

SWEET 16 OPERATING SYSTEM

EXTERNAL REFERENCE SPECIFICATION

SUPPLEMENT 1

- SELF TEST -

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1.0 PURPOSE OF THE SELF TEST FEATURE

These tests will give the user a sense of confidence about their Atari computer, as well as being an important sales tool. Form is more important than function, in all cases of conflict between form and function.

1.1 Introduction and Description

The SELF TEST feature will allow the user to perform minimal tests on the following components:

- a. Memory (RAM, ROM, and ANTIC)
- b. Audio/Visual (ANTIC, GTIA, and POKEY)
- c. Keyboard (POKEY, ANTIC)

The RAM and ROM tests will be combined into one test sequence called "Memory Tests". This is because the ROM test will take less than 40 milliseconds, and the test screens can be kept to a minimum.

The Memory tests will require no user interaction after the test has been selected.

The Help screen, Memory test screen, and the Audio Visual screen will all be a part of the Visual test on:

- a. ANTIC
- b. GTIA

The Audio/Visual and keyboard tests will require the user to determine if the computer is working correctly or not. The reason for this is that there is no direct feedback to the 6502 from their outputs, and thus no way to test them in a closed loop method. There is no way for the computer to determine if the output from POKEY is correct or if the user presses the correct keyboard key.

2.0 APPLICABLE DOCUMENTS

None.

3.0 REQUIREMENTS

3.1 Interfaces

To use the SELF TEST feature, the user will press the HELP key, while the power on logo is on the screen.

To exit from SELF TEST the user will press the SYSTEM RESET KEY. Pressing the RESET key shall cause a power on initialization sequence, (COLDSTART).

3.1.1 Physical

These tests shall be a part of the OPERATING SYSTEM ROM set. These tests shall not require the use of any peripheral except a television set.

The HELP key shall allow the user to back out of a test: The HELP key shall have no effect when the HELP screen is displayed.

3.1.2 Logical

The SELF TEST feature shall be self contained within 2.0K bytes of OS ROM.

3.1.3 Man/Machine

The screen colors to be used in the various parts of the test are coded in this spec as C1, C2, . . . , Cm. Since screen colors can vary from system to system and from TV to TV, the colors shall be specified by the actual values placed in the color register.

<u>COLOR CODE</u>	<u>COLOR REGISTER VALUE</u>	<u>APPROXIMATE COLOR</u>
C1	\$2C	GOLD
C2	\$7A	LIGHT PURPLE
C3	\$D2	GREEN
C4	\$C4	LIGHTER GREEN
C5	\$D6	LIGHTER LIGHTER GREEN
C6	\$32	RED
C7	\$A0	DARK BLUE
C8	\$2A	GOLD
C9	\$30	RED
C10	\$18	GOLDEN GREEN
C11	\$0E	WHITE
C12	\$B4	DARK BLUE GREEN

3.2 Functional Requirements

3.2.1 Help Screen

Refer to HELP SCREEN chart number 1.

All characters except the instructions at the bottom of the screen, shall be in BASICs Graphics mode 1.

The directions on line 21 shall be in BASIC GR.0 with the key caps in reverse video.

The title characters shall be in color C1. The background color shall be C3.

There shall be four options on the SELF TEST screen:

- Memory
- Audio video
- Keyboard
- All tests

The menu option items shall be displayed with C2 characters. The currently selected menu item shall be displayed with flashing C1 characters.

Pressing the SELECT key shall move the selection down one line to the next item. When the bottom menu item is selected, pressing SELECT shall cause the Top menu item to be selected. The character at line 21 shall be in color C12.

The selected test shall begin execution when the START key is pressed.

3.2.2 Memory Test Screen

Refer to MEMORY TEST SCREEN chart 2.

The titles shall be color C4. The background shall be color C7.

The two long bars at the top of the screen shall represent the two 8K ROMs in the system. When a ROM is being tested, the bar color shall be C12. If the ROM tested good, then the ROM bar color shall be C5. If the ROM tested bad, then the ROM bar color shall be C6. If a ROM is found to be bad, it shall not be tested again on subsequent test passes and its color shall remain C6. The ROM test shall consist executing the checksum algorithm and checking the Test Engineering checksum.

Each of the segmented bars shall represent 16K bytes of ram. Each bar segment shall represent 1K bytes of RAM. When a segment is being tested, the segment color shall be C12. If a segment test good, then its color shall become C5. If a segment tests bad, then its color shall become C6. Segments that test bad shall not be tested during subsequent test passes and their color shall remain C6.

If there is no RAM to test then there shall be no corresponding bar segment for it.

The test time for each 1K segment shall be at least 1 second and at most 7 seconds.

The memory tests shall loop and continue testing until either the HELP or RESET keys are pressed. One exception shall be when ALL TESTS is executing. When called by ALL TESTS, the Memory test shall EXIT after a complete test cycle.

During the RAM test the LEDS shall cycle one on and one off. On exiting the MEMORY tests the LEDS shall be left in the off state. The LEDS cycle will be the same duration as testings 1K of RAM.

3.2.3 AUDIO / VISUAL Test

Refer to the AUDIO - VISUAL chart number 3.

The background color shall be C9. The titles shall be color C8.

The screen for the Audio/Visual tests shall display a music staff and treble clef displayed in color C8.

3.2.3 (Cont')

A sequence of five (5) TBD notes shall be played via the sound registers with the corresponding-note shown on the staff.

The tune shall be played sequentially from channel one to channel four. The channel number shall change for each according to the sound channel in use.

This test shall be self looping. The RESET and HELP shall be used to exit from this test. The RESET key shall cause a system COLDSTART. The HELP key shall exit back to the HELP screen menu. When the ALL TESTS is executing, the A/V test shall exit after one complete test cycle.

The pause between all phases shall be less than 3 seconds.

3.2 Functional Requirements

3.2.4 Keyboard Test

Refer to the keyboard test screen chart 4.

The background shall be color C12. The titles shall be color C10.

A full keyboard shall be displayed in color C12. As each key is pressed, the corresponding key on the screen shall be reversed in video image and when released shall change back.

The control and shift keys shall change only when depressed in conjunction with another key - in which case both keys shall change.

As each key (except OPTION, SELECT, and START) is pressed a tone shall be generated for the duration of key press. The tone shall be created by setting the value \$80 into the audio control register.

The break key shall not change appearance or generate a note when pressed due to technical difficulties.

CTL F1 and F2 shall perform their normal keyboard and screen control functions as specified in 3.2, FCT key Decoding.

If the RESET key is pressed, the Sweet 16 shall perform a cold start. If the HELP key is pressed, the Self Test Menu shall be returned to.

3.2.4 (Cont')

The 'CTRL', 'SHIFT', 'ESC', 'CAPS', 'BREAK', 'START', 'SELECT', 'OPTION', 'Fn', and 'TAB' keys shall have a representative key top as shown in chart 4.

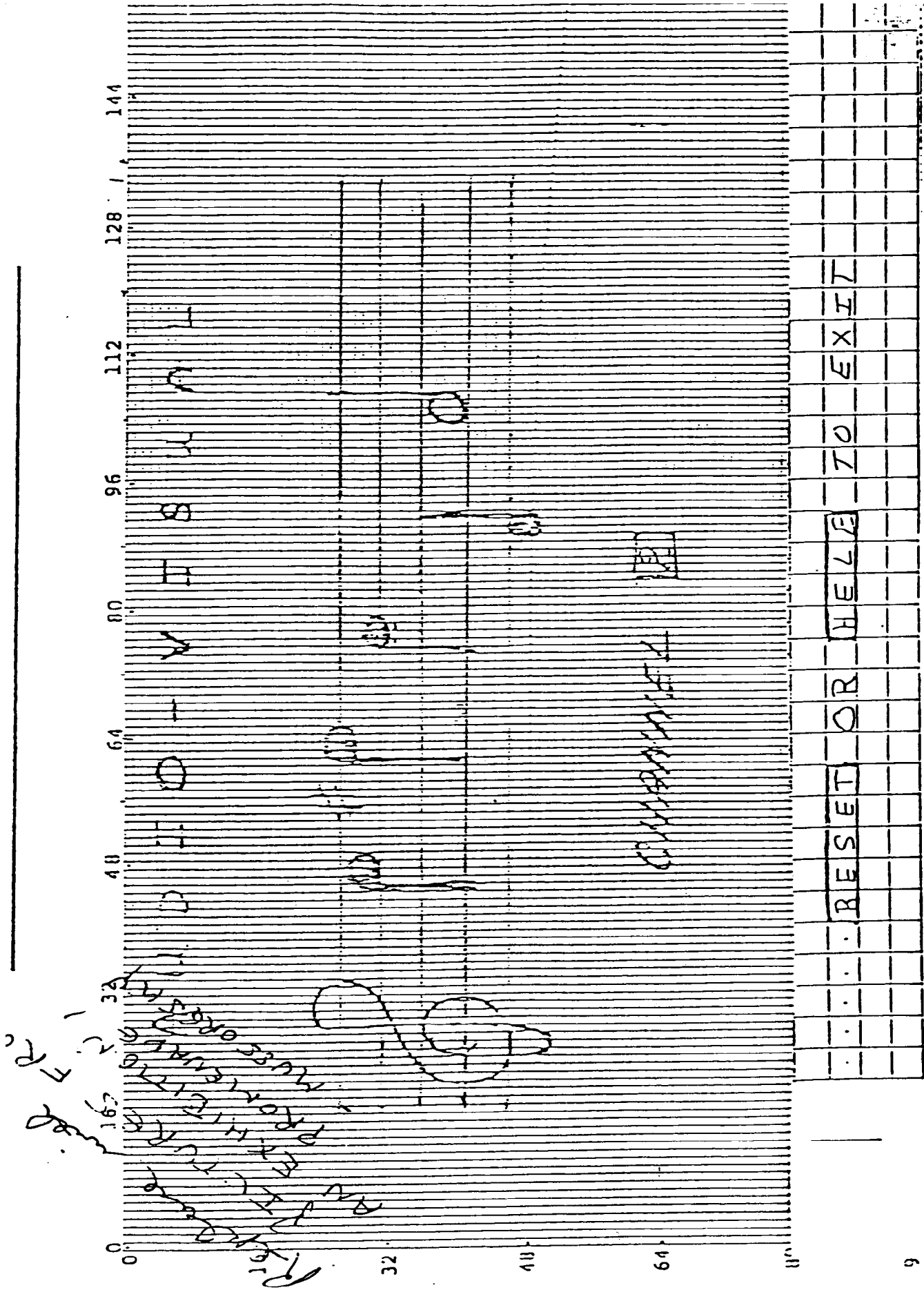
When this test phase is entered using the ALL TESTS option from the HELP SCREEN the computer shall 'type in' 10 to 20 keys at a rate of 0.5 to 2.0 keys per second.

3.2.5 All Tests

The ALL TESTS routine shall call each of the these main tests in sequence until interrupted by a HELP or RESET key depression.

All Tests shall call the tests in the following order:

1. Memory.
2. Audio/Visual.
3. Keyboard
4. Loop to 1.



Notes: AUDIO VISUAL TEST SCREEN

11/11/11 11:11

