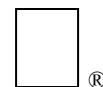


# Apple II Technical Notes



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Developer Technical Support

## Apple IIGS

### #95: ROM Diagnostic Errors

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This Technical Note describes errors returned by the ROM Diagnostics on Apple IIGS systems.

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### The Built-In Diagnostics Revealed

The IIGS has a self-test capability in ROM. The self-test is activated by pressing Open-Apple and Option on power up, or Open-Apple, Option, and Reset. During the test, the test number is visible on the bottom of the screen followed by six zeros. After all tests are complete, a continuous 6 KHz one-second beep sounds and the screen displays a `System Good` message. If any test fails, the screen displays a message of the form `System Bad: AABBCDD` on the lower left hand side and a staggered `AABBCDD` on the upper left hand side to help read the error code in the event of a RAM failure. In the event of video failure, the failure code is also sent to the printer port. In the number contained in the error message, `AA` is the test number that failed and the failure code is embedded in the `BB`, `CC`, and `DD` fields. The complete failure codes for each of the 12 tests are as follows:

#### Self Test 1: ROM Test

`AA` = 01  
`BB` = Failed checksum  
`DD` = 01 if the test encountered bad RAM and the error code is a RAM error code similar to the RAM Test error codes

For a failure in ROM, the ROM diagnostics also display `RM` on the top left hand corner of the screen.

### **Self Test 2: RAM Test**

AA = 02  
BB = Bank Number (or \$FF for ADB Tool call error)  
CC = Bit(s) failed

### **Self Test 3: Soft Switches and State Register Test**

AA = 03  
BB = State Register bit (if any)  
CC = Low byte of soft switch address

### **Self Test 4: RAM Address Test**

AA = 04  
BB = Failed bank number (or \$FF for ADB Tool call error)  
CCDD = Failed address

### **Self Test 5: Speed Test**

AA = 05  
BB = 01: Speed stuck slow  
02: Speed stuck fast

### **Self Test 6: Serial Test**

AA = 06:  
BB = 01: Register R/W  
04: Tx Buffer empty status  
05: Tx Buffer empty failure  
06: All Sent Status fail  
07: Rx Char available  
08: Bad data

### **Self Test 7: Clock Test**

AA = 07  
DD = 01: Fatal error occurred and the test is aborted

### **Self Test 8: Battery RAM Test**

AA = 08  
BB = 01: Address test and CC = bad address  
02: Non-volatile RAM failed and CC = pattern, DD = address

### **Self Test 9: Apple Desktop Bus Test**

AA = 09  
BBCC = Bad checksum  
DD = 01: Apple Desktop Bus tools call encountered a fatal error, no checksum computed.

### **Self Test 10: Shadow Register Test**

AA = 0A  
BB = 01: Text page 1 fail  
02: Text page 2 fail  
03: Apple Desktop Bus Tool call error  
04: Power On Clear bit error

### **Self Test 11: Interrupts Test**

AA = 0B  
BB = 01: VBL interrupt time-out  
02: VBL IRQ status fail  
03: 1/4 sec interrupt  
04: 1/4 sec interrupt  
05:  
06: VGC IRQ  
07: Scan line

### **Self Test 12: Sound Test**

AA = 0C  
DD = 01: RAM data error  
02: RAM address error  
03: Data register failed  
04: Control register failed  
05: Oscillator interrupt timeout

### **Further Reference**

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- *Apple IIGS Hardware Reference*, Second Edition