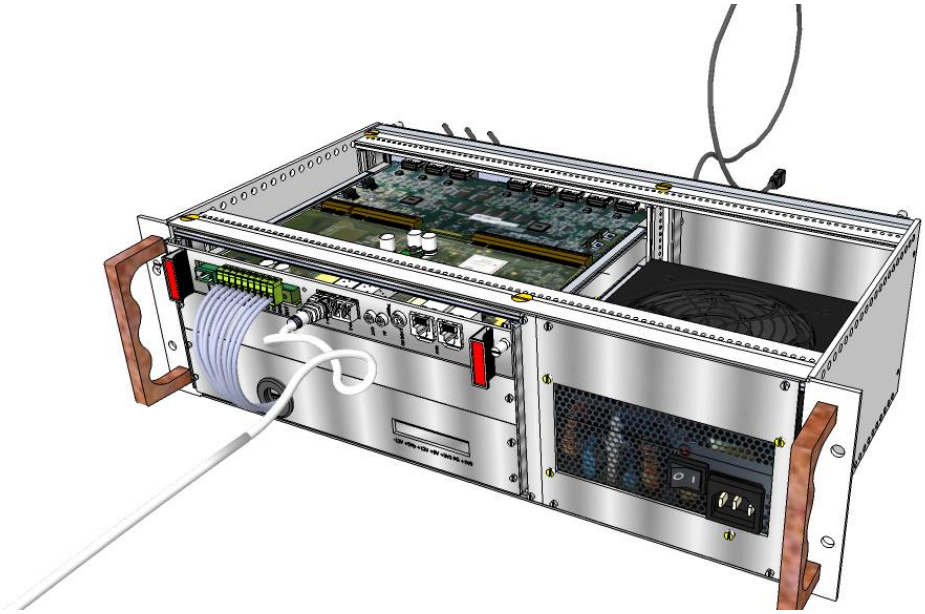
Connecting, Programming and Testing FEC and ADC



v1.0

Notice: PRE-RELEASE for comments

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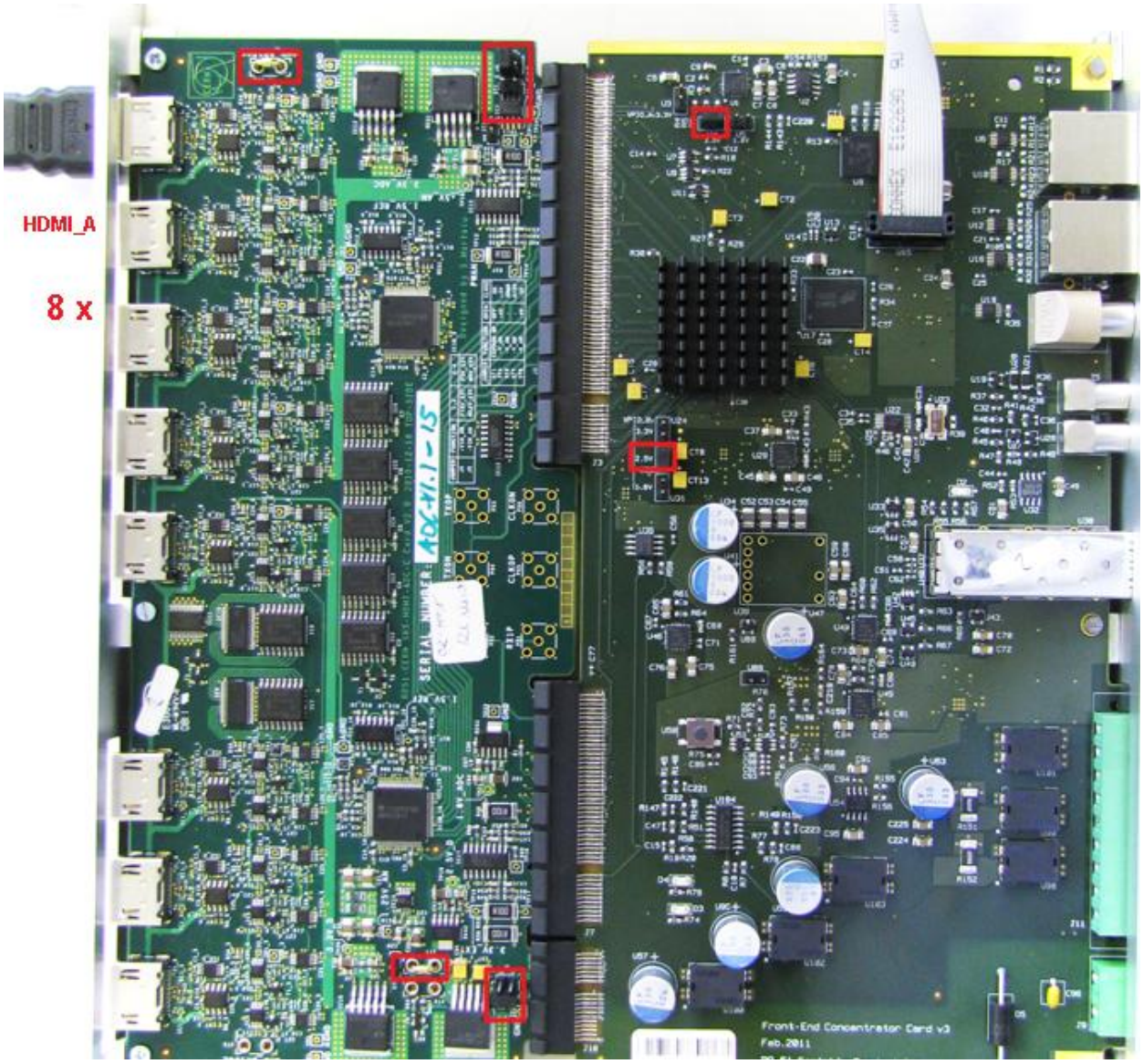
Connection

The FEC card needs 2 jumpers to be placed on the components named "U4" and "U30" (2.5V). The ADC card needs 2 jumpers (J2 and J4) and 2 bridges (ST7 and one of 2 GND_BRIDGE) to be placed.

See image for positions:



Use the ATX adapter output to supply power.

Connect SFP Transceiver to FEC for Ethernet connection (see below).

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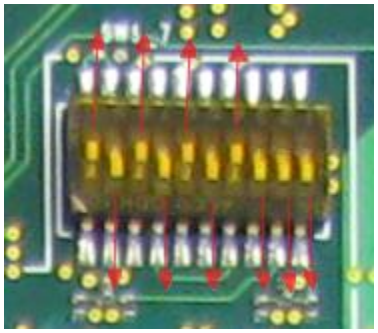
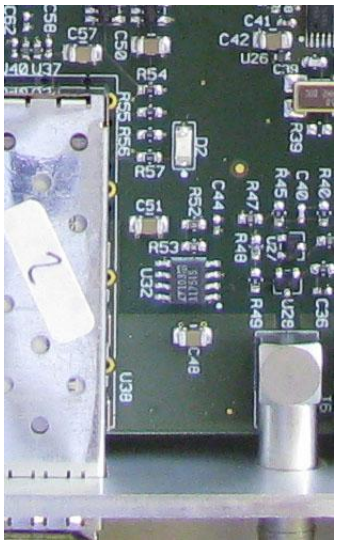
(Ethernet SFP Copper Transceiver)

Change switch positions of all switches of ADC (8 for 8 channels) like below (The arrows show switch positions.):



Programming FEC Cards



Turn the power on and wait for D2 to stop blinking (If you did not connect FEC to your computer Ethernet plug, the led will not be turned on).

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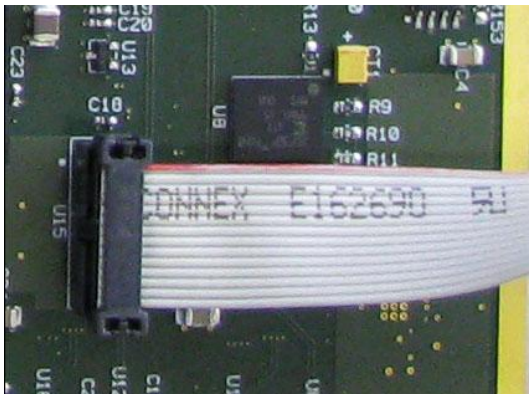
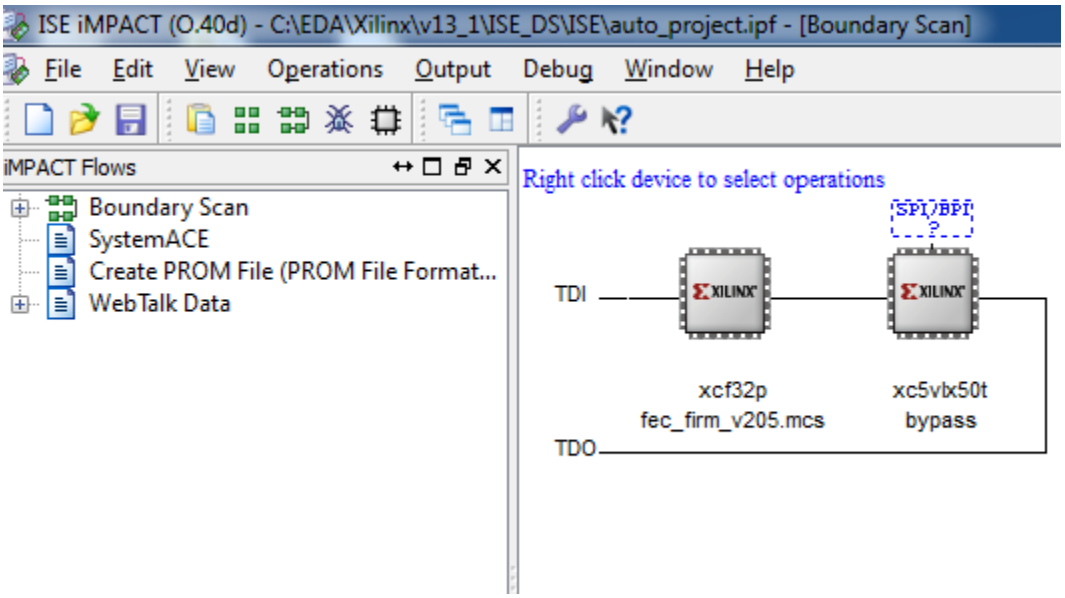
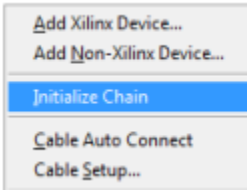
Plug the Xilinx Programmer socket into card.



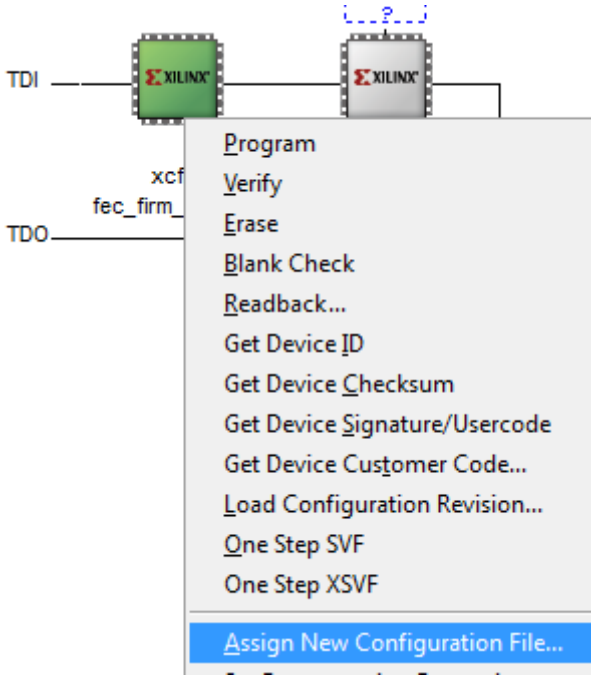
Run iMPACT and create an empty project. The following picture will be shown:

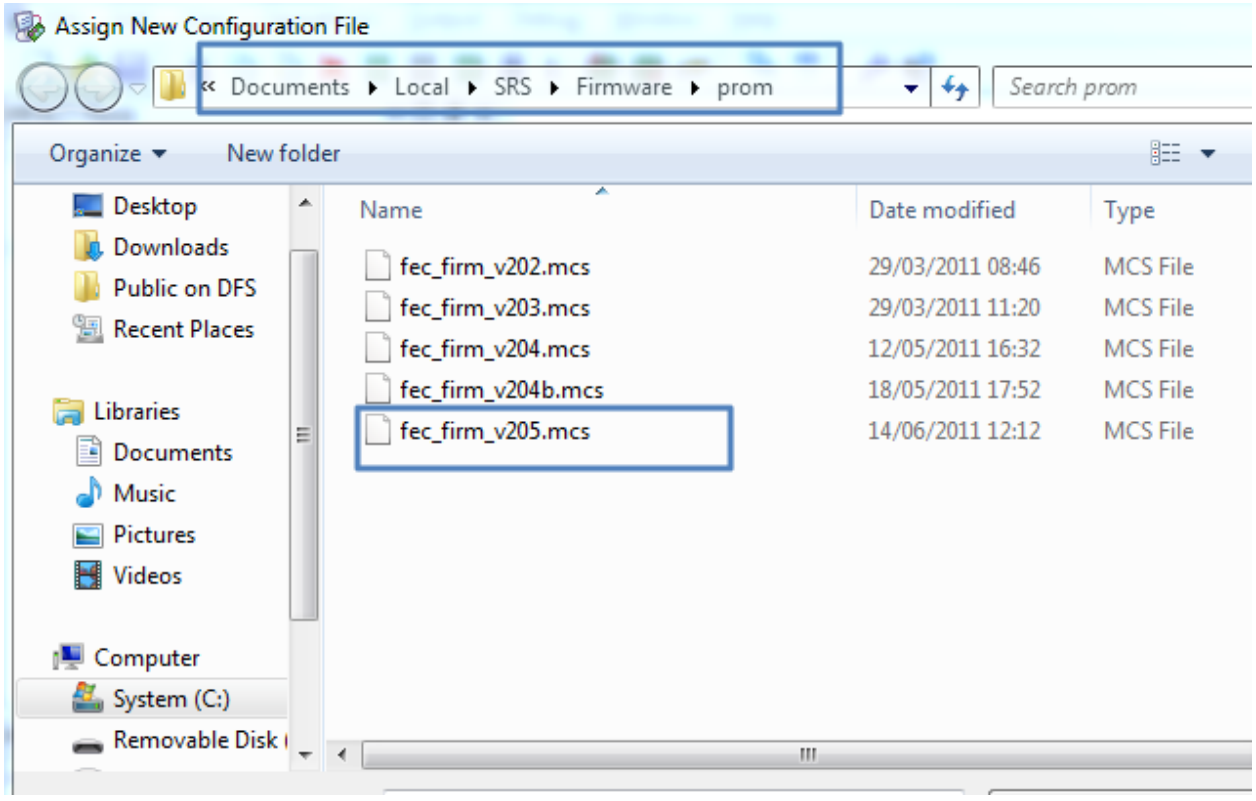




Right click on the workspace and click *Initialize Chain*.

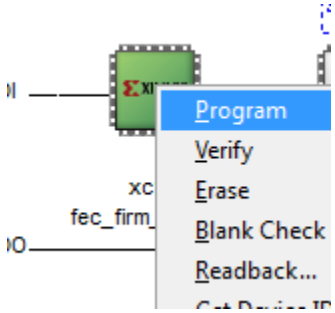
After successful initialization, right click on the first device and choose *Assign New Configuration File*.





Browse in the directory shown above and double click on a firmware you would like to program.

Right click on the first device again and click *Program.*

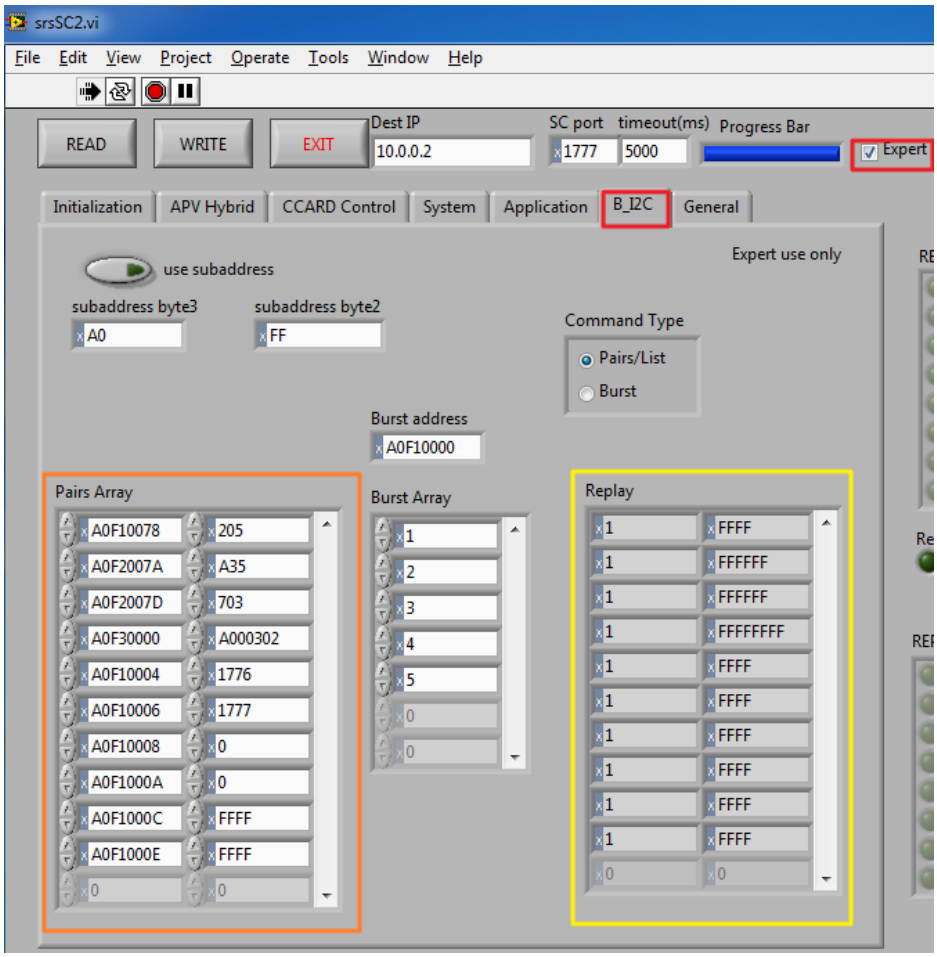


Programming will take a while.

After programming is completed, power it off and on. If you have not done yet, plug ADC card and Hybrid(s).

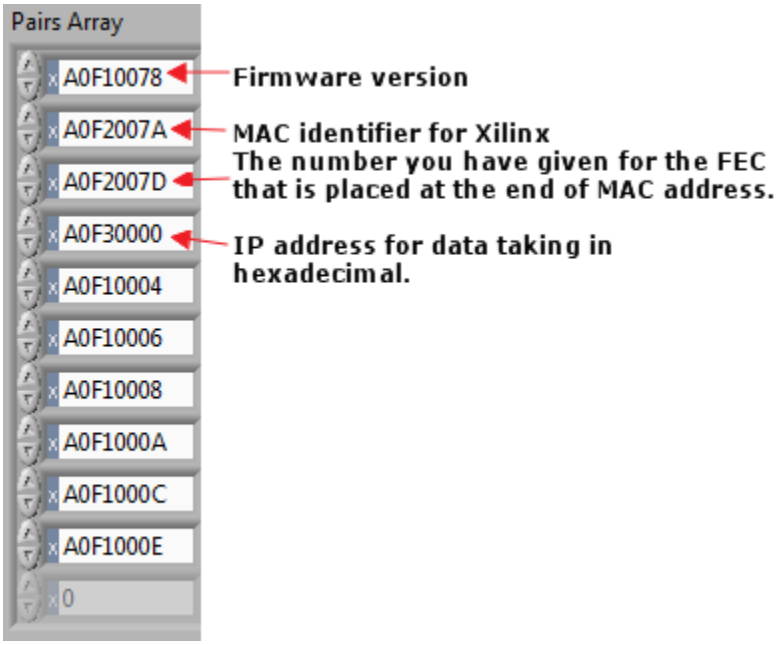
Changing IP and MAC addresses.

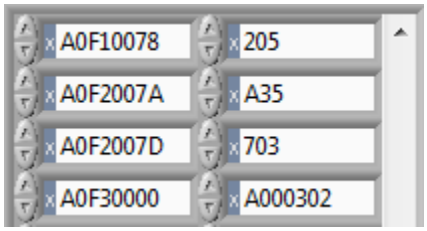
Click *READ* to establish a connection using $(1777)_{16}$ port using *srsSC2.vi* file. Enter *Expert* mode and click *B_I2C* tab to manage advanced values. Click *READ* again to view written values in FEC.



On the picture above, orange box shows the values that are ready to be written into memory. The yellow box shows values of the same parameters that are in the memory. For the picture above, the card is using default values for remote connection (e.g. IP: 10.0.0.2).

The descriptions of the first four parameters are below:





The values of these parameters are (in order):

- Firmware version: **2.05**
- MAC address identifier: 00-0**A**-**35**…
- The card number is: …0**7**-**03**
- The IP address is: A(**10**).00(**0**).03(**3**).02(**2**)

The whole MAC address becomes: 00-0A-35-00-07-03

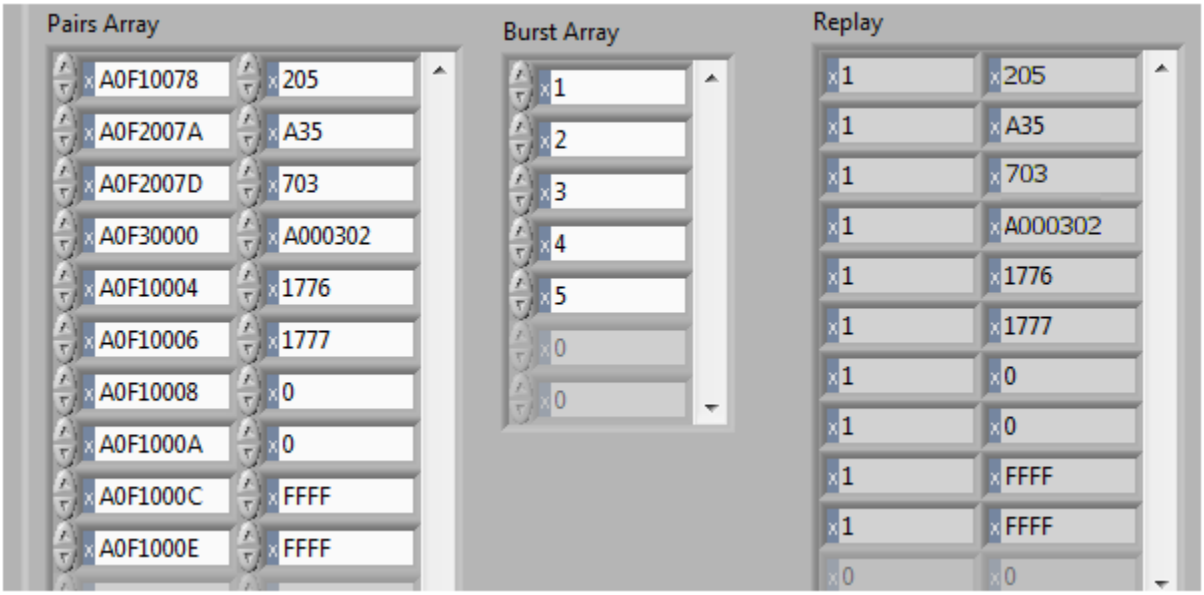
To change IP, you will need to modify the part shown in red text above. To make

To save changes click *WRITE* on the toolbar.

After writing process, you can see the written values on the right side of the window.

Please note that the "Dest IP" field should be changed into your new written IP after rebooting the card to establish connection.

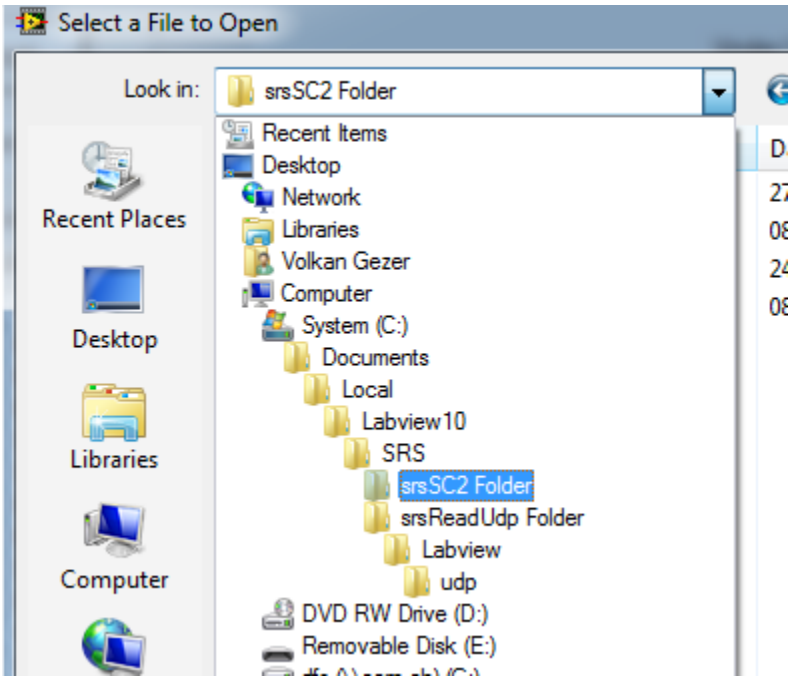
Please see the following picture:



Click on *READ* again to verify changes.

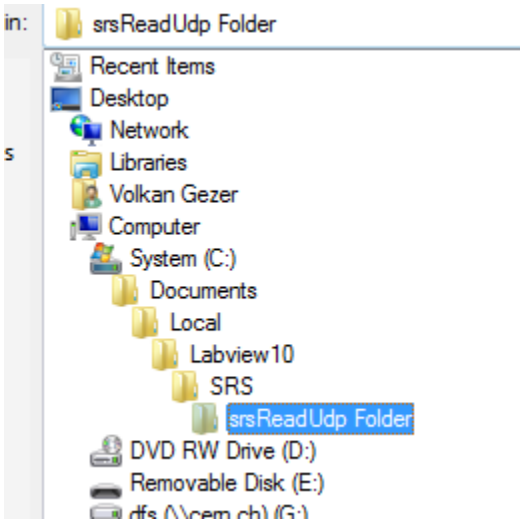
Testing

Open LabView and browse the following folder:



Select *srsSC2.vi* file.

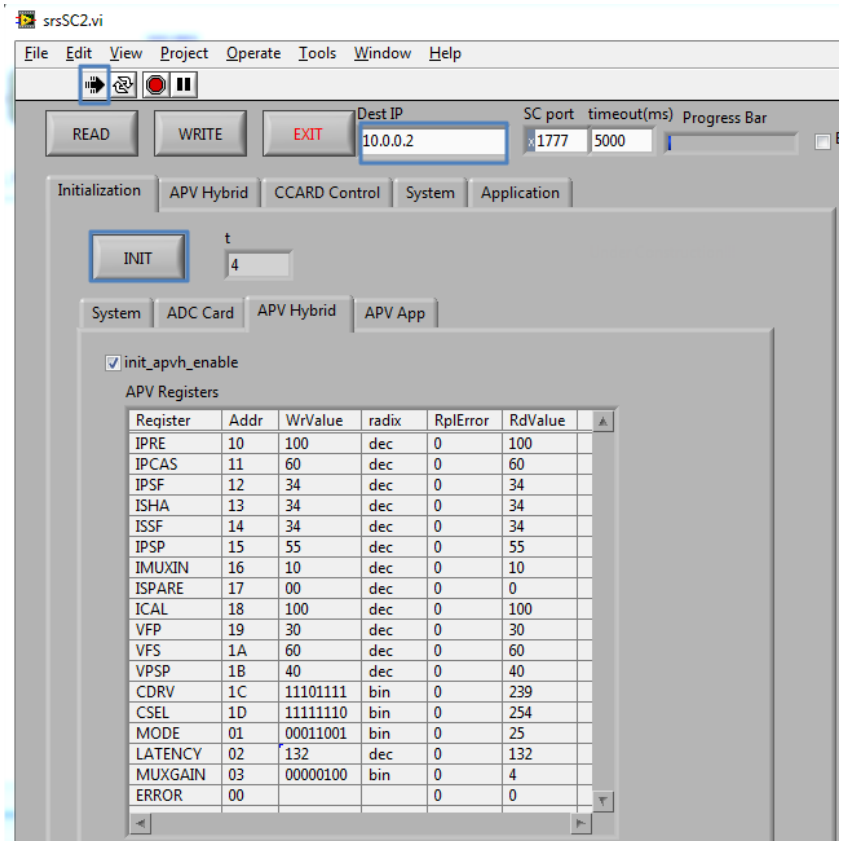
Browser for file again and choose *srsReadUdp.vi* in the following folder:



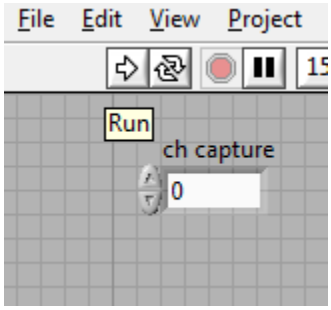
On the *srsSC2.vi* file, run the file using right arrow button on the toolbar and click **INIT** to begin initialization.

If you encounter any errors (e.g. ReqId error), try changing the IP 10.0.0.3, 10.0.0.4 … etc. The SC port $(1777)_{16}$ (6007 in decimals) here is for System registers. Dynamic control of IP address, MAC addresses, and GbE parameters…

See the picture below for the result of mentioned procedures above:



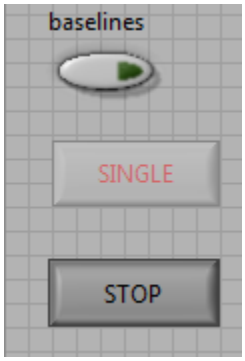
Register	Addr	WrValue	radix	RplError	RdValue
IPRE	10	100	dec	0	100
IPCAS	11	60	dec	0	60
IPSF	12	34	dec	0	34
ISHA	13	34	dec	0	34
ISSF	14	34	dec	0	34
IPSP	15	55	dec	0	55
IMUXIN	16	10	dec	0	10
ISPARE	17	00	dec	0	0
ICAL	18	100	dec	0	100
VFP	19	30	dec	0	30
VFS	1A	60	dec	0	60
VPSP	1B	40	dec	0	40
CDRV	1C	11101111	bin	0	239
CSEL	1D	11111110	bin	0	254
MODE	01	00011001	bin	0	25
LATENCY	02	132	dec	0	132
MUXGAIN	03	00000100	bin	0	4
ERROR	00			0	0



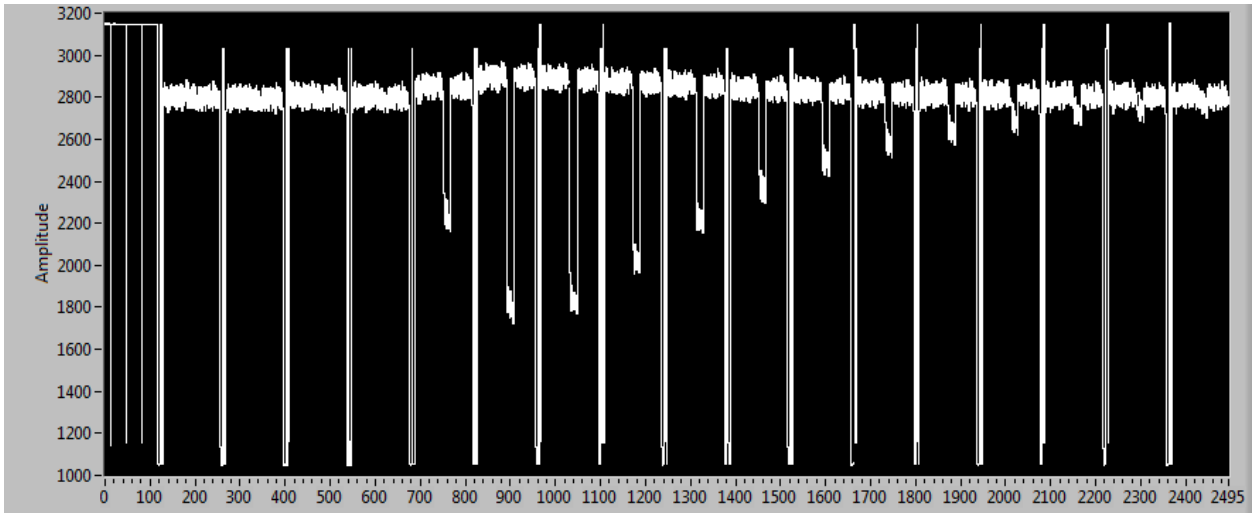
The other file will help observe the card status.

Run the file using right arrow button.

Choose a channel which you plugged one of the HDMI cables in (In the program, channel numbers start from 0). Even numbers are masters, odd numbers are slaves.



Click RUN if it is not running.



If the graph seems like the picture above, the card works properly. Otherwise, check for cables and channel.

Go to *Pedestial* tab and reset baselines and noise. Then check for noise mean value.

If you receive *ReqId* Error, make sure that device is turned on, Ethernet cable is connected and Destination IP address field is the same as device IP.