



LiveDesign Evaluation Board Test Procedures

Summary

Guide
GU0106 (v1.0) December 7, 2004

This guide takes you through the steps of testing the peripherals and features of the LiveDesign Evaluation Board.

Test procedures were developed to test the LiveDesign Evaluation Board(s) during its development phase to verify correct operation. The following test procedures allow the LiveDesign Evaluation Board to be tested using the supplied cables and with some standard computer equipment.

Board Preparation

Parts required

- PC running DXP 2004
- Power Supply and Power Supply Cord*
- Parallel Cable (26 way IDC – DB25)*
- PS2 Keyboards (x2)
- VGA Color Monitor
- Standard PC Speakers
- Headphones
- RS232 (Male) Serial Port Loop-Back Connector
- User Header Cable (20 way IDC – 20 way IDC)*

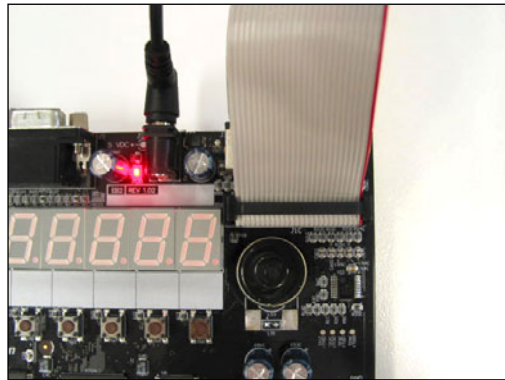
* Supplied with LiveDesign Evaluation Kit

Connecting the board

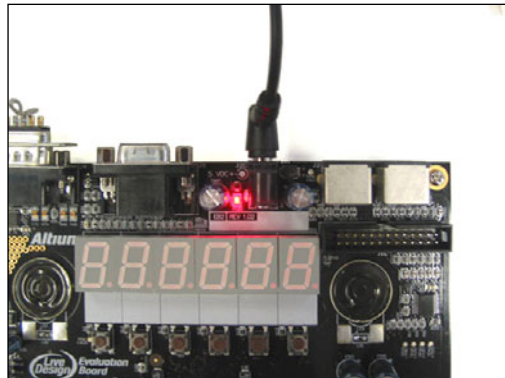
The following section describes the test setup required for running all tests. A subset of tests can be performed if not all external cables are available. The tests that require special hardware will fail if the test hardware is not connected; the following table shows what functional tests require additional connected hardware.

	User Header Cable	RS232 Serial Port Loop-Back Connector	VGA Color Monitor	PS2 Keyboards	PC Speakers	Headphones
User Header A and B	✓					
RS232 Serial Port		✓				
VGA Port			✓			
Keyboard / Mouse Ports				✓		
Audio system					✓	✓

1. Connect the LiveDesign Evaluation Board to your PC using the parallel cable, via the parallel header socket.



2. Connect the power supply to the power supply socket. Connect the power supply cord to the power supply and plug it in to a standard power socket.

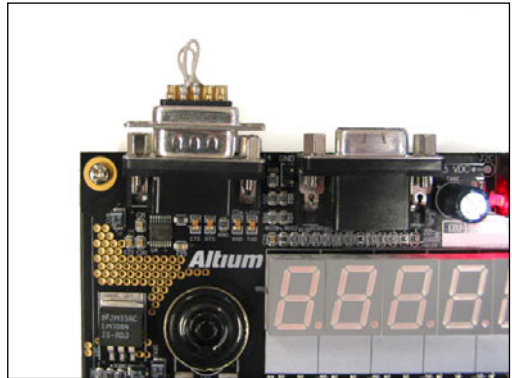
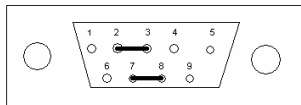


3. Connect the 20-way IDC User Header Cable from User Header A (**HDR9**) to User Header B (**HDR10**) in a one to one configuration.

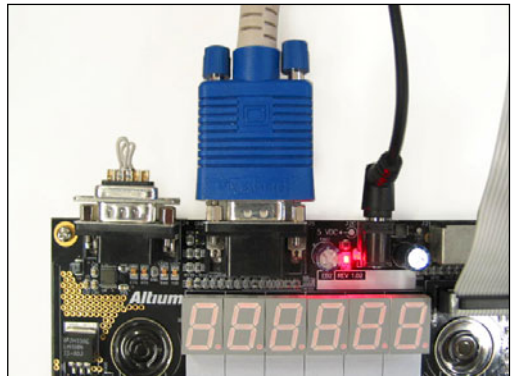


4. Connect the RS232 Serial Port Loop-Back Connector into the RS232 Serial Port (**J4**).

This diagram shows the pin out connections for the (Male) RS232 Serial Port Loop-Back connector.

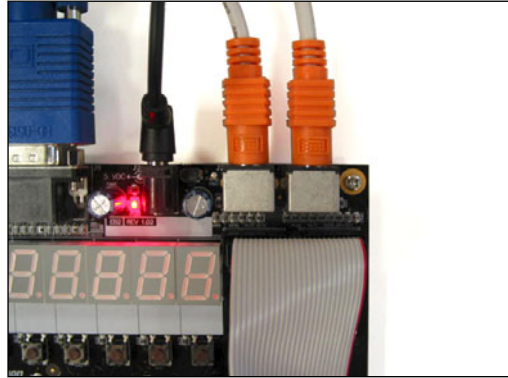


5. Connect the VGA Color Monitor into the VGA Port (**J5**).



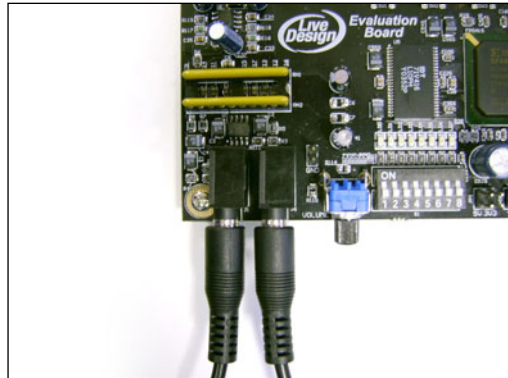
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6. Connect the two PS2 Keyboards into the two PS2 sockets (**J2 and J3**).



7. Connect the powered PC Speakers to the Audio Line Out socket (**J1**).

Connect the Headphones to the Audio Headphone socket (**J6**).

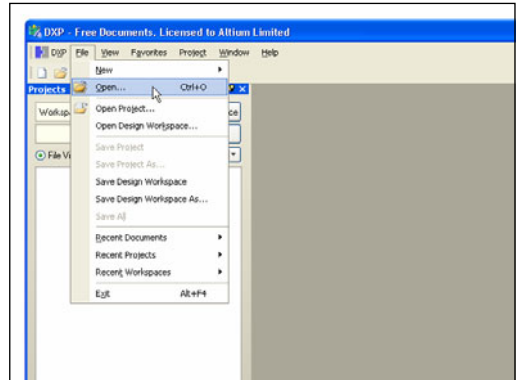


Main Functional Test

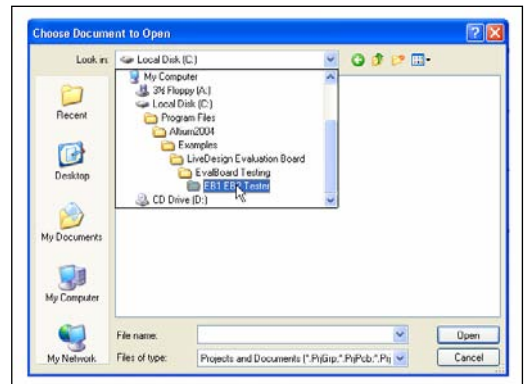
Opening the test project and testing the board connection

Once the LiveDesign Evaluation Board has been powered up, connected to your PC and the additional hardware has been connected you are now ready to perform the full functional test. This section will take you through the steps of opening the functional test project and checking that the DXP 2004 software can successfully connect to the LiveDesign Evaluation Board.

1. Start the DXP 2004 software from the Start menu. Once the software has loaded select **File >> Open** from the menus.

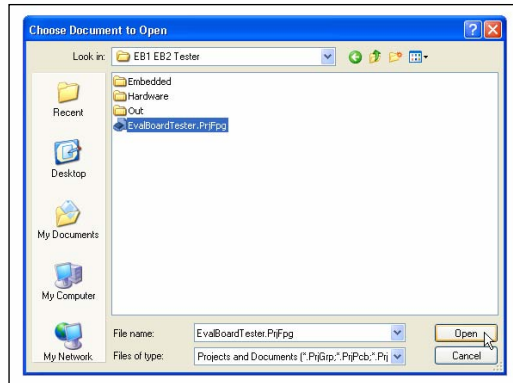


2. Navigate to the **\Altium2004\Examples\LiveDesign Evaluation Board\EvalBoard Testing\EB1 EB2 Tester** folder.

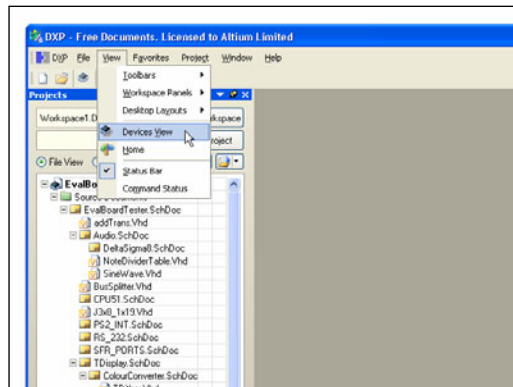


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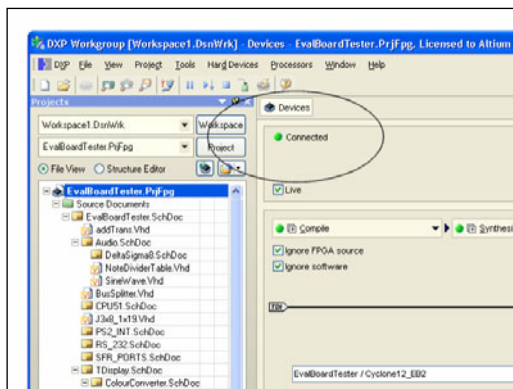
- In this folder, open the file **EvalBoardTester.PrjFpg**. When the project has loaded, the Projects panel on the left side of the workspace will display the files in this project.



- Select **View >> Devices View** from the menus to display the Devices View window.



- Ensure that the **Live** checkbox is enabled and that the **Connected** indicator is green. This indicates that the system is connected and communicating with the LiveDesign Evaluation Board.



If the Devices View does not show the status as connected, or no FPGA icon is visible, refer to the Troubleshooting connection problems section within the LiveDesign Evaluation Board Technical Reference Manual. The 'No NanoBoards Found' message will be shown, but is not relevant in the use of the LiveDesign Evaluation Board.

Downloading and running the test

This section will guide you through each functional test of the LiveDesign Evaluation Board.

Note: The user interface including; user input, status and error messages of this functional test sequence is displayed on a VGA monitor. You must connect a VGA-compatible RGB video monitor to the VGA Port (J5) of the LiveDesign Evaluation Board before continuing.

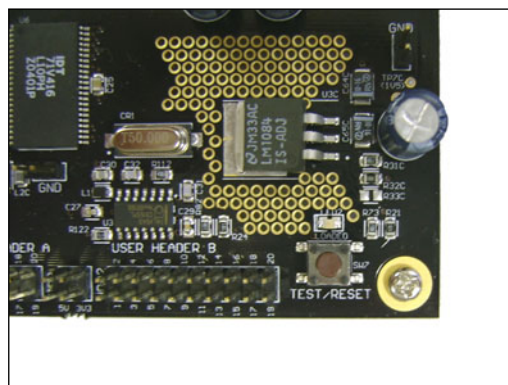
- To process the project and download it to the LiveDesign Evaluation Board, click the **Program FPGA** button in the Devices View window.



The full test sequence will run automatically and you will be prompted for appropriate actions between each test. Any errors during the test will be indicated by an "ERROR" message on the VGA monitor and sound from the speakers. If an error message occurs it must be acknowledged by pressing the "TEST/RESET" button to continue with the functional test sequence. Images for all the functional test error messages are listed in Appendix A at the end of this guide.

- START TEST

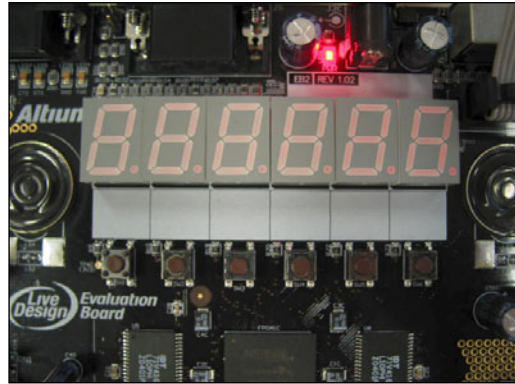
After the version message appears you will be prompted to press the Test/Reset (SW7) button. Press the button and the functional test sequence will begin.



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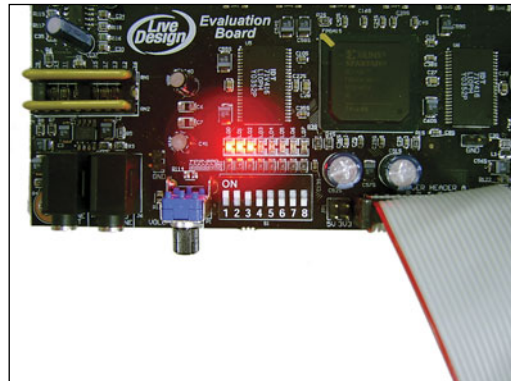
8. KEYPAD ARRAY TEST

Press all the keypad array buttons (SW1 – SW6) one at a time. Verify the decimal point of each 7 segment display is turned off after pressing the corresponding button. Once all the buttons have been successfully pressed the test will continue the next functional test.



9. LED ARRAY, DIPSWITCH TEST

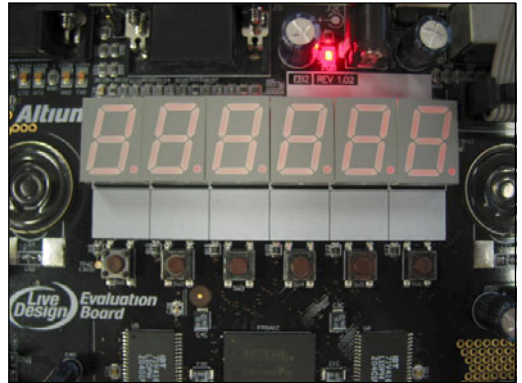
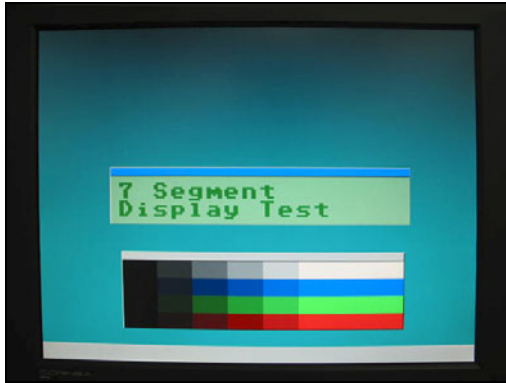
Turn on and off each switch of the DIP Switch (S1). Verify on the VGA monitor that an asterisk (*) symbol is displayed for each corresponding switch tested. You should also notice that each LED (LD0 - LD7) above the switch is illuminated when the DIP switch is turned on. Once all switches have been successfully toggled on/off the test will continue.



The following tests will run automatically with no user input required, unless an error occurs. Verify that each test passes without errors on the VGA monitor.

10. 7-SEGMENT DISPLAY TEST

Verify that each single segment and decimal point of all six digits is turned on and off one by one.



RS232 SERIAL PORT TEST

Verify TXD->RCD and RTS->CTS messages are displayed.



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USER HEADER A AND B TEST

Verify User I/O test passes.



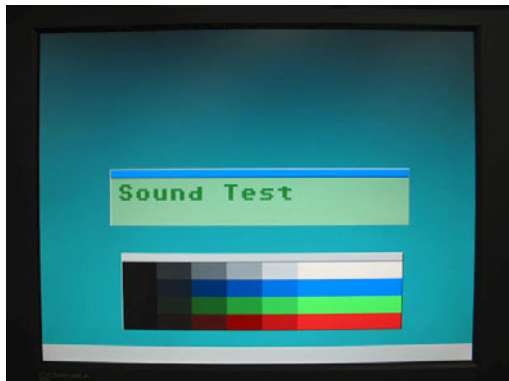
KEYBOARD AND MOUSE PORT TEST

Verify PS2 Port test passes.



AUDIO SYSTEM TEST

Verify the on-board speakers, PC speakers and headphones are correctly working in stereo mode.



STATIC RAM TEST

Verify the memory test is progressing by 64kb increments to a total of 1024kb.



Congratulations!

You have just completed a full functional test of the LiveDesign Evaluation Board. If all tests passed the you should see a **SUCCESS !!!** message on the VGA monitor. If one or more tests failed then the message will display the number of unsuccessful tests. See Appendix A for a complete listing and images of possible error messages.



Appendix A

Error Messages

RS232 SERIAL PORT TEST



USER HEADER A AND B TEST



KEYBOARD AND MOUSE PORT TEST



STATIC RAM TEST



Revision History

Date	Version No.	Revision
11-Oct-2004	1.0	New product release

Software, hardware, documentation and related materials:

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