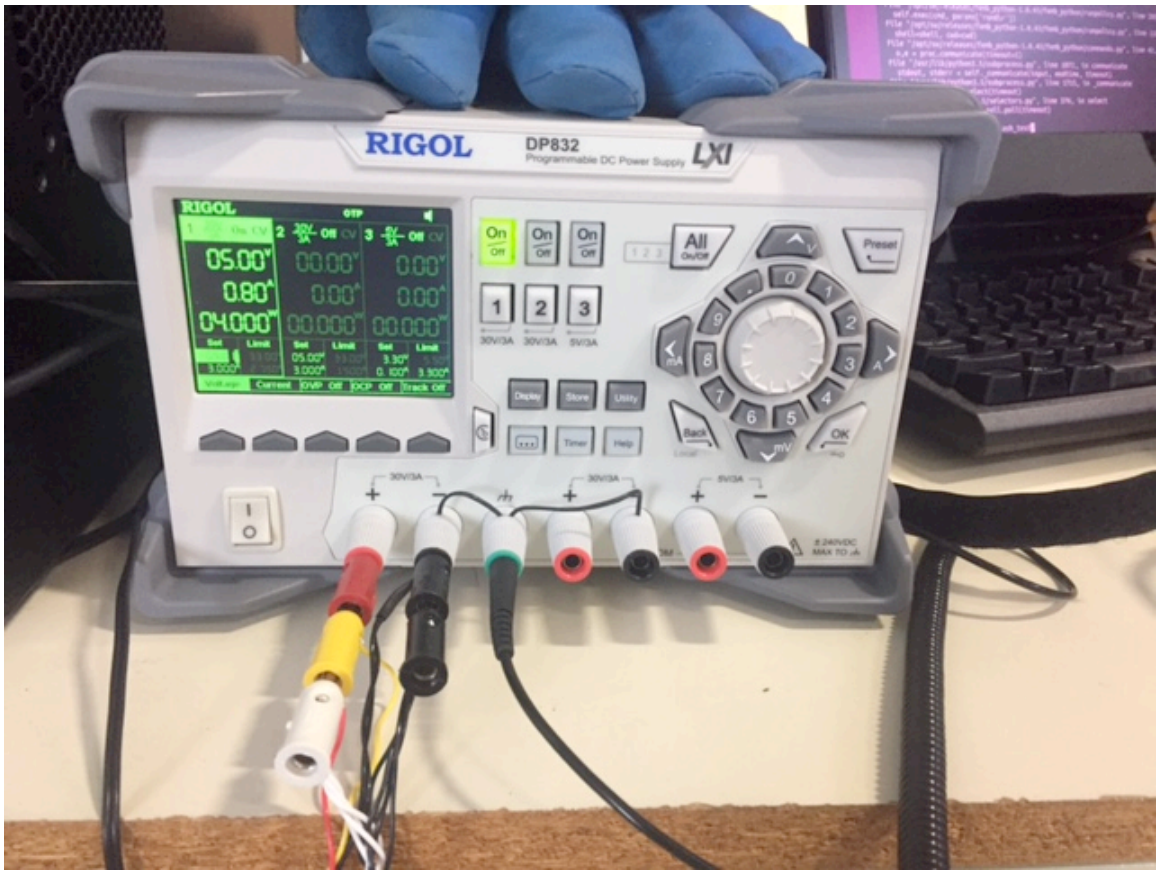
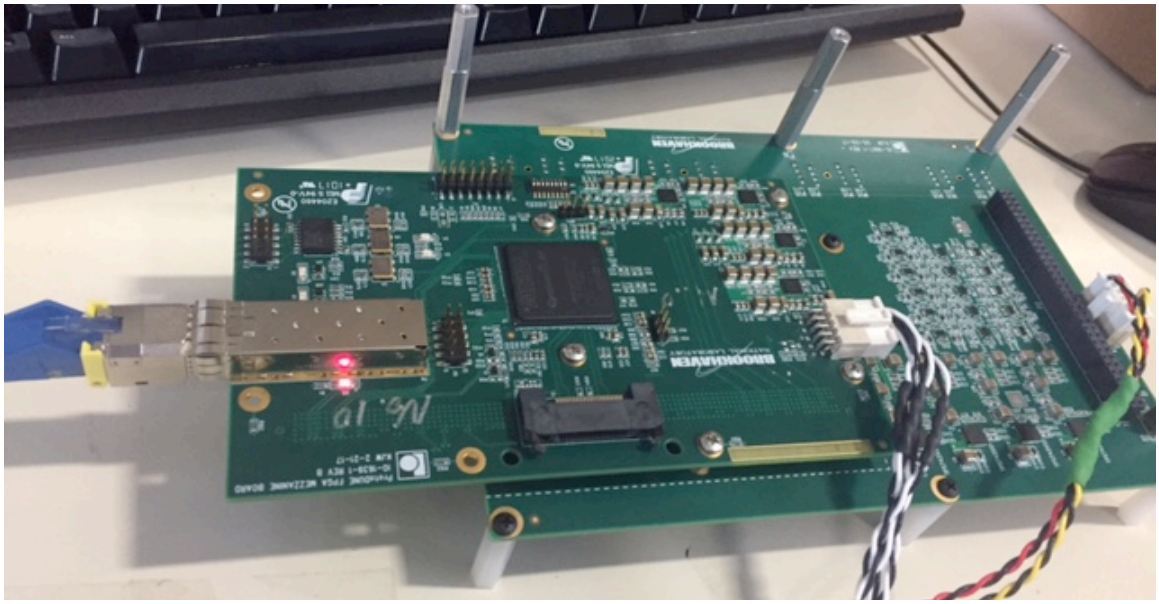
Flash Memory EPCS64N Teststand Instructions

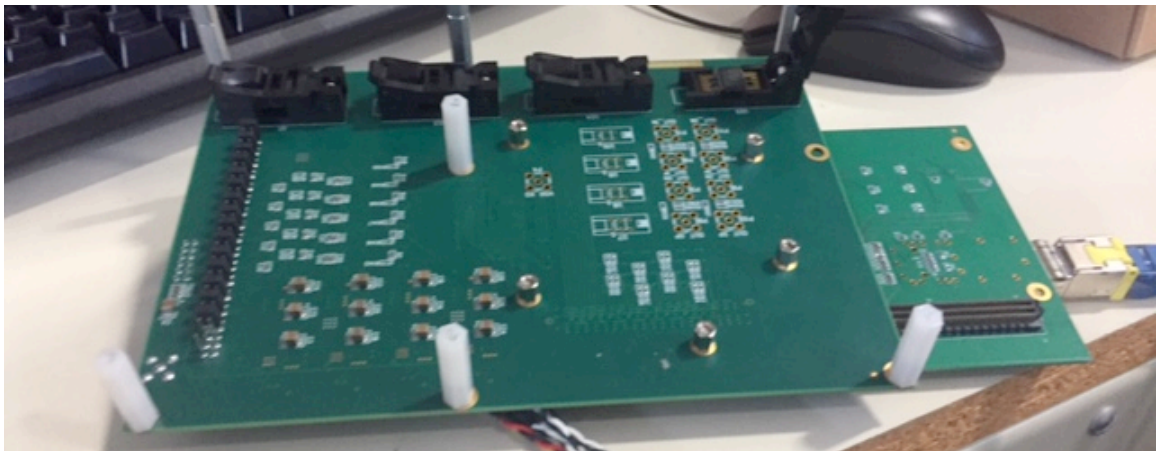
Introduction to the teststand

The test stand consists of a computer, power supply, and Quad testboard. For this test only +5V power is required.



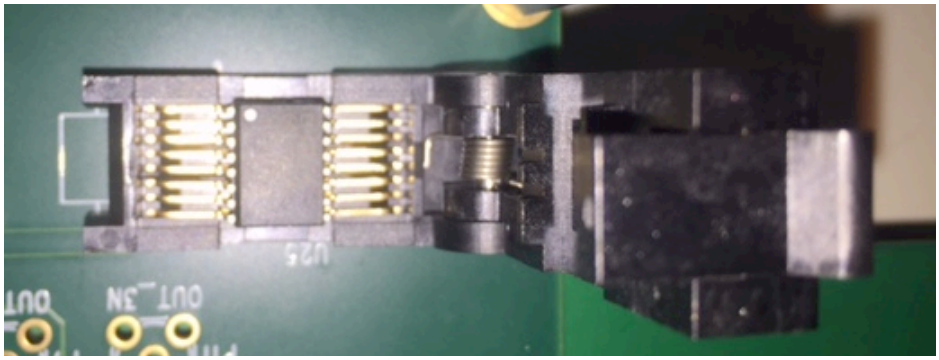
The power supply correctly cabled is shown above. The red, yellow and white banana plugs are +5V. The two black are 0V and the minus terminal is connected to safety ground. The left most power button is used to switch on the power. When the network is running properly the card will draw 0.8V (0.75 to 0.86 is considered good in the warm). When the card is cooled the current drops to about 0.75. If the current is around 0.56 this indicates the communication is bad and the optical transceiver is probably too cold to work.





The Flash memory quad test board is shown above. The power cables connect on the FPGA side and the sockets for the flash memory chips are on the back side.

The flash memory chips are inserted in the sockets so the dot on the chip is oriented to the side of the dot on the board.



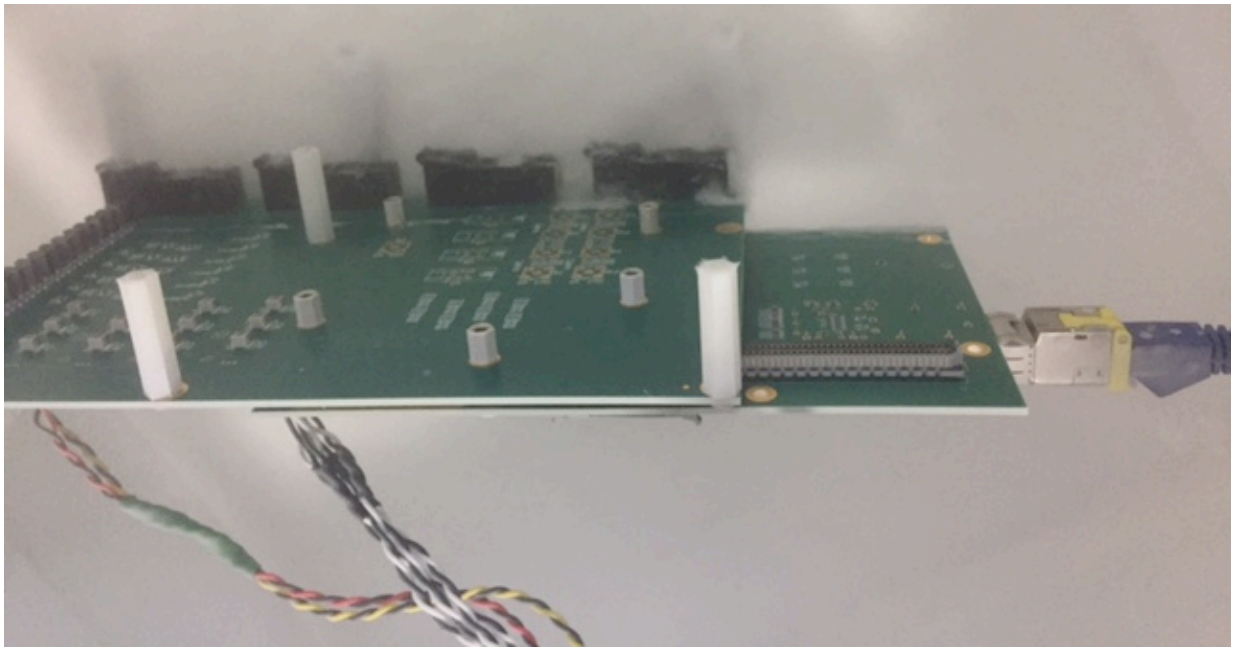
Test Proceedure

1. Verify the board dry and connected to the power supply and computer.
2. Place the board with sockets up on the bench and use a clamp to hold the cables in a reasonable position.
3. Put the grounding wrist strap on.
4. Remove 4 untested chips from the shipping tube.
5. Place the chips in the sockets so that the dot on the chip aligns with the dot on the circuit board.
6. Close the covers.
7. Power the board and see that the supply goes to +5V and the current draw is 0.8A. The current needs to be between 0.75 and 0.85 if the network connection is working.
8. Remove the grounding strap
9. Put on the Cryogenic glove.
10. Check the liquid level using the dipstick.
11. Adjust the level if needed to get roughly the depth to cover the sockets but not more than1/4 inch of the FPGA board. See the picture and caption below.
12. Sit the board in the LN2 on it feet
13. Let the board thermalize till the boiling is greatly reduces
14. Check the level when you can see the board and adjust the level if needed. Pour a small amount of LN2 in the corner away from the circuit board.
15. Start the run using the femb_flash_test command in the operator terminal window.
16. Set the timer for 45 min the max time to let the test run.
17. Cut and paste the timestamp from the text stream and enter this in the googledoc spreadsheet.
18. Enter the other information as it becomes available
    a. Timestamp
    b. Operator
    c. Test board number
    d. Socket 0 pass/fail
    e. Socket 1 pass/fail
    f. Socket 2 pass/fail
    g. Socket 3 pass fail
    h. Roomtemp test/cold test
    i. Test complete
    j. Notes
19. When the test ends
    a. Check that the current draw is still 0.75A to be sure the network link is good.
    b. Switch off the power
    c. Put on the cryoglove
    d. Remove the board and sit it on the floor

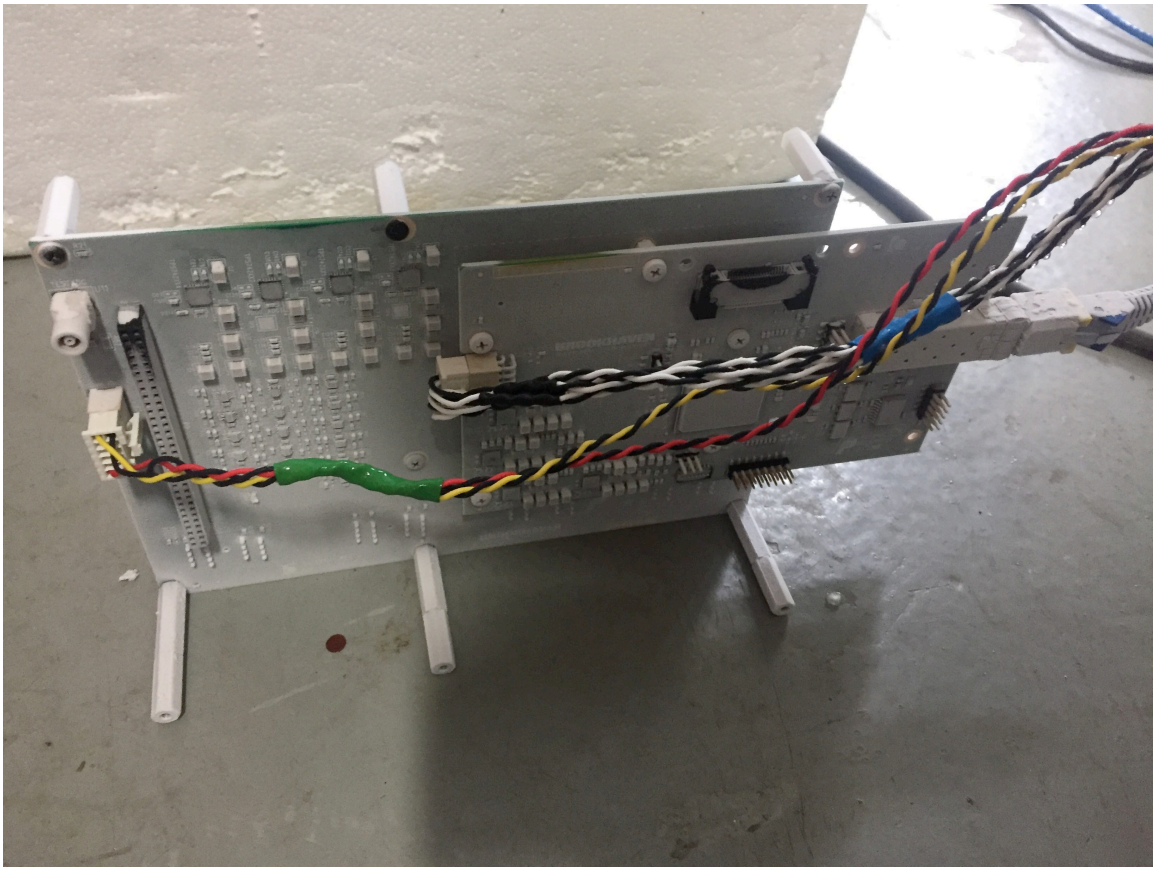
e. Use the heatgun set at 140 to warm the board. This causes a lot of frost. The teststand designers say this is normal. (compresses air can be used to get some of the water off if it is available.
f. When most the condensation is gone remove the chips and put them in the bags, good, undetermined, or Bad. A Chip status is undetermined if the test program failed.

20. Use the heatgun to remove the remaining condensation. It is important to get the boards completely dry as drops of water like to sit on the resisters and between the pins of the components.
21. IF it is raining be sure to dry the board where it does not get dripped on.

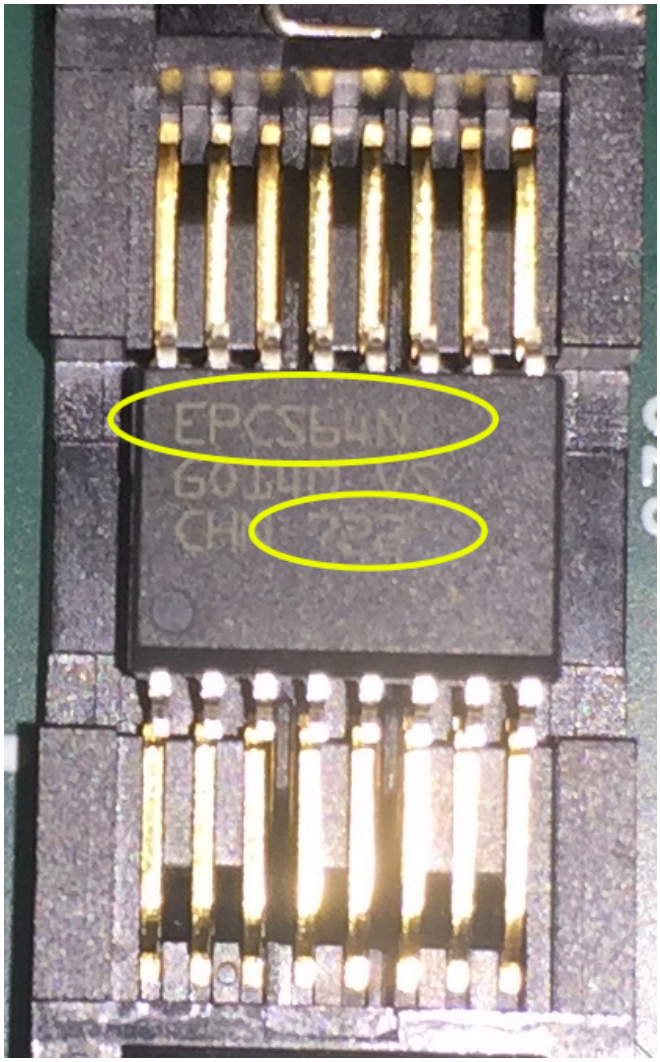
Photograph of the board in the test box. If the liquid level is correct then the bottom edge of the mezzineene card should be in liquid but the pins on the bottom of the board not.



This photo shows the board sitting in the LN2. The sockets are covered and the liquid is covering about 3mm of the mezzanine card. If the liquid is lower and the test runs 40 minutes, which happens if all 4 chips are bad, then the liquid level will drop below the top of the socket.



Photograph of the board in the frosting process. At times the frost can get a mm thick. This is normal.



Picture of the EPCS64N chip in its test socket. The 722 number may be a lot number. The photo is much bigger than the chip.