to find the type of video in use, detect and initialize video adapter
0E	Test video memory; Write sign-on message to screen, setup shadow RAM
0F	Test DMA controller 0; BIOS checksum test, keyboard detect and initialization
10	Test DMA controller 1
11	Test DMA page registers
12-13	Reserved
14	Test timer counter 2
15	Test 8259-1 mask bits
16	Test 8259-2 mask bits
17	Test stuck 8259 interrupt bits; Test stuck key
18	Test 8259 interrupt functionality
19	Test stuck NMI bits (parity I/O check)
1A	Benchmark; Display CPU clock
1B-1E	Reserved
1F	Set EISA mode; If the EISA memory checksum is good then EISA is initialized. If it's not good then ISA tests and clear EISA mode flag
20	Enable slot 0; System board
21-2F	Enable slots 1-15
30	Size base and extended memory; Size the base memory from 256K to 640K and the extended memory above 1MB
31	Test base and extended memory; Test the base memory from 256K to 640K and the extended memory above 1MB using various bit patterns
32	Test EISA extended memory
33-3B	Reserved
3C	Setup enabled
3D	Initialize and install mouse if present
3E	Setup cache controller
40	Display virus protect disable or enable
41	Initialize floppy
42	Initialize hard drive

43	Detect & Init. serial & parallel ports
44	Reserved
45	Detect and Init. math coprocessor
46	Reserved
47	Reserved
48-4D	Reserved
4E	Mfg. POST loop, or display messages
4F	Security password
50	Write CMOS; Write CMOS back to RAM and clear screen
51	Pre-boot enable; Enable parity checking, enable NMI, enable cache before boot
52	Initialize option ROM's; Initialize and ROM's present at locations C800h to EFFFFh
53	Initialize time value
60	Setup virus protect
61	Set boot speed
62	Setup numlock
63	Boot attempt
B0	Spurious
B1	Unclaimed NMI
BE	Chipset default initialization; Program chipset registers and power-on BIOS defaults.
BF	Chipset initialization; Reserved
C0	Turn off chipset cache
C1	Memory presence test; OEM specific, test the size of on-board memory
C5	Early shadow; OEM specific, early shadow enable for fast boot
C6	Cache presence test; External cache-size detection test
E1-EF	Setup pages
FF	Boot loader

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AWARD Version 6.0 (i810):

CFh	Test CMOS read/write functionality
C0h	Early chipset initialization: Disable shadow RAM, L2 cache (socket 7 and below), program basic chipset registers
C1h	Detect memory: Auto detection of DRAM size, type and ECC, auto detection of L2 cache (socket 7 and below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM
01h	Expand the Xgroup codes located in physical memory address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch
04h	Reserved
05h	Blank out screen; Clear CMOS error flag
06h	Reserved

07h	Clear 8042 interface; Initialize 8042 self test
08h	Test special keyboard controller for Winbond 977 series Super I/O chips; Enable keyboard interface
09h	Reserved
0Ah	Disable PS/2 mouse interface (optional); Auto detect ports for keyboard & mouse followed by a port & interface swap (optional); Reset keyboard for Winbond 977 series Super I/O chips
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is read/write capable or not. If test fails, keep beeping the speaker
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash read/write codes into the run time area in F000 for ESCD & DMI support
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real time clock power status and then check for override
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686)
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	Check validity of RTC value; Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead; Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information; Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots; Early PCI initialization - Enumerate PCI bus number, assign memory & I/O resource, search for a valid VGA device & VGA BIOS, and put it into C000:0
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved

29h	Program CPU internal MTRR (P6 & PII) for 0-640K memory address; Initialize the APIC for Pentium class CPU; Program early chipset according to CMOS setup; Measure CPU speed; Invoke video BIOS
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	Initialize multilanguage; Put information on screen display, including Award title, CPU type, CPU speed, etc...
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1
3Fh	Reserved
40h	Test 9259 interrupt mask bits for channel 2
41h	Reserved
42h	Reserved
43h	Test 8259 functionality
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	Calculate total memory by testing the last double last word of each 64K page; Program writes allocation for AMD K5 CPU
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	Program MTRR of M1 CPU; initialize L2 cache for P6 class CPU & program cacheable range; Initialize the APIC for P6 class CPU; On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical
4Fh	reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)

53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	Display PnP logo; Early ISA PnP initialization and assign CSN to every ISA PnP device
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code
5Ah	Reserved
5Bh	Show message for entering AWDFLASH.EXE from FDD (optional feature)
5Ch	Reserved
5Dh	Initialize Init_Onboard_Super_IO switch; Initialize Init_Onboard_AUDIO switch
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-Configuration table
6Ch	Reserved
6Dh	Assign resources to all ISA PnP devices; Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO"
6Eh	Reserved
6Fh	Initialize floppy controller; Setup floppy related fields in 40:hardware
70h	Reserved
71h	Reserved
72h	Reserved
73h	Enter AWDFLASH.EXE if: AWDFLASH.EXE is found in floppy drive and ALT+F2 is pressed
74h	Reserved
75h	Detect and install all IDE devices: HDD, LS120, ZIP, CDROM...
76h	Reserved
77h	Detect serial ports and parallel ports
78h	Reserved
79h	Reserved
7Ah	Detect and install coprocessor
7Bh	Reserved
7Ch	Reserved

7Dh	Reserved
7Eh	Reserved
7Fh	Switch back to text mode if full screen logo is supported: if errors occur, report errors & wait for keys, if no errors occur or F1 key is pressed continue - Clear EPA or customization logo
80h	Reserved
81h	Reserved
82H	Call chipset power management hook: Recover the text fond used by EPA logo (not for full screen logo), If password is set, ask for password
83H	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	Final USB initialization; NET PC: Build SYSID structure; Switch screen back to text mode; Set up ACPI table at top of memory; Invoke ISA adapter ROM's; Assign IRQ's to PCI devices; Initialize APM; Clear noise of IRQ's
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	Enable L2 cache; Program boot up speed; Chipset final initialization; Power management final initialization; Clear screen and display summary table; Program K^ write allocation; Program P6 class write combining
95h	Program daylight saving; Update keyboard LED and typematic rate
96h	Build MP table; Build and update ESCD; Set CMOS century to 20h or 19h; Load CMOS time into DOS timer tick; Build MSIRQ routing table
FFh	Boot attempt (INT 19h)

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