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## POST Beep Codes

When you turn the computer on, it performs **Power On System Test (POST)**, during which it checks and initializes the system's internal components. If a serious error occurs, the computer does not display a message but emits a series of long and short beeps instead. Beeps are your computer's way of letting you know what's going on when the video signal is not working. These codes are built in to the BIOS of the PC. There is no official standard for these codes due to the many brands of BIOS that are out there.

To decode the meaning of your computer POST beep codes you must consult the manual of your motherboard. If you don't have a motherboard manual or if it's incomplete you must search on the site of your computer manufacturer. Another way is take off the computer case and look for BIOS manufacturer (just see if it says "AMI" or "Phoenix" ...). For more information about BIOS and how to identify it please check this site: [Wim's BIOS Page - Everything you want to know about BIOS](#). Once you have determined your BIOS make, consult the following tables to see what's wrong with your computer.

[[American Megatrends' AMI BIOS](#)][[AMI BIOS](#)][[AST Research BIOS](#)][[AST Enhanced BIOS](#)][[AST Phoenix BIOS](#)][[WINBIOS](#)][[AWARD BIOS](#)][[IBM BIOS](#)][[MACINTOSH STARTUP TONES](#)][[PHOENIX BIOS](#)]

### American Megatrends' AMI BIOS ↑

Beeps	Descriptions
1	The memory refresh circuitry has failed
2	Parity errors have been detected in the first 64 KB of memory
3	A failure has occurred within the first 64 KB of memory
4	System Timer failure: Timer 1 on the mainboard does not work properly
5	The CPU has generated an undetectable error
6	8042 Gate-A20 failure: BIOS cannot switch the CPU into protected mode
7	The CPU has generated an exception error
8	The video adapter is missing, or the memory on the adapter has generated a failure
9	The ROM checksum value does not match the value in BIOS
10	The shutdown register for CMOS interrupt channel 2 has failed POST; the system board cannot retrieve CMOS contents during POST
11	Level-2 cache memory has failed the tests, and has been disabled
2 short	POST has failed, caused by a failure of one of the hardware tests
1 long, 2 short	Failure in video system: a checksum error was encountered in video BIOS ROM, or a horizontal retrace failure has been encountered
1 long, 3 short	Failure in video system: the video DAC, the monitor detection procedure or the video RAM has failed
1 long	POST procedures have passed

### AMI BIOS ↑

The following are AMI BIOS Beep Codes that can occur. However because of the wide variety of different computer manufacturers with this BIOS the beep codes may vary.

Beep Code	Descriptions
1 short	DRAM refresh failure
2 short	Parity circuit failure
3 short	Base 64K RAM failure
4 short	System timer failure
5 short	Process failure
6 short	Keyboard controller Gate A20 error
7 short	Virtual mode exception error
8 short	Display memory Read/Write test failure
9 short	ROM BIOS checksum failure
10 short	CMOS shutdown Read/Write error

11 short	Cache Memory error
1 long, 3 short	Conventional/Extended memory failure
1 long, 8 short	Display/Retrace test failed

### AST Research BIOS ↑

Long Beep	Short Beep	Descriptions
0	1	Low level processor verification test failed (POST 1)
0	2	Clearing keyboard controller buffers failed (POST 2)
0	3	Keyboard controller reset failed (POST 3)
0	4	Low level keyboard controller interface test (POST 4)
0	5	Reading data from keyboard controller failed (POST 5)
0	6	System board support chip initialization failed (POST 6)
0	7	Processor register read/write verify test failed (POST 7)
0	8	CMOS timer initialization failed (POST 8)
0	9	ROM BIOS checksum test failed (POST 9)
0	10	Initialize primary video (POST 10)
0	11	8254 timer channel 0 test failed (POST 11)
0	12	8254 timer channel 1 test failed (POST 12)
0	13	8254 timer channel 2 test failed (POST 13)
0	14	CMOS power-on and time test failed (POST 14)
0	15	CMOS shutdown byte test failed (POST 15)
1	0	DMA channel 0 test failed (POST 16)
1	1	DMA channel 1 test failed (POST 17)
1	2	DMA page register test failed (POST 18)
1	3	Keyboard controller interface test failed (POST 19)
1	4	Memory refresh toggle test failed (POST 20)
1	5	First 64 KB memory test failed (POST 21)
1	6	Setup interrupt vector table failed (POST 22)
1	7	Video initialization failed (POST 23)
1	8	Video memory test failed (POST 24)

### AST Enhanced BIOS ↑

Short Beep	Long Beep	Short Beep	Descriptions
3	1	-	Flash loader failure
3	2	-	Failure in system board component
3	3	-	Failure in system board component
3	4	-	Memory failure
3	5	-	Video failure
0	6	-	Flash BIOS update error
-	2	x	AST low level diagnostics

### AST Phoenix BIOS ↑

Beeps	Descriptions
1-1-3	CMOS read/write failure
1-1-4	ROM BIOS checksum failure
1-2-1	Programmable interval timer failure
1-2-2	DMA initialization failure
1-2-3	DMA page register read/write failure
1-3-1	RAM refresh verification failure
1-3-3	First 64 KB RAM chip or data or data line failure
1-3-4	First 64 KB RAM odd/even logic failure
1-4-1	First 64 KB RAM address line failure

1-4-2	First 64 KB RAM parity failure
2-1-1	First 64 KB RAM failure bit 0
2-1-2	First 64 KB RAM failure bit 1
2-1-3	First 64 KB RAM failure bit 2
2-1-4	First 64 KB RAM failure bit 3
2-2-1	First 64 KB RAM failure bit 4
2-2-2	First 64 KB RAM failure bit 5
2-2-3	First 64 KB RAM failure bit 6
2-2-4	First 64 KB RAM failure bit 7
2-3-1	First 64 KB RAM failure bit 8
2-3-2	First 64 KB RAM failure bit 9
2-3-3	First 64 KB RAM failure bit A
2-3-4	First 64 KB RAM failure bit B
2-4-1	First 64 KB RAM failure bit C
2-4-2	First 64 KB RAM failure bit D
2-4-3	First 64 KB RAM failure bit E
2-4-4	First 64 KB RAM failure bit F
3-1-1	Slave DMA register failure
3-1-2	Master DMA register failure
3-1-3	Slave interrupt mask register failure
3-1-4	Slave interrupt mask failure
3-2-4	Keyboard controller test failure
3-3-4	Screen memory test failure
3-4-1	Screen initialization failure
3-4-2	Screen retrace test failure
3-4-3	Failure searching for video ROM
4-2-1	No timer tick
4-2-3	Gate-A20 failure
4-2-4	Unexpected interrupt in protected mode



Beeps	Error Message	Description	Resolution
1	Refresh Failure	The memory refresh circuitry is faulty.	Reseat the memory SIMMs. If the system still beeps, replace the memory.
2	Parity Error	Parity error in the base memory (the first 64 KB block) of memory.	Reseat the memory SIMMs. If the system still beeps, replace the memory.
3	Base 64 KB Memory Failure	Memory failure in first 64 KB.	Reseat the memory SIMMs. If the system still beeps, replace the memory.
4	Timer Not Operational	A memory failure in the first 64 KB of memory, or Timer 1 is not functioning.	The motherboard must be replaced.
5	Processor error 8042 - Gate A20 Failure	The CPU generated an error.	The motherboard must be replaced.
6	8042 - Gate A20 Failure Processor Exception Interrupt Error	Cannot switch to protected mode.	Try a different keyboard, or replace the keyboard fuse, if the keyboard has one.
7	Processor Exception Interrupt Error	The CPU on the CPU Card generated an exception interrupt.	The motherboard must be replaced.
8	Display Memory Read/Write Error	The system video adapter is either missing or its memory is faulty. This is not a fatal error.	There is a memory error on the video adapter. Replace the video adapter, or the RAM on the video adapter.
9	ROM Checksum Error	The ROM checksum value does not match the value encoded in WINBIOS.	The BIOS ROM chip is bad. The system probably needs a new BIOS ROM chip.
10	CMOS Shutdown Register Read/Write Error	The shutdown register for CMOS RAM has failed.	The motherboard must be replaced.
11	Cache memory bad - do not enable cache	The cache memory test failed. Cache memory is disabled. Do not press Ctrl/Alt/Shift <+> to enable cache memory.	The motherboard must be replaced.

## **AWARD BIOS**

The following are Award BIOS Beep Codes that can occur. However because of the wide variety of different computer manufacturers with this BIOS the beep codes may vary.

Beep Code	Descriptions
1 long, 2 short	Indicates a video error has occurred and the BIOS cannot initialize the video screen to display any additional information
Any other beep(s)	>RAM problem.

If any other correctable hardware issues the BIOS will display a message.

## **IBM BIOS**

The following are IBM BIOS Beep Codes that can occur. However because of the wide variety of models shipping with this BIOS the beep codes may vary.

Beep Code	Descriptions
No Beeps	No Power, Loose Card, or Short.
1 Short Beep	Normal POST, computer is ok.
2 Short Beep	POST error, review screen for error code.
Continuous Beep	No Power, Loose Card, or Short.
Repeating Short Beep	No Power, Loose Card, or Short.
One Long and one Short Beep	Motherboard issue.
One Long and Two short Beeps	Video (Mono/CGA Display Circuitry) issue.
One Long and Three Short Beeps.	Video (EGA) Display Circuitry.
Three Long Beeps	Keyboard / Keyboard card error.
One Beep, Blank or Incorrect Display	Video Display Circuitry.

## **MACINTOSH STARTUP TONES**

TONES	ERROR
Error Tone. (two sets of different tones)	Problem with logic board or SCSI bus.
Startup tone, drive spins, no video	Problem with video controller.
Powers on, no tone.	Logic board problem.
High Tone, four higher tones.	Problem with SIMM.

## **PHOENIX BIOS**

PHOENIX BIOS Q3.07 OR 4.X

Beep Code	Descriptions / What to Check
1-1-1-3	Verify Real Mode.
1-1-2-1	Get CPU type.
1-1-2-3	Initialize system hardware.
1-1-3-1	Initialize chipset registers with initial POST values.
1-1-3-2	Set in POST flag.
1-1-3-3	Initialize CPU registers.
1-1-4-1	Initialize cache to initial POST values.
1-1-4-3	Initialize I/O.
1-2-1-1	Initialize Power Management.
1-2-1-2	Load alternate registers with initial POST values.
1-2-1-3	Jump to UserPatch0.
1-2-2-1	Initialize keyboard controller.
1-2-2-3	BIOS ROM checksum.
1-2-3-1	8254 timer initialization.
1-2-3-3	8237 DMA controller initialization.
1-2-4-1	Reset Programmable Interrupt Controller.

1-3-1-1	Test DRAM refresh.
1-3-1-3	Test 8742 Keyboard Controller.
1-3-2-1	Set ES segment to register to 4 GB.
1-3-3-1	28 Autosize DRAM.
1-3-3-3	Clear 512K base RAM.
1-3-4-1	Test 512 base address lines.
1-3-4-3	Test 512K base memory.
1-4-1-3	Test CPU bus-clock frequency.
1-4-2-4	Reinitialize the chipset.
1-4-3-1	Shadow system BIOS ROM.
1-4-3-2	Reinitialize the cache.
1-4-3-3	Autosize cache.
1-4-4-1	Configure advanced chipset registers.
1-4-4-2	Load alternate registers with CMOS values.
2-1-1-1	Set Initial CPU speed.
2-1-1-3	Initialize interrupt vectors.
2-1-2-1	Initialize BIOS interrupts.
2-1-2-3	Check ROM copyright notice.
2-1-2-4	Initialize manager for PCI Options ROMs.
2-1-3-1	Check video configuration against CMOS.
2-1-3-2	Initialize PCI bus and devices.
2-1-3-3	Initialize all video adapters in system.
2-1-4-1	Shadow video BIOS ROM.
2-1-4-3	Display copyright notice.
2-2-1-1	Display CPU type and speed.
2-2-1-3	Test keyboard.
2-2-2-1	Set key click if enabled.
2-2-2-3	56 Enable keyboard.
2-2-3-1	Test for unexpected interrupts.
2-2-3-3	Display prompt "Press F2 to enter SETUP".
2-2-4-1	Test RAM between 512 and 640k.
2-3-1-1	Test expanded memory.
2-3-1-3	Test extended memory address lines.
2-3-2-1	Jump to UserPatch1.
2-3-2-3	Configure advanced cache registers.
2-3-3-1	Enable external and CPU caches.
2-3-3-3	Display external cache size.
2-3-4-1	Display shadow message.
2-3-4-3	Display non-disposable segments.
2-4-1-1	Display error messages.
2-4-1-3	Check for configuration errors.
2-4-2-1	Test real-time clock.
2-4-2-3	Check for keyboard errors
2-4-4-1	Set up hardware interrupts vectors.
2-4-4-3	Test coprocessor if present.
3-1-1-1	Disable onboard I/O ports.
3-1-1-3	Detect and install external RS232 ports.
3-1-2-1	Detect and install external parallel ports.
3-1-2-3	Re-initialize onboard I/O ports.
3-1-3-1	Initialize BIOS Data Area.
3-1-3-3	Initialize Extended BIOS Data Area.
3-1-4-1	Initialize floppy controller.
3-2-1-1	Initialize hard-disk controller.
3-2-1-2	Initialize local-bus hard-disk controller.
3-2-1-3	Jump to UserPatch2.
3-2-2-1	Disable A20 address line.

3-2-2-3	Clear huge ES segment register.
3-2-3-1	Search for option ROMs.
3-2-3-3	Shadow option ROMs.
3-2-4-1	Set up Power Management.
3-2-4-3	Enable hardware interrupts.
3-3-1-1	Set time of day.
3-3-1-3	Check key lock.
3-3-3-1	Erase F2 prompt.
3-3-3-3	Scan for F2 key stroke.
3-3-4-1	Enter SETUP.
3-3-4-3	Clear in-POST flag.
3-4-1-1	Check for errors
3-4-1-3	POST done--prepare to boot operating system.
3-4-2-1	One beep.
3-4-2-3	Check password (optional).
3-4-3-1	Clear global descriptor table.
3-4-4-1	Clear parity checkers.
3-4-4-3	Clear screen (optional).
3-4-4-4	Check virus and backup reminders.
4-1-1-1	Try to boot with INT 19.
4-2-1-1	Interrupt handler error.
4-2-1-3	Unknown interrupt error.
4-2-2-1	Pending interrupt error.
4-2-2-3	Initialize option ROM error.
4-2-3-1	Shutdown error.
4-2-3-3	Extended Block Move.
4-2-4-1	Shutdown 10 error.
4-3-1-3	Initialize the chipset.
4-3-1-4	Initialize refresh counter.
4-3-2-1	Check for Forced Flash.
4-3-2-2	Check HW status of ROM.
4-3-2-3	BIOS ROM is OK.
4-3-2-4	Do a complete RAM test.
4-3-3-1	Do OEM initialization.
4-3-3-2	Initialize interrupt controller.
4-3-3-3	Read in bootstrap code.
4-3-3-4	Initialize all vectors.
4-3-4-1	Boot the Flash program.
4-3-4-2	Initialize the boot device.
4-3-4-3	Boot code was read OK.

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