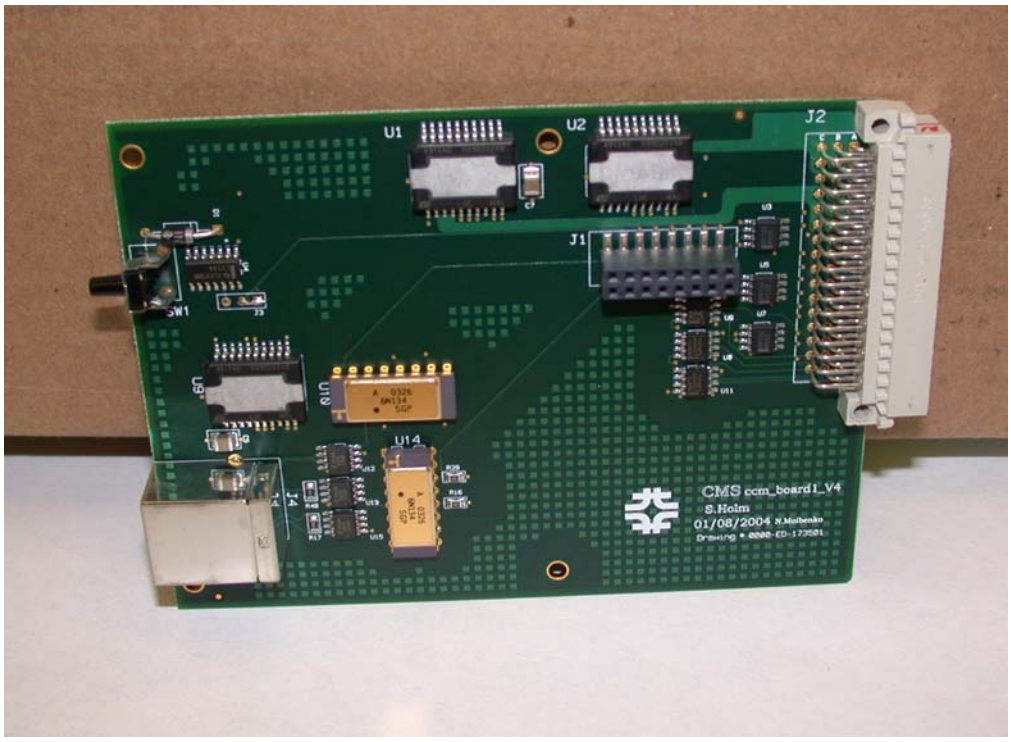
CCM Board Testing

k.w.b = Known Working Board

Board 1 testing
Visual Inspection – look for all parts being installed similar to a k.w.b.
Solder a short across R15 on bottom of board.
Solder a short across J3 on top of board, two right most holes.



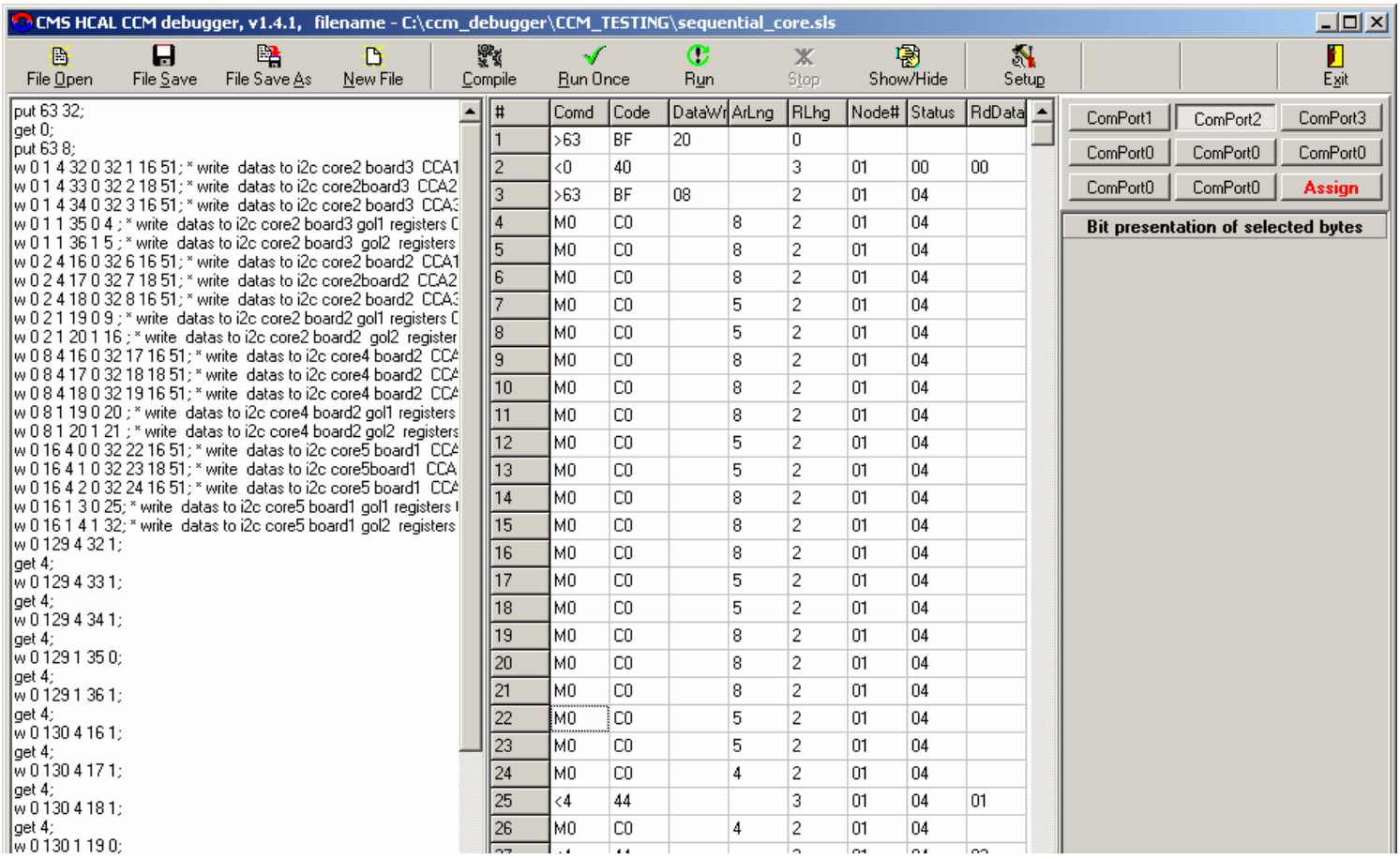
TEST SETUP
Remove power from backplane if it's on. (Power supply "Output On/Off" button).
Using a k.w.b. 3, 4 & 5 connect Board 1 to Board 5.
Plug 4-board unit into backplane (Blue cable and Orange fiber connected).
FE Boards should be plugged into slots J3, J5, J14 and J16 of the HO-Backplane.

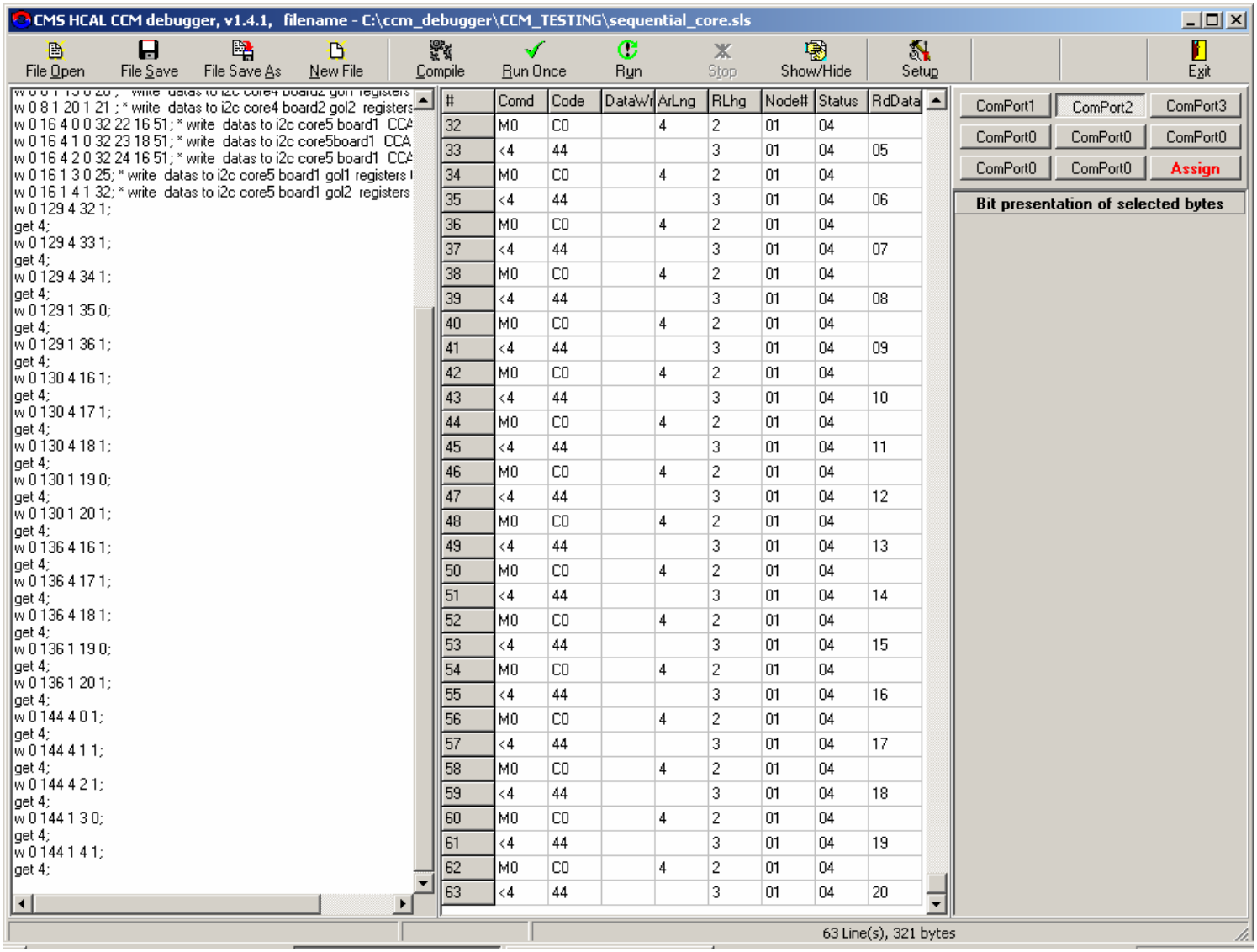
Turn on the +6.5v supply then the +5.0v supply.
With four FE boards installed on backplane the currents on the P.S. Display should be: +6.5v: ~ 1.97A +5.0v: ~ 2.39 A
!If there is a large difference then there is a problem.

Double Click the CCM_Debugger software on the PC, it will open in a new window.
!Make sure com port 2 button(upper right) is selected in CCM_Debugger window

Click "File Open" button, Select Sequential_Core.sls from CCM Testing folder.

Click "Run Once", the middle section of the window should display the results. The Node # column will contain the CCM hardwired ID. The Status will display the contents of the Status register and the RdData column will display a count of 01-20 in rows 25-63 every other row as shown below. The current of the supplies should increase to: +6.5v : ~ 2.16A +5.0v : ~ 3.73A





If boards passes the test then put a green dot on and put into “pass” box, if fail put into “fail” box.

5/11/2004

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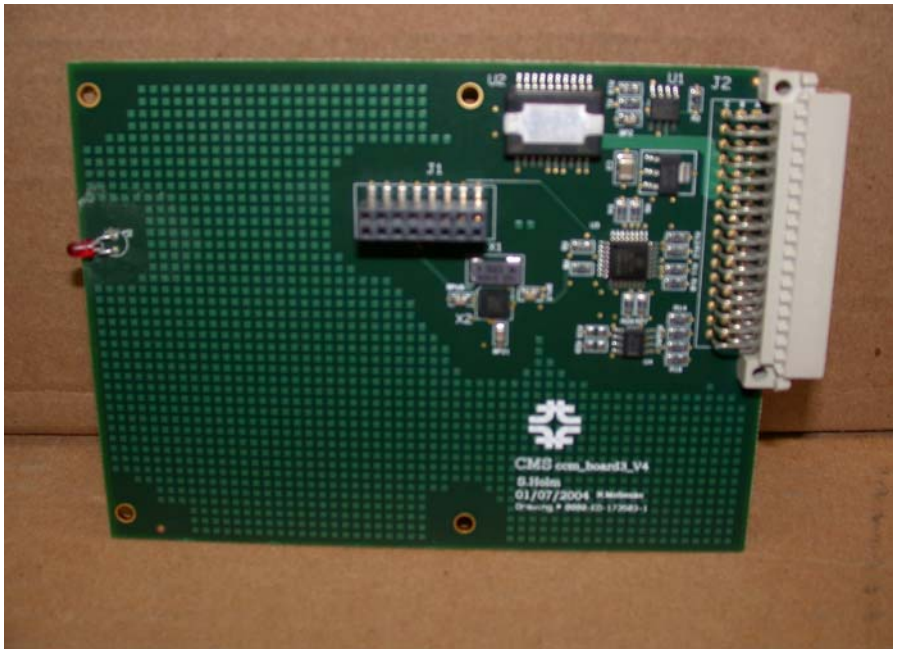
Board 3 testing

Visual Inspection – look for all parts being installed similar to a k.w.b.



TEST SETUP

Remove power from backplane if it's on. (Power supply "Output On/Off" button).
Using a k.w.b. 3, 4 & 5 connect Board 3 to Board 5 and then Board 4 to Board 3.
Plug 4-board unit into backplane (Blue cable and Orange fiber connected).
FE Boards should be plugged into slots J3, J5, J14 and J16 of the HO-Backplane.

Turn on the +6.5v supply then the +5.0v supply.
With four FE boards installed on backplane the currents on the P.S. Display should be: +6.5v: ~ 1.97A +5.0v: ~ 2.39 A
!If there is a large difference then there is a problem.

The LED on Board 3, 4 and 5 should turn on. *If the LED on Board 3 doesn't turn on and Board 4 and Board 5 LED are on there is usually a problem with the QPLL2 device. Set the board aside and go to next board.*

Double Click the CCM_Debugger software on the PC, it will open in a new window.
!Make sure com port 2 button(upper right) is selected in CCM_Debugger window

Click "File Open" button, Select Sequential_Core.sls from CCM Testing folder.

Click "Run Once", the middle section of the window should display the results. The Node # column will contain the CCM hardwired ID. The Status will display the contents of the Status register and the RdData column will display a count of 01-20 in rows 25-63 every other row as shown on Board 1 testing.
The current of the supplies should increase to: +6.5v : ~ 2.16A +5.0v : ~ 3.73A

Click "File Open" button, Select QIE_Reset_Test.sls from CCM Testing folder.

Click "Run", the middle section of the window should display the results. This puts the program into a continuos loop of executing the commands. Using the Oscilloscope probe the FE cards U15 pin 6. The oscilloscope should display a 25ns 3v positive going pulse.

If boards passes the test then put a dot on and put into "pass" box, if fail put into "fail" box.

5/12/2004

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BOARD 5 TESTING

Add eight *0.01uf 0805 SMT Capacitors* to the back of the board , 6 across connector J4 and one each across resistor R2 and R13.
CLEAN : Use solder flux cleaner spray to clean the flux off of the board, blow residue off board with compressed air. Clean with Windex.
Visually inspect the boards for cleanliness on both sides – clean when needed.

Break the shunts on SW1 for the board ID. The ID is an 8-bit hex number that is read back through the slow control system. Pin 1 of SW1 is the LSB. Pin 1 is closest to the FPGA U16. Write the board ID number(decimal) on the top of Connector J4 with a permanent pen.

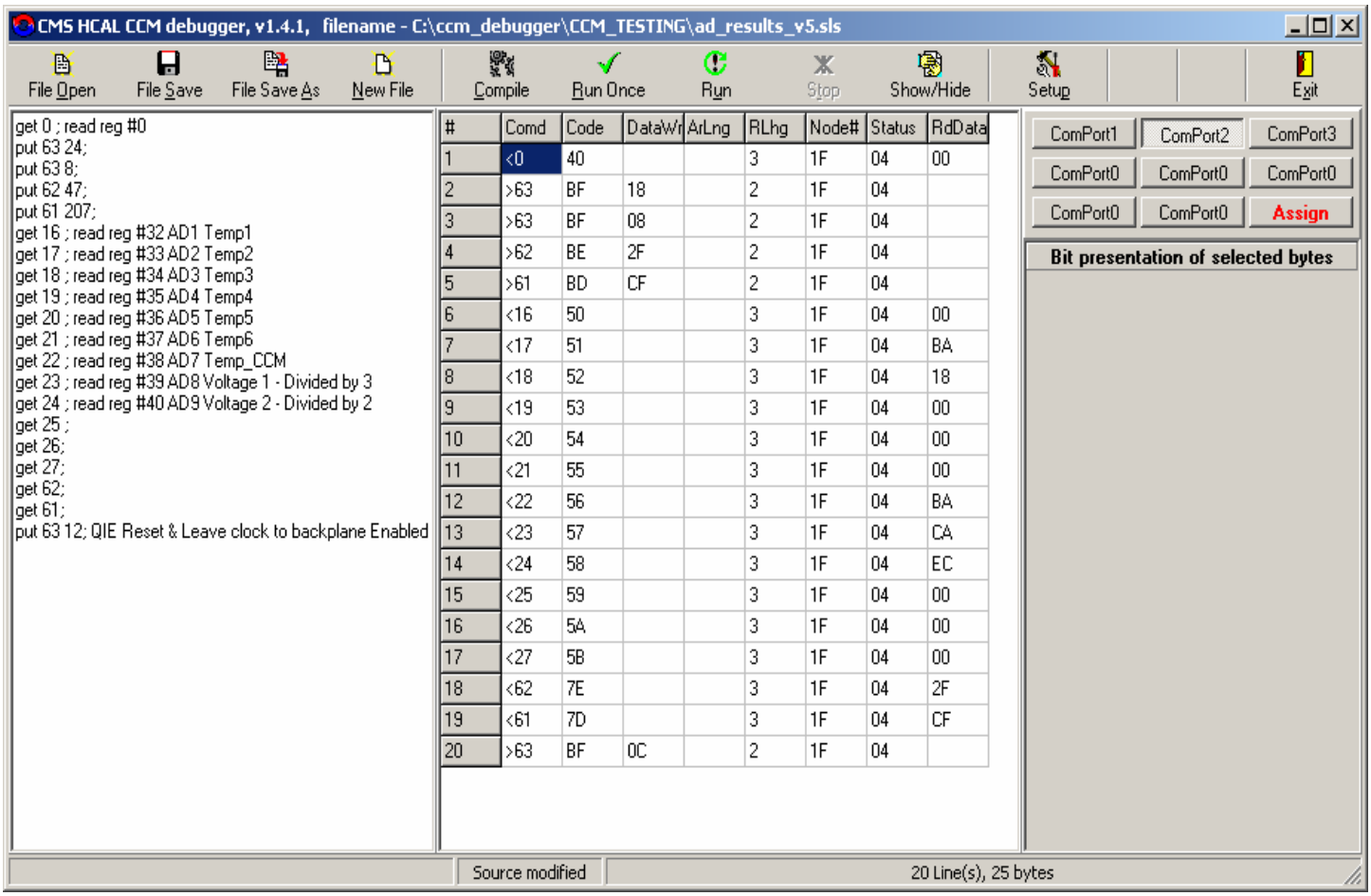
Visual inspect with a k.w.b. 5.
Connect to k.w.b 1 and 3 & 4. Plug the orange fiber optic cable into the board and install onto backplane.

Turn on the +6.5v supply then the +5.0v supply.
With four FE boards installed on backplane the currents on the P.S. Display should be: +6.5v: ~ 1.97A +5.0v: ~ 2.39 A
!If there is a large difference then there is a problem.

Double Click the CCM_Debugger software on the PC, it will open in a new window.
!Make sure ***com port 2*** button(upper right) is selected in CCM_Debugger window

Click "File Open" button, AD_results_v5.sls from CCM Testing folder.

Click "Run Once", the middle section of the window should display the results. The Node # column will contain the CCM hardwired ID. The Status will display the contents of the Status register and the RdData column will display the results of the A/D convertor. Row 7 & 12 should have a number close to BAh. Row 13 ~ CAh and row 14 ~ ECh. Row 62 = 2F and row 61 = CF.
The current of the supplies should increase to: +6.5v : ~ 2.16A +5.0v : ~ 3.73A



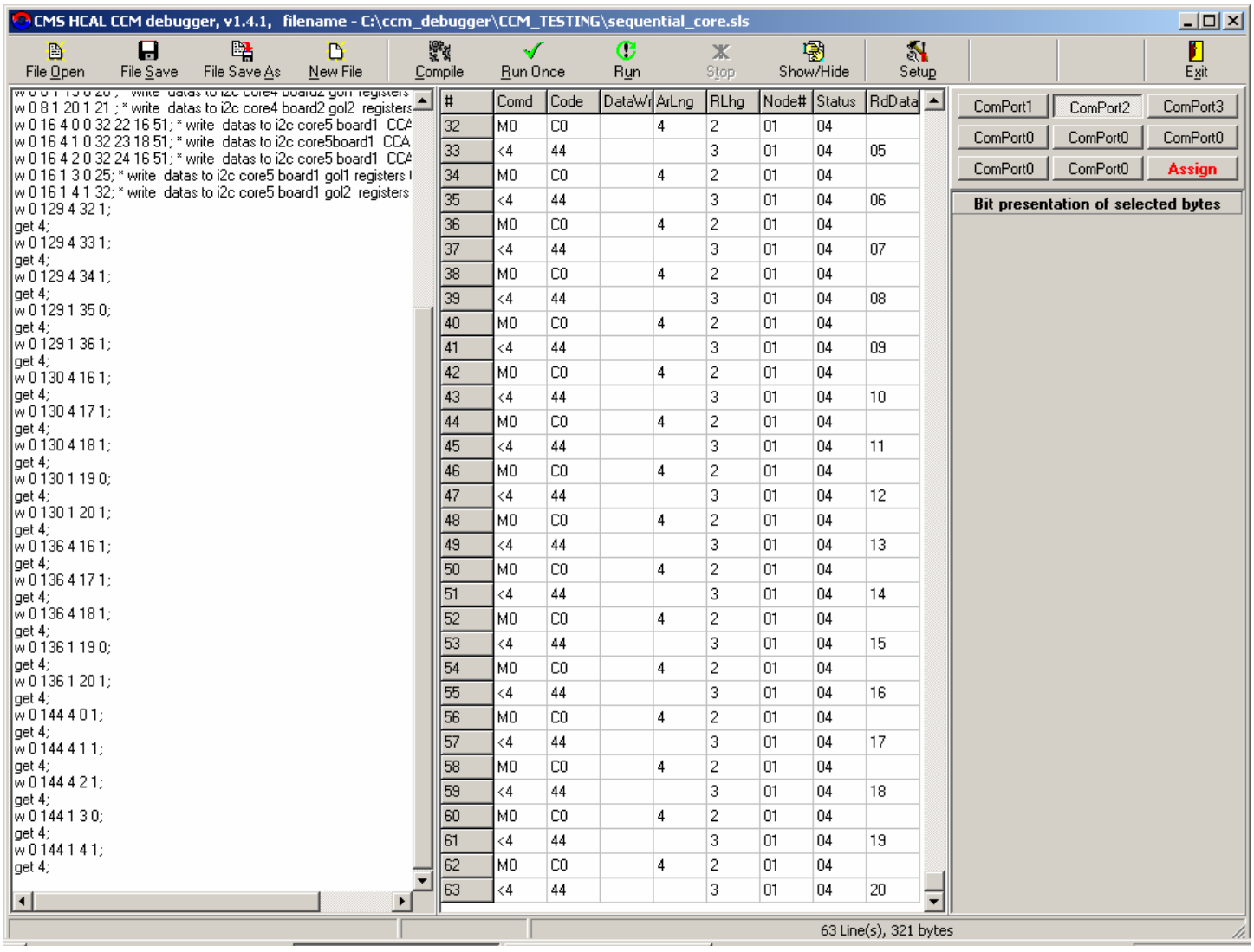
Click “File Open” button, select Pulse_testing.sls from CCM Testing folder.

Click “Run”, the middle section of the window should display the results. This puts the program into a continuous loop of executing the commands. Using the Oscilloscope probe the four FE cards U15 pin 6(25ns 3v positive going pulse), U16 pin 6 and then pin 7 for the high to low transistion. Time scale should be on 20ns per division. Change the scale to 200us per division and check pin C15 of the FE board connector – a 800us pulse should be displayed.
Leave the scope on the 200us scale and reverse the procedure for the next board under test.

Click “Stop”,

Click "File Open" button, Select Sequential_Core.sls from CCM Testing folder.

Click "Run Once", the middle section of the window should display the results. The Node # column will contain the CCM hardwired ID. The Status will display the contents of the Status register and the RdData column will display a count of 01-20 in rows 25-63 every other row as shown on Board 1 testing.

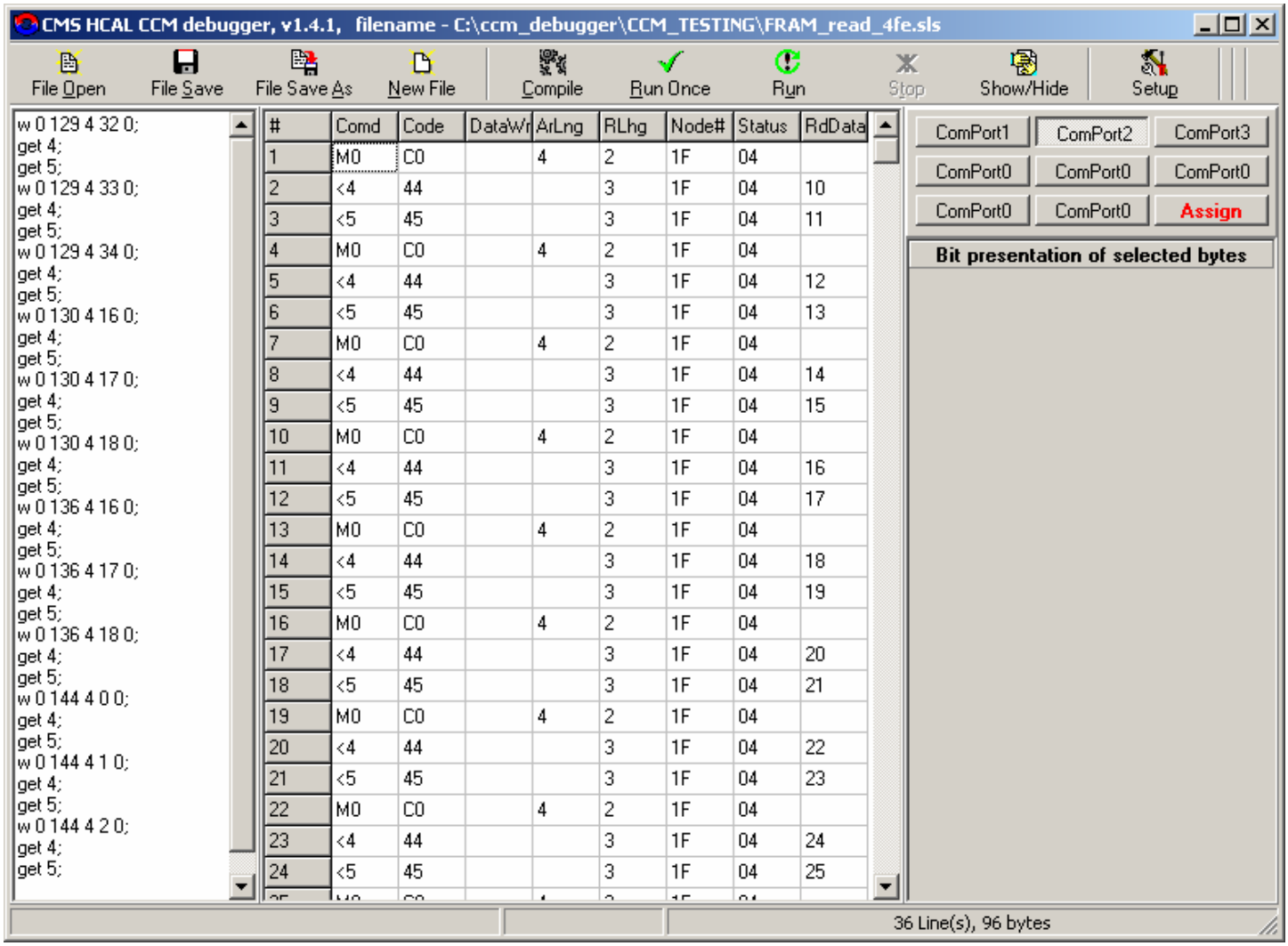


Click “File Open” button, Select FRAM_Load.sls from CCM Testing folder.

Click “Run Once”, the middle section of the window should display the results. The Node # column will contain the CCM hardwired ID.

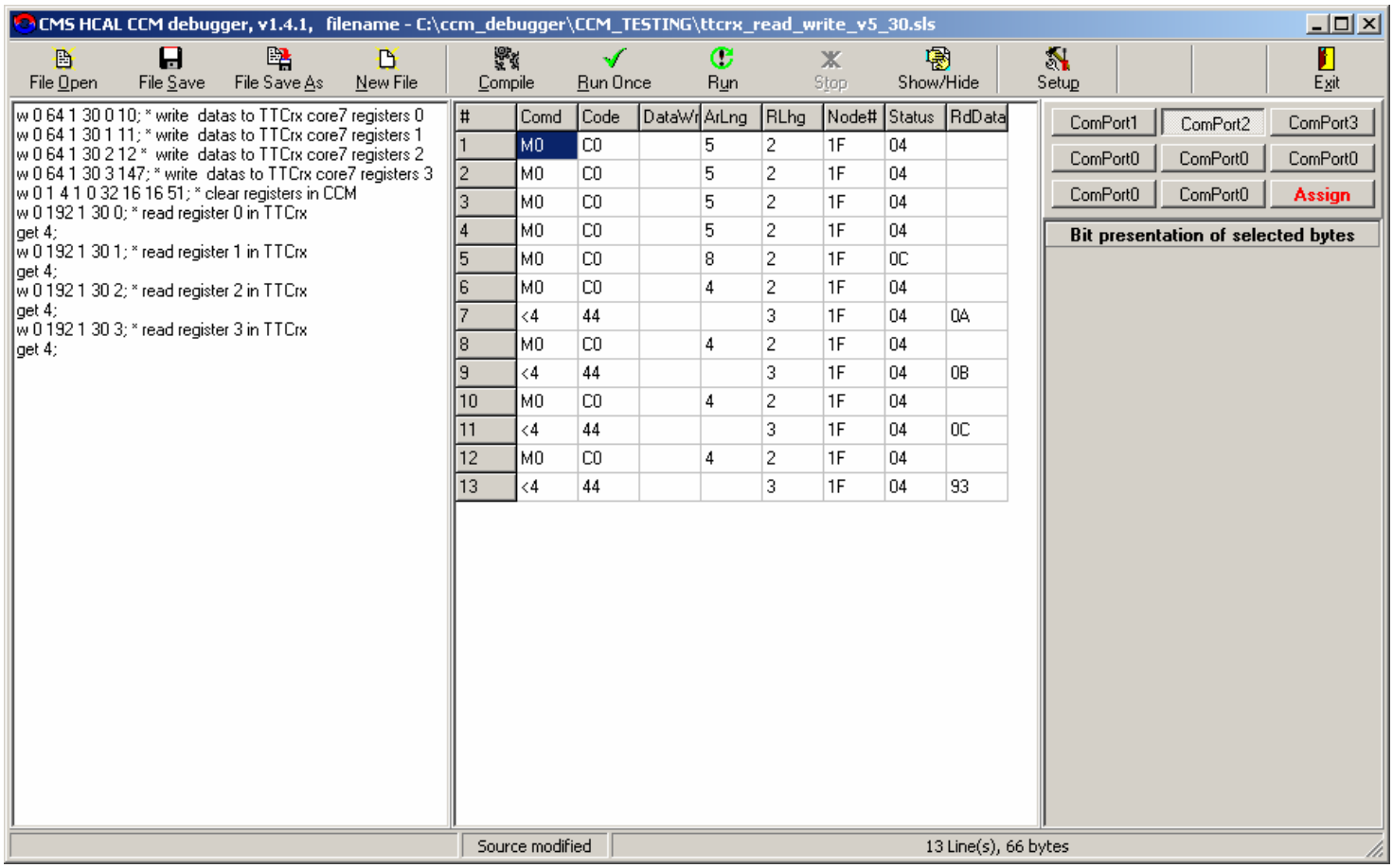
Click “File Open” button, Select FRAM_Read.sls from CCM Testing folder.

Click “Run Once”, the middle section of the window should display the results. The Node # column will contain the CCM hardwired ID. The Status will display the contents of the Status register and the RdData column will display a count of 10-33, beginning in row 2. As shown in the following picture.



Click “File Open” button, Select TTCrx_Read_Write.sls from CCM Testing folder.

Click “Run Once”, the middle section of the window should display the results. The Node # column will contain the CCM hardwired ID. The Status will display the contents of the Status register and the RdData column data read back from the TTCrx. As shown in the following picture.



If boards passes the test then put a dot on and put into “pass” box, if fail put into “fail” box.

5/17/2004

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