YAMAHA

DIGITAL RECORDING PROCESSOR

CBX-D5

Owner's Manual 3

TEST PROGRAM MANUAL

(For the Macintosh®)



Table of Contents

1	Introduction	1
	CBX-D5 Test Program Overview	1
	System Requirements	1
	System Connections	1
	Test Program Installation	1
	Creating the TestData Sound Files	2
	Test Program Start-up	2
	Running the Individual Tests	2
	Failed Tests	3
	Keyboard Shortcuts	3
2	Dialog Box	4
3	Individual Tests	5
	1. SCSI ID Switch	
	2. HOST Select Switch	
	3. MIDI and TO HOST Connections	7
	4. LED Indicator	
	5. OUTPUT 1 Level Meter and Sine Wave Play	9
	6. OUTPUT 2 Level Meter and Sine Wave Play	
	7. OUTPUT 3 Level Meter and Sine Wave Play	
	8. OUTPUT 4 Level Meter and Sine Wave Play	
	9. OUTPUT SYNC WORD CLK Selection	. 13
	10. 2ch Interleaved File Play	
	11. 4ch Interleaved File Play	
	12. Simultaneous Play of Different Sampling Frequency Files.	
	13. Sine Wave Play with Equalizer Effect	
	14. Sine Wave Play with Delay Effect	
	15. Sine Wave Play with Chorus Effect	. 19
	16. Panning of Sine Wave Play	
	17. Sine Wave Play Using the Frequency Conversion	.21
	18. Selection of Recording Source (DIGITAL INs)	
	19. Analog IN Level Volume and Trigger Level	
	20. Digital IN Frequency Conversion	. 24
4	Sound File Specifications	25

Apple[®] and Macintosh[®] are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective holders.

1 Introduction

CBX-D5 Test Program Overview

The CBX-D5 *Test Program* is a Macintosh program for testing the Yamaha CBX-D5. If you are having trouble with your CBX-D5 recording system, this program can be used to test the CBX-D5 and to make sure that communication between it and the Macintosh computer is functioning correctly.

The user interface uses mouse and keyboard control like typical Macintosh applications. The result of each test can be judged by monitoring the CBX-D5 outputs, and by confirmation on the Macintosh display screen.

System Requirements

- Macintosh computer with hard disk (8MB hard disk space required)
- CBX-D5

System Connections

The CBX-D5 should not be connected to any other equipment during these testing unless specified by an individual test. The CBX-D5 should be connected to the Macintosh via SCSI. In addition, a Mac peripheral cable should be connected from the CBX-D5's TO HOST connector to the Mac's Modem Port. All communication between the CBX-D5 and Macintosh is via SCSI and RS422.

Test Program Installation

Essentially, there are two parts to the *Test Program*: the program itself, and the TestData sound files. The *Test Program* is included on the program disk. But, the TestData sound files must be created. See "Creating the TestData Sound Files" on page 2. The TestData sound files require about 8MB of disk space, so they must be created on a hard disk. However, the *Test Program* itself can be run from floppy disk or hard disk. Obviously, performance will be quicker if it is on a hard disk.

- 1. From the Macintosh "File" menu, select "New folder".
- 2. Name the folder "D5TestProg", or something similar.
- 3. Insert the Test Program disk into the disk drive.
- 4. When the disk icon appears, click on it to display the disk contents.
- 5. Drag the Test Program and the TFMaker files into the new folder that you have just made.

Creating the TestData Sound Files

- 1. Double-click on the TFMaker icon.
- 2. Select the folder that you want the TestData sound files to be in.

Note: The TestData sound files require about 8MB of disk space.

3. Click on [CREATE].

The seven TestData sound files will be created. When complete, the *TFMaker* program will quit automatically.

Test Program Start-up

To start the Test Program, double-click on the Test Program icon.

After a few seconds the Dialog Box that is explained on page 4 will appear.

Press the Enter key.

The window labeled "D5 Tester" opens in the upper left of the screen. Test No. 1 is set up. If the *Test Program* can not identify the connected CBX-D5 an error message will appear and the program will end.

Running the Individual Tests

Selecting Tests

After start-up, test No. 1 is selected automatically. The number of the current test is displayed in the lower left-hand corner of the window, and its title at the top of the window. Tests can be selected by typing a number on the keyboard, then pressing the Enter key. The previous or next test can be selected by clicking on [Prev] or [Next] respectively.

If a *Test Program* sound file that is needed for the test cannot be found because it is in the wrong folder, a dialog box will appear allowing you to specify that file's location. When the file is found, the selected test can be continued. The previous test will be selected if you click on [Cancel].

Test Start

To start the selected test, click on [Start]. During the test, [Stop] will be displayed. Clicking on [Stop] will cancel a test.

Time Display

The [TIME 00:00] display, located to the right of [Next], indicates the elapsed time for tests that actually play sound files.

Additional parameter options may appear for some tests. These are explained in the "Individual Tests" from page 4.

Failed Tests

If an unexpected test result is received, and you think the CBX-D5 may be faulty, please contact your Yamaha dealer, and explain the test result.

If you think the controlling software may be at fault, please contact your software dealer.

Keyboard Shortcuts

Key Press:

Action:

Left arrow

Same as [Prev] button

Right arrow

Same as [Next] button

Enter

Same as [Start] button when test number has been selected

Command-Q

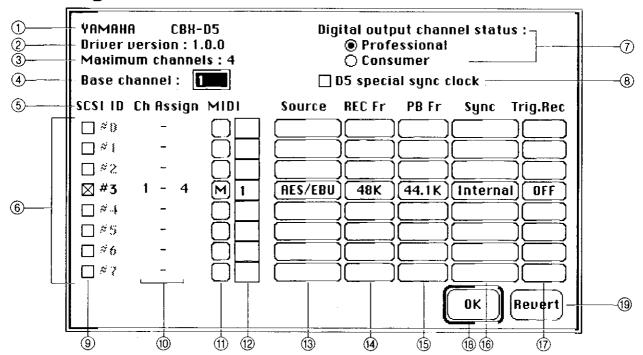
Same as [Quit] menu

0 (zero) number pad key

Same as [Stop] button during execution

CAUTION: Depending on the item being tested, the test audio data may be played back from the playback amp and the speakers/headphones at high volume. As each test is carried out, if there is an audio file used for that test, make sure the volume level on each unit of equipment is set low enough to protect the ears, before beginning the test.

2 Dialog Box

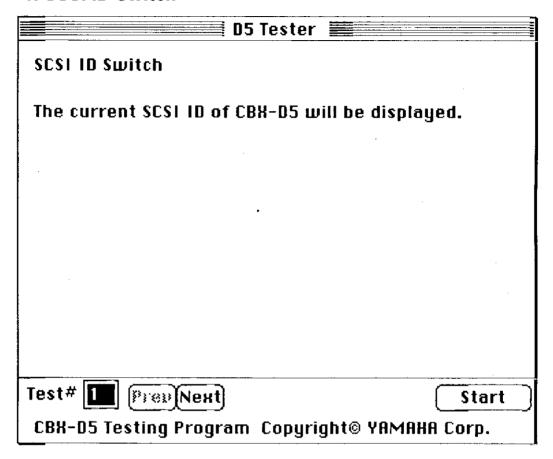


- 1 Product name.
- 2 Driver version.
- (3) The number of audio tracks available.
- 4) Sets the base channel: 1 to 128.
- (5) CBX-D5 parameter titles.
- ⑤ Each row indicates the parameters of a connected CBX-D5 with the corresponding SCSI ID setting.
- Switches the digital outputs between Professional and Consumer channel status.
- (8) Enables or disables the CBX-D5 special sync clock. If enable is elected, the CBX-D5 can receive audio track synchronization data from the Macintosh via MIDI System Exclusive messages.
- (9) Enables or disables the selected CBX-D5.
- ① Indicates the range of channels used by the CBX-D5. This value is determined by the Base channel parameter 4).
- Selects the communication port between the Macintosh and the CBX-D5: M = Modem, P = Printer.
- ② Selects the cable number for the MIDI port ①. This parameter should be set when the CBX-D5 and Macintosh are connected using a MIDI interface such as the MIDI Time Piece. Otherwise, set it to 1.

- Selects the audio input source. Repeated clicking on this box will cycle through the following options: AES/EBU, Y2, CD/DAT, ANALOG.
- (4) Selects the REC FREQ. Repeated clicking on this box will cycle through the following options: 48k, 44.1k, 32k, 22.05k.
- (5) Selects the PB FREQ: if Sync (6) is set to Internal, options are 48k and 44.1k. Otherwise, options are 48k, 44.1k, and 32k. Repeatedly click on this box to cycle through the options.
- (6) Selects the Sync source. Repeated clicking on this box will cycle through the following options: Internal, External, AES/EBU, Y2, and CD/DAT.
- © Selects the trigger record mode: Off, -9 dB, -15 dB, -18 dB, -24 dB, -30 dB, -36 dB, -42 dB, -48 dB, and -Inf (negative infinity).
- (8) Click [OK] or press Enter when you've made the settings.
- (19) Reverts to the settings that were initially set.

3 Individual Tests

1. SCSI ID Switch



Summary

This test verifies that the CBX-D5's SCSI ID switch is functioning correctly.

Procedure

- 1. Select a SCSI ID on the CBX-D5.
- 2. Click on [Start].

The *Test Program* requests the SCSI ID setting from the CBX-D5.

- 3. Repeat steps 1 and 2 until all SCSI IDs, 0 to 7, have been tested.
- 4. When the test is complete, set the SCSI ID switch back to its original position.

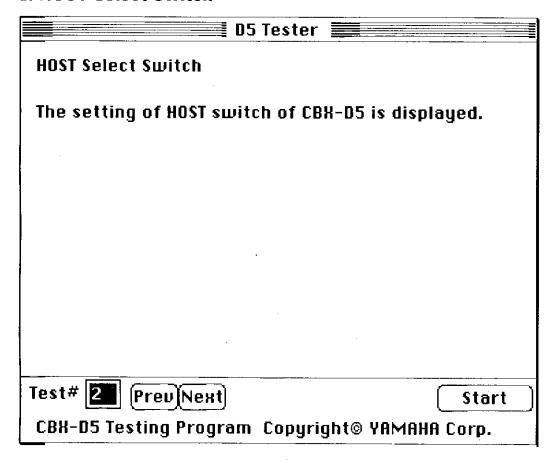
Expected Result

The SCSI ID set on the CBX-D5 should be displayed on screen.

Sound Files Used

6

2. HOST Select Switch



Summary

This test verifies that the CBX-D5's TO HOST switch is functioning correctly.

Procedure

- 1. Set the TO HOST switch to "MIDI".
- 2. Click on [Start].

The Test Program requests the TO HOST switch setting from the CBX-D5.

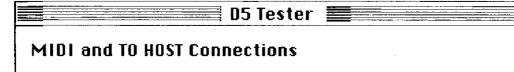
- 3. Repeat steps 1 and 2 until all four TO HOST switch settings (MIDI, PC-2, PC-1, Mac) have been tested.
- 4. When the test is complete, set the TO HOST switch back to its original position.

Expected Result

The TO HOST switch setting should be displayed on screen.

Sound Files Used

3. MIDI and TO HOST Connections



Set HOST switch of CBX-D5 to Mac, connect Macintosh and D5 with serial cable, and connect D5 MIDI OUT to D5 MIDI IN with MIDI cable.

This program checks if MIDI data sent from Macintosh returns back to Macintosh correctly.



Start

CBX-D5 Testing Program Copyright® YAMAHA Corp.

Summary

This test verifies that the connections to the CBX-D5 via MIDI and TO HOST are functioning correctly.

Procedure

- 1. Set the CBX-D5's TO HOST switch to "Mac".
- 2. Connect the CBX-D5 to the Macintosh using the TO HOST connection.
- 3. Connect a MIDI cable from the CBX-D5's MIDI OUT to its MIDI IN.
- 4. Click on [Start].

The *Test Program* outputs some MIDI data from the Macintosh to the CBX-D5. The CBX-D5 then returns it to the Macintosh.

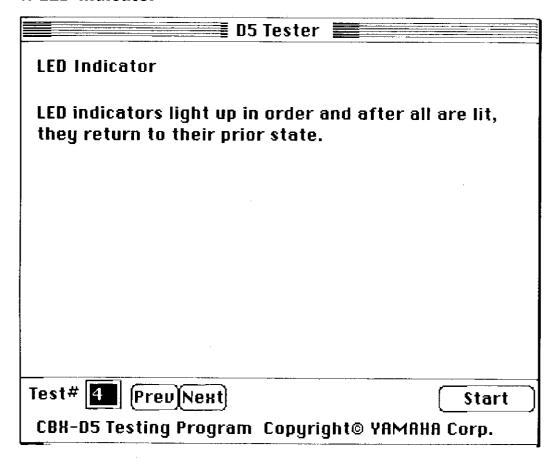
Expected Result

"OK" is displayed if the MIDI data is returned correctly.

"Time out error" is displayed if it isn't.

Sound Files Used

4. LED Indicator



Summary

This test verifies that all CBX-D5 LED indicators light up correctly.

Procedure

1. Click on [Start].

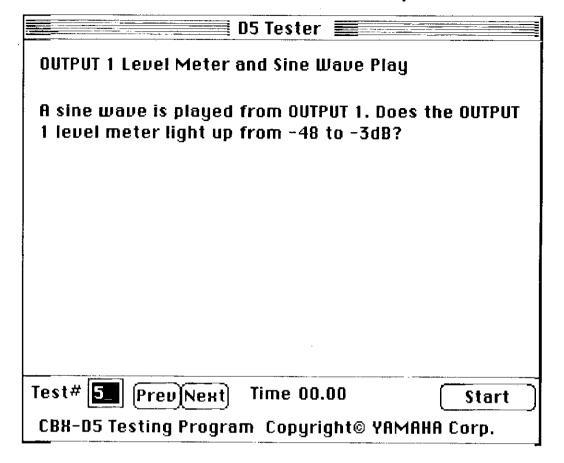
The Test Program sends an LED test command to the CBX-D5.

Expected Result

The LEDs are tested in succession. Each LED should light up momentarily, then all together. When the test is complete, they return to the original condition.

Sound Files Used

5. OUTPUT 1 Level Meter and Sine Wave Play



Summary

This test verifies that sine wave data can be played correctly, and that OUTPUT 1 and OUTPUT LEVEL meter 1 function correctly.

Procedure

- 1. Connect ANALOG OUT 1 to an amplifier, mixer, etc., so that you can monitor its output.
- 2. Click on [Start].

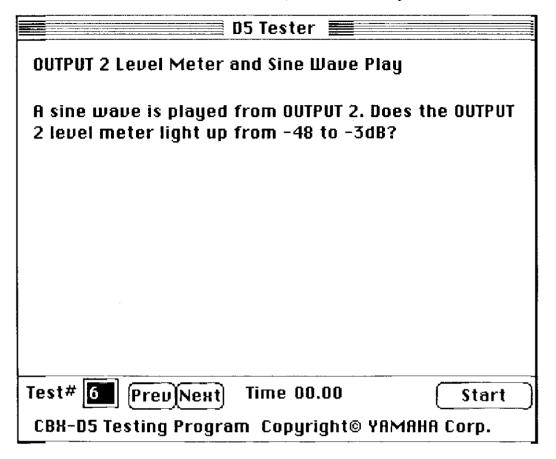
A sound file containing a 1 kHz sine wave is played and sent to OUTPUT 1.

Expected Result

A 1 kHz tone should be output via OUTPUT 1 and all the LEDs of OUTPUT LEVEL meter 1 should light up.

Sound Files Used

6. OUTPUT 2 Level Meter and Sine Wave Play



Summary

This test verifies that sine wave data can be played correctly, and that OUTPUT 2 and OUTPUT LEVEL meter 2 function correctly.

Procedure

- 1. Connect ANALOG OUT 2 to an amplifier, mixer, etc., so that you can monitor its output.
- 2. Click on [Start].

A sound file containing a 1 kHz sine wave is played and sent to OUTPUT 2.

Expected Result

A 1 kHz tone should be output via OUTPUT 2 and all the LEDs of OUTPUT LEVEL meter 2 should light up.

Sound Files Used

7. OUTPUT 3 Level Meter and Sine Wave Play

OUTPUT 3 Level Meter and Sine Wave Play

A sine wave is played from OUTPUT 3. Does the OUTPUT 3 level meter light up from -48 to -3dB?

Test# Prev Next Time 00.00 Start CBH-D5 Testing Program Copyright® YAMAHA Corp.

Summary

This test verifies that sine wave data can be played correctly, and that OUTPUT 3 and OUTPUT LEVEL meter 3 function correctly.

Procedure

- 1. Connect ANALOG OUT 3 to an amplifier, mixer, etc., so that you can monitor its output.
- 2. Click on [Start].

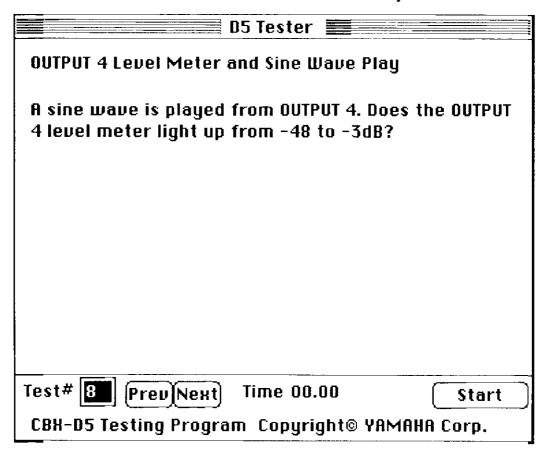
A sound file containing a 1 kHz sine wave is played and sent to OUTPUT 3.

Expected Result

A 1 kHz tone should be output via OUTPUT 3 and all the LEDs of OUTPUT LEVEL meter 3 should light up.

Sound Files Used

8. OUTPUT 4 Level Meter and Sine Wave Play



Summary

This test verifies that sine wave data can be played correctly, and that OUTPUT 4 and OUTPUT LEVEL meter 4 function correctly.

Procedure

- 1. Connect ANALOG OUT 4 to an amplifier, mixer, etc., so that you can monitor its output.
- 2. Click on [Start].

A sound file containing a 1 kHz sine wave is played and sent to OUTPUT 4.

Expected Result

A 1 kHz tone should be output from OUTPUT 4 and all the LEDs of OUTPUT LEVEL meter 4 should light up.

Sound Files Used

9. OUTPUT SYNC WORD CLK Selection

	D5 Tester
OUTPUT SYNC WORD CLI	K Selection
with right buttons, ar	th left buttons, input frequency nd then send a sync clock from y that sine waves are received rectly.
Slave clock	Sampling frequency
● WORD CLK IN○ AES/EBU○ Y2○ CD/DAT	● 48KHz○ 44.1KHz○ 32KHz
Test# 9 PrevNext	Time 00.00 Start
CBX-D5 Testing Progra	am Copyright® YAMAHA Corp.

Summary

This test verifies that sine wave data can be played in the selected WORD CLK correctly, and can be output from DIGITAL OUT with the specified sampling frequency.

Procedure

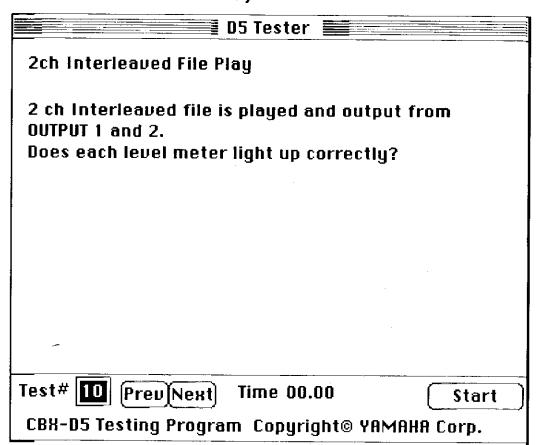
- 1. Connect an external wordclock signal to the CBX-D5 using the WORD CLK IN connector or source it from the AES/EBU, Y2, or CD/DAT input.
- 2. Set the CBX-D5's Sync source to WORD CLK, AES/EBU, Y2, or CD/DAT.
- 3. Set the sampling frequency to 48K, 44.1K, 32K. This should be the clock rate of the signal sent to the CBX-D5. This does not affect the recording frequency of CBX-D5.
- **4.** Send the external wordclock to the CBX-D5.
- 5. Connect a CBX-D5 digital output to another digital audio device.
- 6. Click on [Start].

Expected Result

A 1 kHz tone should be output from OUTs 1 to 4, and the other digital audio device should be able to receive the digital audio and synchronize to it. The LEDs for PB Freq will be turned off. If both LEDs are on, the CBX-D5 is not receiving the clock.

Sound Files Used

10. 2ch Interleaved File Play



Summary

This test verifies that 2-channel interleaved sound files can be played correctly.

Procedure

- 1. Connect ANALOG OUTs 1 and 2 to an amplifier, mixer, etc., so that you can monitor their output.
- 2. Click on [Start].

A sound file containing a 1 kHz sine wave is played and sent to OUTs 1 and 2.

Expected Result

A 1 kHz tone should be output from OUTs 1 and 2.

Sound Files Used

11. 4ch Interleaved File Play

4ch Interleaved File Play

4 ch Interleaved file is played and output from
OUTPUT 1-4.
Does each level meter light up correctly?

Test# Prev Next Time 00.00

Start

CBX-D5 Testing Program Copyright® YAMAHA Corp.

Summary

This test verifies that 4-channel interleaved sound files can be played correctly.

Procedure

- 1. Connect ANALOG OUTs 1, 2, 3, 4 to an amplifier, mixer, etc., so that you can monitor their output.
- 2. Click on [Start].

A 4-channel interleaved sound file containing a 1 kHz sine wave is played and sent to OUTs 1, 2, 3, 4.

Expected Result

A 1 kHz tone should be output from OUTs 1, 2, 3, 4.

Sound Files Used

12. Simultaneous Play of Different Sampling Frequency Files

	D5 Tester
Simultane Files	ous Play of Different Sampling Frequency
are played	ol files with different sampling frequencies is simultaneously. Are there abnormal in pitch in any of the analog outputs?
REC FREQ	PB FREQ
● 48K○ 44.1K○ 32K○ 22.05K	● 48K○ 44.1K
Test# 12	Prev Next Time 00.00 Start
CBX-D5 Te	sting Program Copyright® YAMAHA Corp.

Summary

This test verifies that sound files that were recorded at different sampling frequencies can be played back simultaneously at the specified PB FREO.

Procedure

- 1. Connect ANALOG OUTs 1, 2, 3, 4 to an amplifier, mixer, etc., so that you can monitor their output.
- 2. Set the REC FREQ and PB FREQ as required.
- 3. Click on [Start].

The following mono sound files are played simultaneously.

TestData-2: Fs=48k

TestData-3: Fs=44.1k

TestData-4: Fs=32k

TestData-5: Fs=22.05k

Expected Result

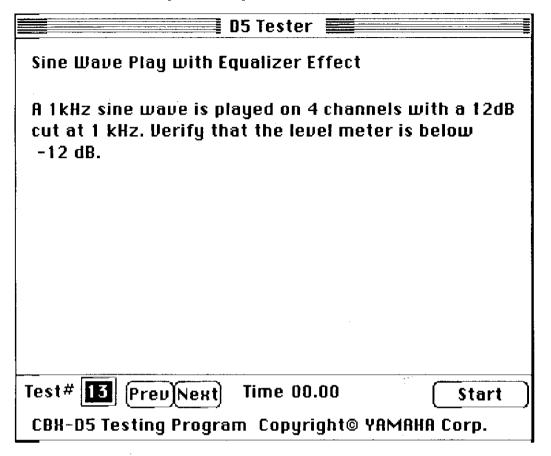
A 1 kHz tone should be output from OUTs 1, 2, 3, 4. Make sure that all four output signals are at the same pitch (1 kHz).

Note: You may notice the sound fluctuates from left to right. This is caused by slight phase differences and it is not an error.

Sound Files Used

TestData-2, TestData-3, TestData-4, TestData-5

13. Sine Wave Play with Equalizer Effect



Summary

This test verifies that the DEQ IC can reduce the level of a specified frequency.

Procedure

- 1. Connect ANALOG OUTs 1, 2, 3, 4 to an amplifier, mixer, etc., so that you can monitor their output.
- 2. Click on [Start].

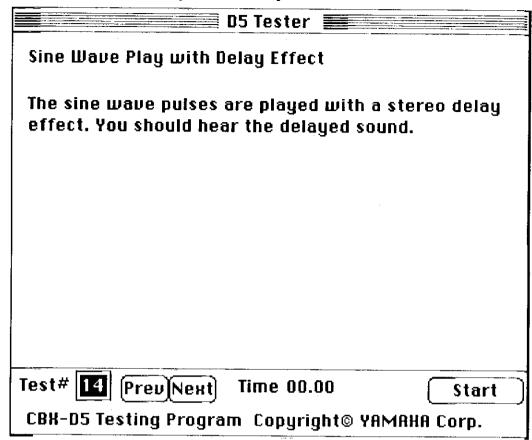
A 1 kHz tone should be output from ANALOG OUTs 1, 2, 3, 4 with a 12 dB cut at 1 kHz.

Expected Result

The actual playback level should be -3 dB. However, since a 12 dB cut at 1 kHz has been applied, only OUTPUT LEVEL meter LEDs below -6 dB should light up.

Sound Files Used

14. Sine Wave Play with Delay Effect



Summary

This test verifies that the DSP2 IC Delay effect is functioning correctly.

Procedure

- 1. Connect ANALOG OUTs 1, 2, 3, 4 to an amplifier, mixer, etc., so that you can monitor its output.
- 2. Click on [Start].

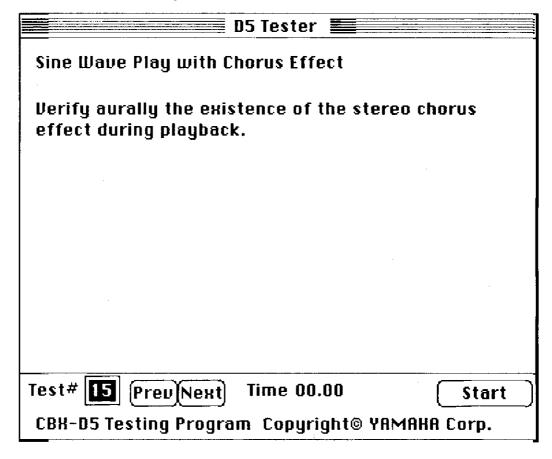
A sound file containing a 1 kHz sine wave is played and stereo delay effect applied.

Expected Result

A 1 kHz tone with a stereo delay effect should be sent to OUTPUTs 1, 2, 3, 4.

Sound Files Used

15. Sine Wave Play with Chorus Effect



Summary

This test verifies that the DSP2 IC Stereo Chorus effect is functioning correctly.

Procedure

- 1. Connect ANALOG OUTs 1, 2, 3, 4 to an amplifier, mixer, etc., so that you can monitor its output.
- 2. Click on [Start].

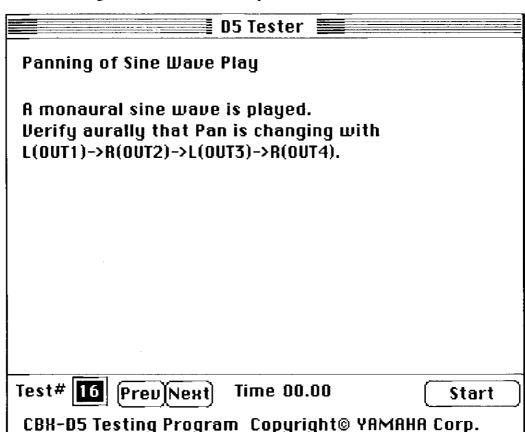
A sound file containing a 1 kHz sine wave is played and stereo chorus effect applied.

Expected Result

A 1 kHz tone with a stereo chorus effect should be sent to OUTPUTs 1, 2, 3, 4.

Sound Files Used

16. Panning of Sine Wave Play



Summary

This test verifies that MIX-P IC is functioning correctly.

Procedure

- 1. Connect ANALOG OUTs 1, 2, 3, 4 to an amplifier, mixer, etc., so that you can monitor their output.
- 2. Click on [Start].

A sound file containing a 1 kHz sine wave is played and panned to the following outputs. OUTPUT 1 - OUTPUT 2 - OUTPUT 3 - OUTPUT 4.

Expected Result

A 1 kHz tone should be panned to the outputs in the following order: OUTPUT 1 - OUTPUT 2 - OUTPUT 3 - OUTPUT 4.

Sound Files Used

17. Sine Wave Play Using the Frequency Conversion

D5 Tester

Sine Wave Play Using the Frequency Conversion

A sine wave recorded at 48kHz sampling frequency is played at PB FREQ=44.1K.

Verify that the data is output from DIGITAL OUT in 44.1KHz correctly, using another device that has DIGITAL IN.

Test# Prev Next

Time 00.00

Start

CBX-D5 Testing Program Copyright® YAMAHA Corp.

Summary

This test verifies that data at 48 kHz (sampling frequency) can be converted and output via the digital outputs at 44.1 kHz.

Procedure

- 1. Connect a CBX-D5 digital output to a device with digital inputs such as a DAT or DCC.
- 2. Click on [Start].

A sound file recorded at 48 kHz is played at the REC FREQ of 48 kHz and output at 44.1 kHz via the digital outputs.

Expected Result

A 1 kHz tone should be output via the digital outputs. Check that the other device is receiving the signal at a sampling frequency of 44.1 kHz.

Sound Files Used

18. Selection of Recording Source (DIGITAL INs)

D5 Tester

Selection of Recording Source (DIGITAL INs)

Select the recording source with the buttons and send data into the appropriate DIGITAL IN of the D5. Verify that the signal from the specified REC SOURCE is being sent from ANALOG OUT.

D5 recording source

AES/EBU

○ CD/DAT

Test# 18 PrevNext

CBX-D5 Testing Program Copyright® YAMAHA Corp.

Summary

This test verifies that data from the digital inputs can be received correctly.

Procedure

- 1. Connect the digital output of a DAT or DCC to a CBX-D5 digital input.
- 2. Set the CBX-D5 input source to that digital input.
- **3.** Connect ANALOG OUTs 1 and 2 to an amplifier, mixer, etc., so that you can monitor the output.
- 4. Start the DAT or DCC playing.

The CBX-D5 is set to Record Monitor mode and the signal is output to the analog outputs.

Expected Result

The signal should be sent to ANALOG OUTs 1 and 2.

Sound Files Used

none

19. Analog IN Level Volume and Trigger Level

	5 Tester
ANALOG IN Level Volume	and Trigger Level
Select REC FREQ arbitrar from ANALOG IN.	rily and input an audio signal
Verify that the appropr	iate trigger level appears on
the screen according to	the operation of the ANALOG
IN level.	
REC FREQ	Trigger level : 00h: -9dB ******
● 48K	
○ 44.1K	
○ 32K	
○ 22.05K	
Test# 19 PrevNext	
CBX-D5 Testing Program	n Copyright© YAMAHA Corp.

Summary

This test verifies that the ANALOG IN LEVEL control and the trigger level sensing are functioning correctly.

Procedure

- 1. Connect an analog input signal to the CBX-D5.
- 2. Set the REC FREQ as required.
- 3. Start the analog audio source playing.

The CBX-D5's input source is set to ANALOG and Record Monitor mode is engaged. The trigger level corresponding with the ANALOG IN LEVEL control is displayed on screen.

Expected Result

The trigger level displayed on screen should correspond with the operation of the ANALOG IN LEVEL control.

Sound Files Used

none

20. Digital IN Frequency Conversion

	05 Tester							
DIGITAL IN Frequency	DIGITAL IN Frequency Conversion							
and input digital dat Verify that a signal i	CE and REC FREQ with the buttons, to from the selected input source. is properly received and output rectly with any REC FREQ.							
REC SOURCE	REC FREQ							
● RES/EBU○ Y2○ CD/DAT	● 48KHz○ 44.1KHz○ 32KHz							
Test# 20 Prev Next	ram Copyright© YAMAHA Corp.							

Summary

This test verifies that the frequency conversion is functioning correctly. Data is input via a digital input at one sampling frequency and sent to an analog output irrelevant of the selected REC FREQ.

Procedure

- 1. Connect the digital output of a DAT or DCC to a CBX-D5 digital input.
- 2. Set the CBX-D5 input source to that digital input.
- 3. Connect ANALOG OUTs 1 and 2 to an amplifier, mixer, etc., so that you can monitor its output.
- 4. Start the DAT or DCC playing.
- 5. Select the different REC FREQ frequencies.

The CBX-D5 is set to Record Monitor mode. The signal is sent to an analog output irrelevant of the REC FREQ setting.

Expected Result

The signal should be sent to an ANALOG OUTs 1 and 2, and be unaffected by the different REC FREQ settings.

Sound Files Used

none

4 Sound File Specifications

File Name	Туре	Sampling Frequency	Contents	Range
TestData-1	mono	Fs=48K	1 kHz sine	8000h-7FFFh
TestData-2	mono	Fs=48K	1 kHz sine	8001h-7FFEh
TestData-3	mono	Fs=44.1K	1 kHz sine	8001h-7FFEh
TestData-4	mono	Fs=32K	1 kHz sine	8001h-7FFEh
TestData-5	mono	Fs=22.05K	1 kHz sine	8001h-7FFEh
TestData-6	2ch	Fs=48K	1 kHz sine	8001h-7FFEh
TestData-7	4ch	Fs=48K	1 kHz sine	8001h-7FFEh

