TARGET4

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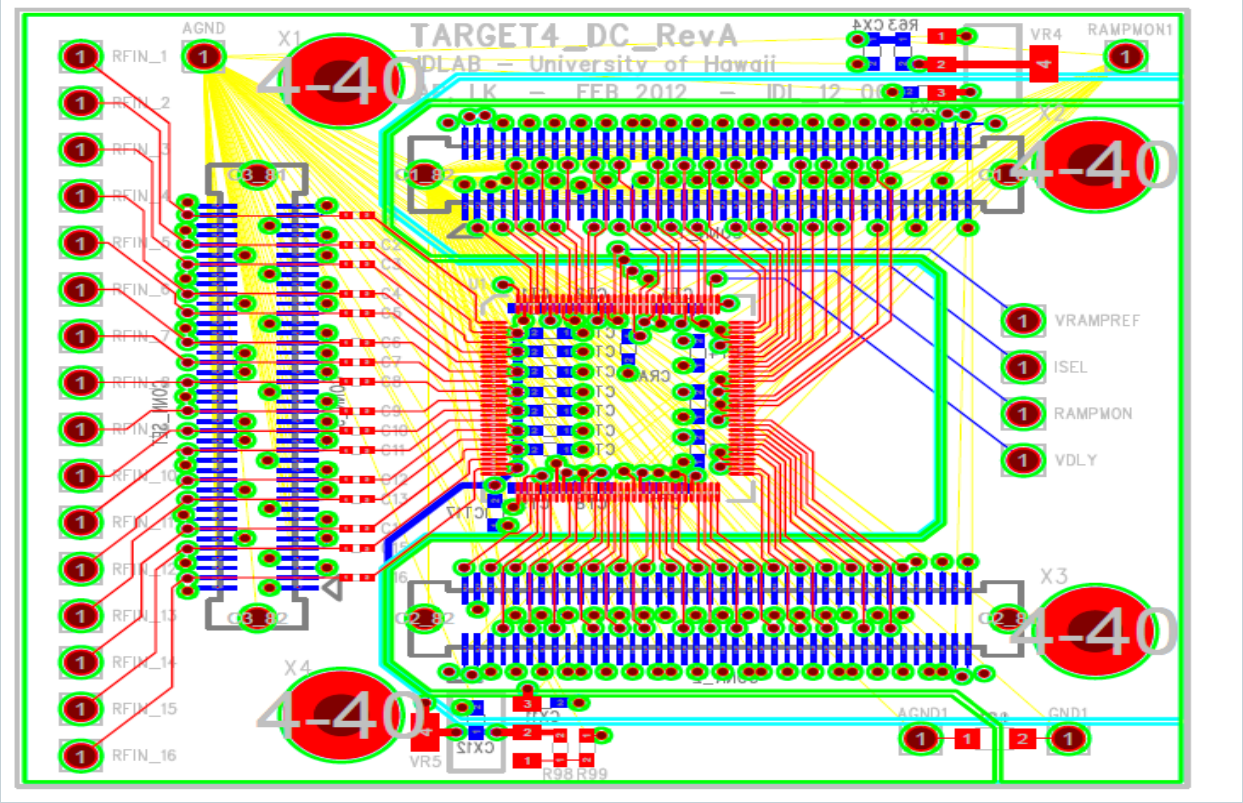
Overview

- TARGET4 (TeV Array Readout with GSa/s sampling and Event Trigger)
- Originally designed to be used with Cherenkov telescope array
- Initial test have shown that there migh be some problems with DAC

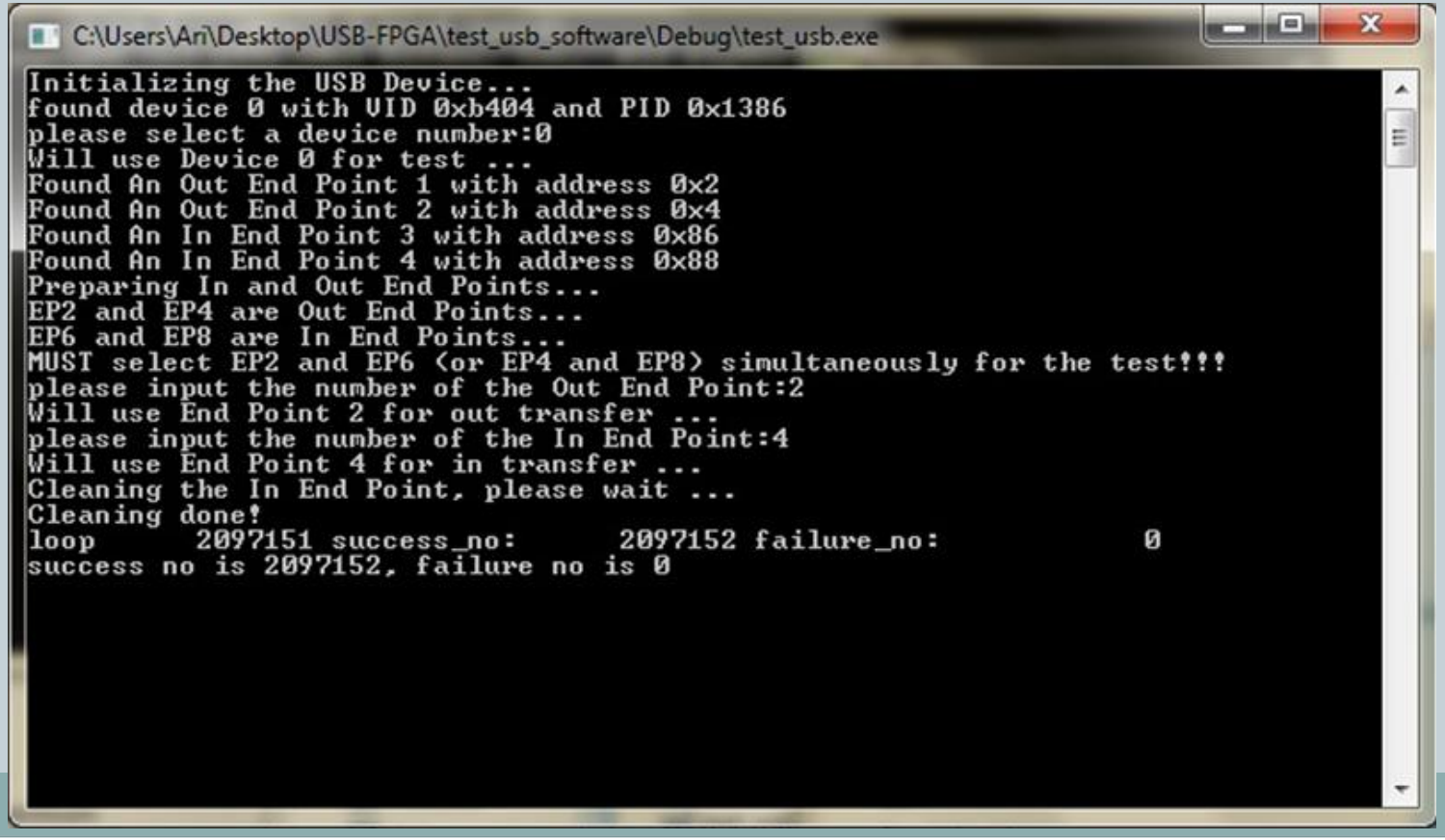
Circuit board design

- In order to allow easier inserting of signals test points had to be added into daughter card



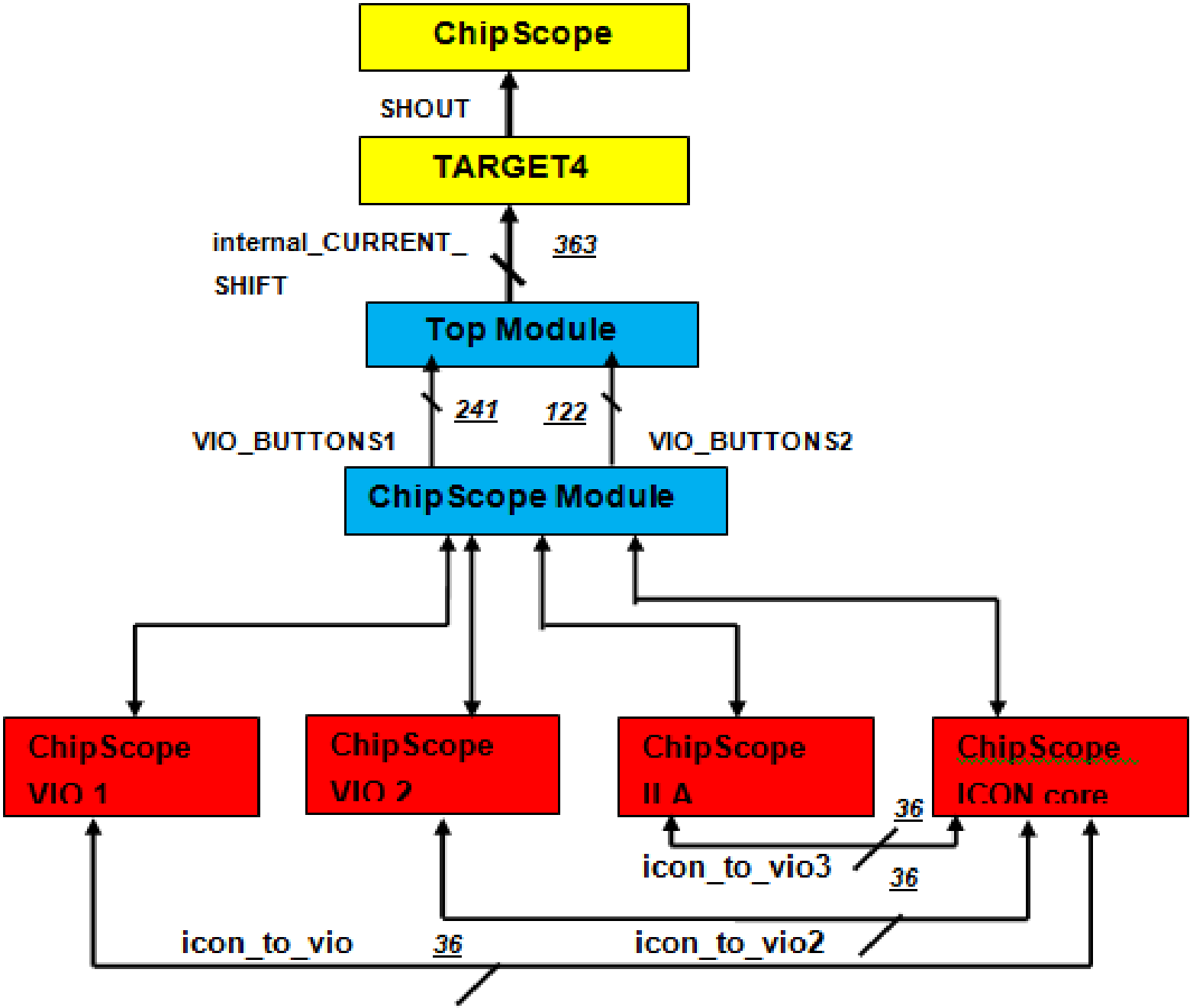
Universal evaluation board

- Soldering
- Uploading USB-firmware



Writing firmware for DAC

- Had to write firmware for setting up the DAC registers
- Uses ChipScope to monitor and set up the signals


ChipScope
SHOUT
TARGET4
internal_CURRENT_
SHIFT
363
Top Module
241
122
VIO_BUTTONS1
VIO_BUTTONS2
ChipScope Module
ChipScope
VIO 1
ChipScope
VIO 2
ChipScope
ILA
ChipScope
ICON core
36
icon_to_vio3
36
icon_to_vio
36
icon_to_vio2

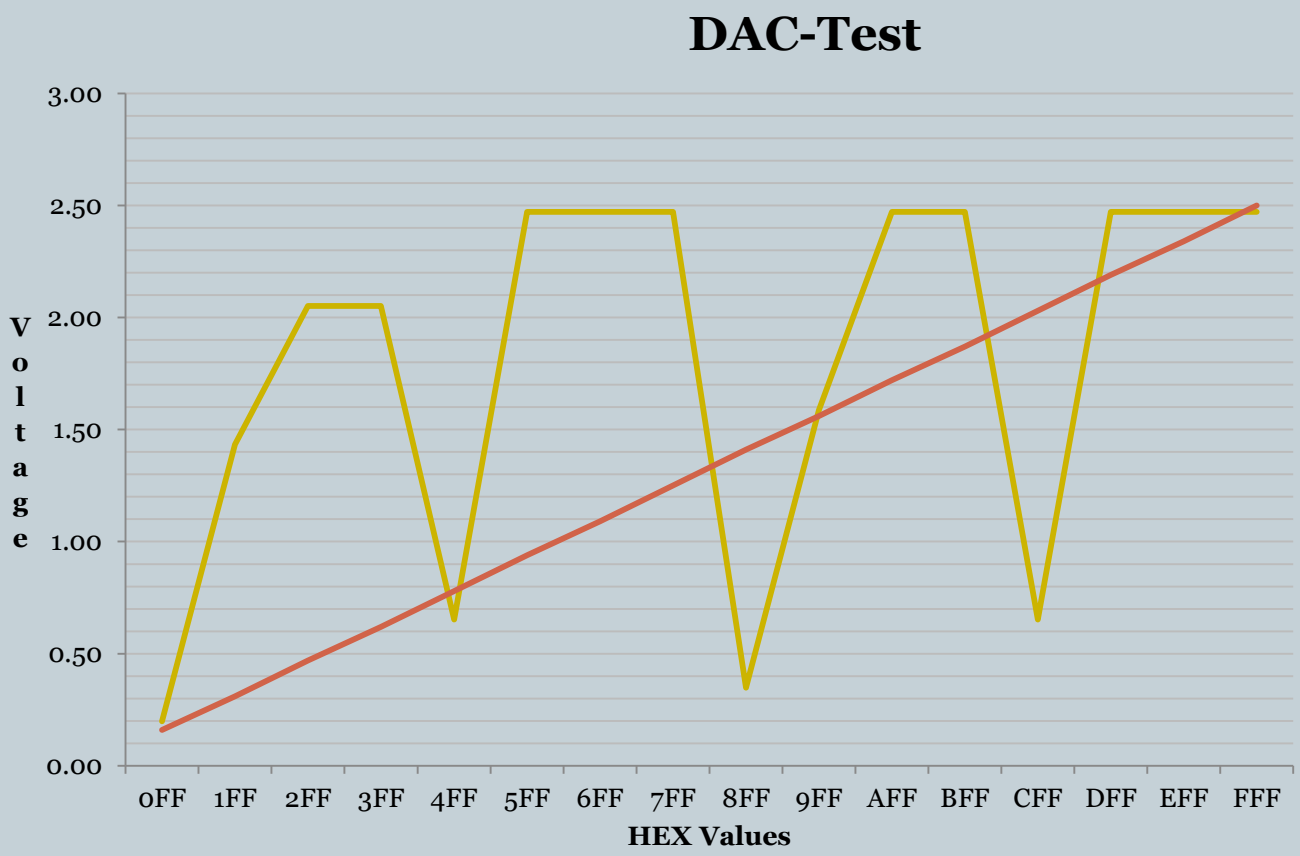
DAC testing

- Work in progress
- We are monitoring two registers that we can measure from daugher card

Results

5/2/2012						
Hex	Bin	Expected value (V)	Vdly (V)	Shout	Shout in voltage (V)	Vdly when SNG=0 (V)
0FF	0000 1111 1111	0.16	0.198	0000 1111 1111	0.16	0.204
1FF	0001 1111 1111	0.31	1.434	1000 1111 1111	1.41	0.204
2FF	0010 1111 1111	0.47	2.052	1100 1111 1111	2.03	0.813
3FF	0011 1111 1111	0.62	2.052	1100 1111 1111	2.03	0.813
4FF	0100 1111 1111	0.78	0.652	0011 1111 1111	0.62	0.652
5FF	0101 1111 1111	0.94	2.472	1111 1111 1111	2.5	1.269
6FF	0110 1111 1111	1.09	2.472	1111 1111 1111	2.5	1.269
7FF	0111 1111 1111	1.25	2.472	1111 1111 1111	2.5	1.269
8FF	1000 1111 1111	1.41	0.348	0001 1111 1111	0.31	0.348
9FF	1001 1111 1111	1.56	1.587	1001 1111 1111	1.56	0.348
AFF	1010 1111 1111	1.72	2.472	1111 1111 1111	2.5	1.269
BFF	1011 1111 1111	1.87	2.472	1111 1111 1111	2.5	1.269
CFF	1100 1111 1111	2.03	0.652	0011 1111 1111	0.62	0.652
DFF	1101 1111 1111	2.19	2.472	1111 1111 1111	2.5	1.269
EFF	1110 1111 1111	2.34	2.472	1111 1111 1111	2.5	1.269
FFF	1111 1111 1111	2.5	2.472	1111 1111 1111	2.5	1.269

Results



Full Voltage	Not Full Voltage
F = 1111	C = 1100
E = 1110	9 = 1001
D = 1101	8 = 1000
B = 1011	4 = 0100
A = 1010	3 = 0011
7 = 0111	2 = 0010
6 = 0110	1 = 0001
5 = 0101	0 = 0000