

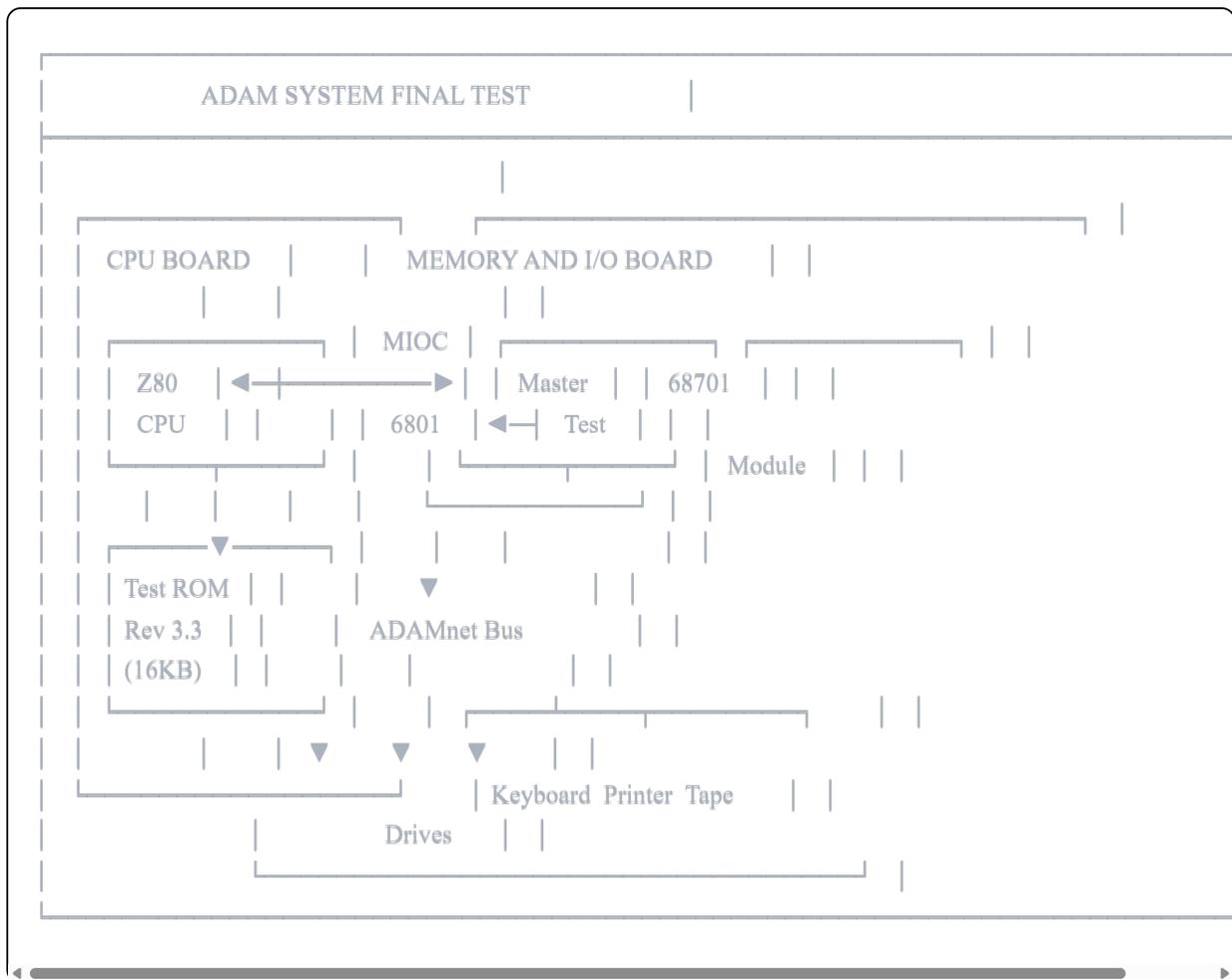
ADAM System Final Test Module - Complete System Analysis

Overview

The ADAM System Final Test consists of **two complementary components** that work together to perform comprehensive factory testing:

1. **ADAM Final Test Rev 3.3 ROM** (16KB Z80 ROM) - Main test program running on the Z80 CPU
2. **68701 Test Module Firmware** (2KB) - Microcontroller firmware for testing the Master 6801

System Architecture



Component Details

1. ADAM Final Test Rev 3.3 (Z80 ROM)

File: (ADAM_Final_Test_Rev_3_3_198x_Coleco_rom)

Size: 16,384 bytes (16KB)

Processor: Z80 (runs on CPU Board)

Load Address: \$8000 (standard ADAM cartridge location)

Header Information:

- Signature: \$55 \$AA (ColecoVision/ADAM ROM identifier)
- Title: "TEST UTILITY / FINAL ADAM TEST"

Test Functions:

1. **SYSTEM TEST** - Complete system verification
2. **CPU TEST** - Z80 and memory testing
3. **PRINTER TEST** - Daisy wheel printer verification
4. **KEYBOARD TEST** - Matrix scan and key detection
5. **PRINT HEAD ALIGNMENT** - Printer calibration
6. **MARKETING MESSAGE** - Prints welcome message for QC

Key Messages in ROM:

- "ADAM SYSTEM FINAL TEST REV 3.3"
- "MANUFACTURING TEST OPTIONS"
- "CAN'T SYNC-UP WITH MASTER!!!" ← References the 6801!
- "PASSED/FAILED MANUFACTURING TEST"
- Various error messages for each subsystem

2. 68701 Test Module Firmware

File: ADAM System Final Test Module (\$A38B).bin

Size: 2,048 bytes (2KB)

Processor: MC68701 (Motorola 6801 variant with internal ROM)

Load Address: \$F800-\$FFFF (internal ROM space)

Checksum: \$A38B (verified)

Purpose:

Tests the **Master 6801** microcomputer on the Memory and I/O Board. The Master 6801 is critical because it:

- Controls the ADAMnet serial network (62.5 kbps half-duplex)
- Interfaces keyboard, printer, and tape drives
- Communicates with Z80 via the MIOC chip

Test Functions:

- Internal RAM test (\$0080-\$00FF)

- External RAM test (\$0400-\$07FF)
- Port I/O verification
- Timer/counter functions
- Serial communication timing (ADAMnet protocol)
- Synchronization with Z80 test program

How They Work Together

Synchronization Protocol

The Z80 test ROM and 68701 module communicate through a handshaking protocol:

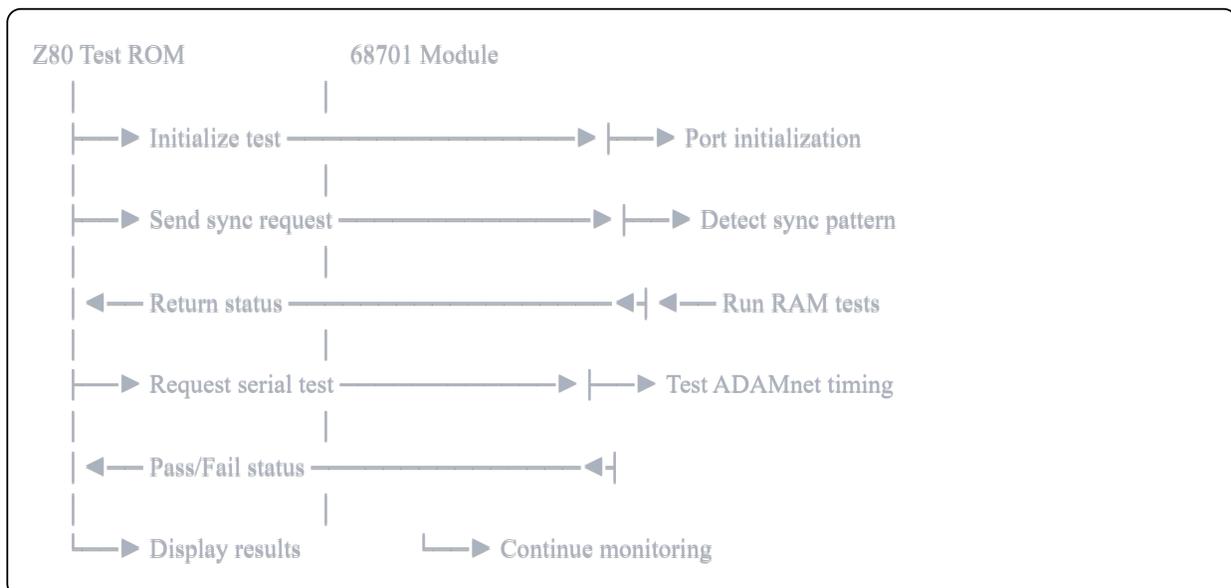
1. **Z80 initiates test sequence** via MIOC control signals
2. **68701 module monitors PORT1/PORT4** for commands
3. **Data exchange** uses SYN characters (\$16) for synchronization
4. **Status reporting** via port bit patterns

Error Detection

The Z80 ROM displays "CAN'T SYNC-UP WITH MASTER!!!" if:

- The 68701 module is not present
- The Master 6801 is not responding
- ADAMnet timing is out of specification

Test Flow



Technical Details

68701 Port Assignments (from firmware analysis)

Port	Bits	Function
PORT1 (\$02)	Bit 3	Clock/sync toggle
PORT1 (\$02)	Bits 4-5	Status indicators
PORT1 (\$02)	Bits 6-7	Mode control
PORT4 (\$07)	Bits 3-5	Sync detection
PORT4 (\$07)	Bit 6	Additional status

Memory Areas Tested

Range	Size	Description
\$0080-\$00FF	128 bytes	68701 internal RAM
\$0400-\$07FF	1KB	External test RAM

Timing Constants

- Timer delay: 1000 cycles (\$03E8)
- Bit timing: Calibrated for 62.5 kbps ADAMnet
- SYN character: \$16 (ASCII synchronous idle)

Historical Context

This test system was used in **Coleco's manufacturing facility** circa 1983-1984 to verify ADAM computers before shipping. The two-part design allowed:

1. **Comprehensive testing** of both the Z80 main CPU and 6801 peripheral controller
2. **Independent verification** of the ADAMnet subsystem
3. **Production line efficiency** with clear pass/fail indicators

Preservation Notes

- **68701 Firmware:** Dumped December 29, 2025 by John Lundy
- **Module supplied by:** Rich DiRocco
- **Checksum verified:** \$A38B matches chip label

- **Z80 ROM:** Previously preserved, Rev 3.3 version

This represents one of the few surviving factory test systems for the ADAM computer, providing valuable insight into Coleco's quality control processes.

File Checksums

68701 Firmware: A38B (internal checksum, verified)

Z80 Test ROM: [16KB file, standard ADAM ROM format]

Analysis by Claude, based on disassembly and ADAM Technical Reference Manual