

3. Debug Test

3.1 Equipment Required

- volt/ohm meter
- 110V and 220V ac power
- Phillips screwdriver
- Oscilloscope
- Audio source or signal generator
- Audio cables with 1/4" jacks
- Audio amplifier
- Midi cable
- 1/4" jack connected to momentary switch
- 1/4" jack connected to 20Kohm or greater potentiometer
- 1/4" stereo audio cable (TRS)
- Echoplex footpedal
- Functioning Echoplex unit

3.2 Test Software Overview

The Echoplex has built-in hardware tests designed for debug and repair. To start the debug tester, power up the unit with the Parameter and Overdub buttons held down. When the display shows the test version, release the switches.

The tester consists of "banks" of tests, selected by pressing the Parameter button. Once the bank is selected the other switches start the test functions in that bank. See the chart to learn where each test is located.

3.3 Test Descriptions

Switch Test

The test program starts up in the Switch test. This test displays the hexadecimal value being read by the A/D converter when it looks at the switches. This will tell you if the switches are working and if they are producing the correct voltage to be recognized properly. It works for both the front panel and footpedal switches. The value read should be within +/-2 of the correct value. (So Multiply, for example, can be between 4E and 52.) Here are the values for each switch:

Nothing Pressed:	7F
Record:	00
Overdub:	60
Multiply:	50

Insert:	40
Mute:	30
Undo:	20
NextLoop:	10

Display Test

Lights each color of each LED in succession, and each segment of each numeric display.

Simple Memory Test

Assumes 256K SIMMs in all slots. Data patterns are written to each address in the memory, in both banks. The system then waits a while to allow the DRAM refresh circuit to operate. Each address is checked to make sure that every location worked. If it passes, the LED comes back green, if it fails, the LED comes back red. When it fails, the system will sit in a loop reading the failed address for debugging.

A/D -> D/A Audio Playthrough

Sets the codec so that audio coming in is converted to digital and then immediately passed back out to the analog outputs.

Set VCA Offset

Pulses the control line to the input VCA. If there is DC offset, an waveform will appear at the output. Watch the waveform with a scope (or listen on an amplifier) and tune the trimpot until the waveform reaches a minimum. This will trim the dc offset generated by the VCA and prevent pops from appearing in the loop audio.

MIDI Test

Connect a midi cable between midi out and midi in. The test writes data out the midi out jack and checks to see that it comes back on the midi in jack. If it is correct, the LED comes back green, if it fails, the LED comes back red. If it fails, the data is continuously transmitted for debugging purposes.

EEPROM Test

Writes the default parameter data to the EEPROM and then reads it out. If correct, the LED comes back green, if it fails, the LED comes back red.

Feedback Knob Test

Reads the feedback knob with the A/D converter and displays the value on the 7-segment LEDs. The range should go from 00 to FF.

Codec Offset

Measures the dc offset generated by the A/D converter in the codec, and displays it.

Jack Input Tests - BeatSync, BrotherSync, Overdub

Use a momentary switch or a jumper wire to short across the jack outputs. When it contacts, an LED on the front should light. For BrotherSync jack, the switch should short between the ring and sleeve, the others should be tip and sleeve.

Sync Pulse Output

Sends a pulse waveform out the BeatSync and BrotherSync Jack, for checking with a scope.

Tone Generator

Generates a sine wave out the audio output path, from the codec. Frequency is controlled by the feedback knob. This can be useful for audio testing.

Bank 1 - 256K memory test

Test for 256K SIMMs in Bank 1. Data patterns are written to each address in the memory. The system then waits a while to allow the DRAM refresh circuit to operate. Each address is checked to make sure that every location worked. If it passes, the LED comes back green, if it fails, the LED comes back red. When it fails, the system will sit in a loop reading the failed address for debugging.

Bank 1 - 1MB memory test

Test for 1MB SIMMs in Bank 1. same as the other memory tests.

Bank 1 - 4MB memory test

Test for 4MB SIMMs in Bank 1. same as the other memory tests.

Bank 0 - 256K memory test

Test for 256K SIMMs in Bank 0. same as the other memory tests.

Bank 0 - 1MB memory test

Test for 1MB SIMMs in Bank 0. same as the other memory tests.

Bank 0 - 4MB memory test

Test for 4MB SIMMs in Bank 0. same as the other memory tests.

Oberheim Echoplex test chart

	Record SW3	Overdub SW4	Multiply SW5	Insert SW6	Mute SW7	Undo SW8	Next SW9
Loops D9	256KB SIMM memory test bank 1	1MB SIMM memory test bank 1	4MB SIMM memory test bank 1	256K SIMM memory test bank 0	1MB SIMM memory test bank 0	4MB SIMM memory test bank 0	Exit Test mode
MIDI D10	Codec Offset	Jack input tests BeatSync, BrotherSync, Overdub	Sync Pulse Output	***	Tone Generator	Go to Production Test	Exit test mode
Keys D11	Display Test	Simple memory test	A/D -> D/A Audio Playthrough	Set VCA offset	Midi test	EEPROM test	Feedback Knob test
Timing D12	record switch test	overdub switch test	Multiply switch test	Insert Switch test	Mute switch test	Undo switch test	NextLoop Switch Test