First Tests of the TI ADC12J2700 Evaluation Module

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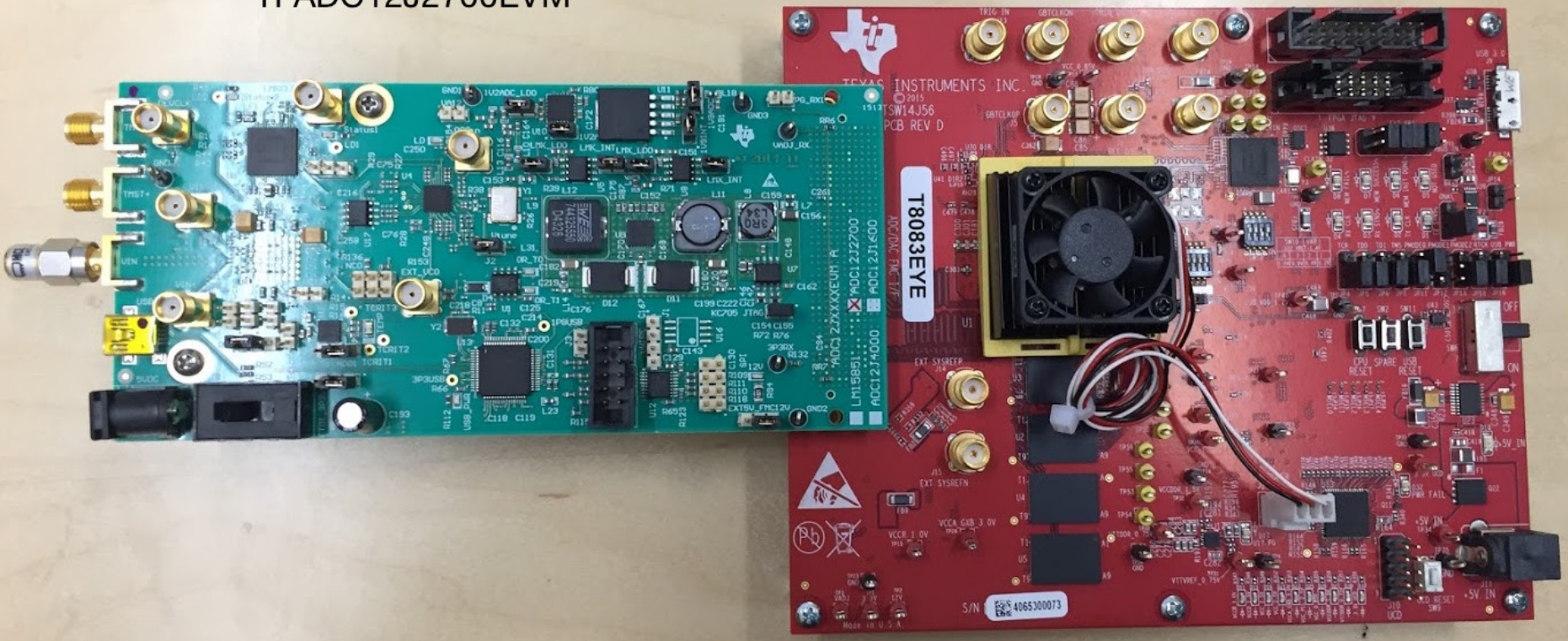
First steps

- Set up Evaluation Modules for TI ADC12J2700 ADC
- From the TI web site:
  - "The ADC12J2700EVM is an evaluation module (EVM) that allows for the evaluation of Texas Instruments' ADC12J2700. The ADC12J2700 is a low power, 12-bit, 2.7-GSPS RF-sampling analog to digital converter (ADC) with a buffered analog input, integrated Digital Down Converter with programmable NCO and Decimation settings (including un-decimated 12 bit ADC output) and features a JESD204B interface."
- EVM software is Windows, I set it up on a Windows 7 machine with USB 2
  - http://www.ti.com/tool/tsw14j56evm
  - http://www.ti.com/tool/adc12j2700evm
- Two separate USB devices, one for configuring the ADC, one for configuring the data capture card

TI TSW14J56EVM

TI ADC12J2700EVM



ADC12J2700 EVM

ADC12J2700EVM GUI A

File Debug Settings Help

ADC12J2700 GUI A

EVM | Control | JESD204B / DDC | NCO Configuration | Low Level View | USB Status | Reconnect FTDI ?

1. User Inputs

#1. Clock Source
On-board

#2a. On-board Fs Selection
Fs = 2700 Msps

#2b. External Fs Selection
1000 MHz

#3. Decimation and Serial Data Mode
Bypass Mode; DDR

Program Clocks and ADC

2. Temp Sensor:

ADC Temp
56 degrees C

LM95233 Local Temp
41 degrees C

Update Temperatures

START HERE!

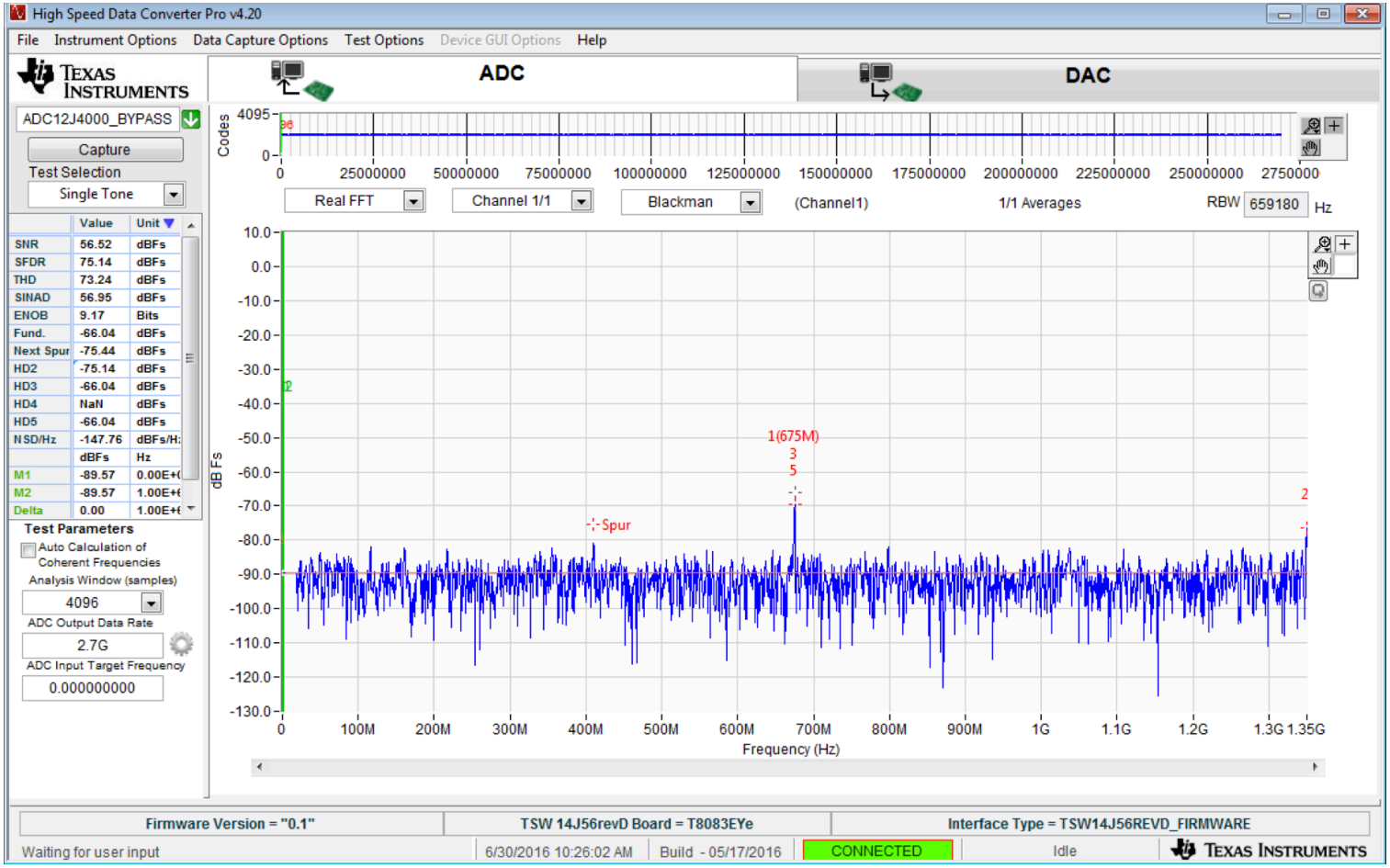
This tab is used to control the EVM to program the clocks, basic mode of the ADC, and read the temperature. Once the EVM is programmed, the other tabs allow the user to configure the ADC.

1. User Inputs - How to program the EVM clocks and ADC:
#1. Clock Source - the DEVCLK to the ADC may be supplied by the on-board PLL/VCO or externally by the user. If the on-board clock is selected, choose the Fs at #2a. If the external clock is selected, enter the Fs at #2b.
#2a. On-board Fs Selection - The PLL/VCO will be programmed to provide any of the available sampling clock frequencies to the DEVCLK, as well as provide the clock for distribution via the LMK04828 for the JESD204B clocks.
#2b. External Fs Selection - The user must enter the external Fs supplied (in MHz). The PLL/VCO will be powered down; see the Users Guide for details regarding external clocks required.
#3. Decimation and Serial Data Mode - Choose the decimation mode and serial data mode for the ADC.
#4. Program Clocks and ADC - once all modes have been selected, press this button to write selections to the PLL/VCO, LMK04828, and ADC.

2. Temp Sensor - the temperature for the device and ambient (board) may be read.

Read Register: LM95233.Local Temp MS | 1/12/2011 11:44:30 AM | Build: | CONNECTED | Idle | Texas Instruments

Data capture EVM



What's the data look like?

```
[~/doc/Physics/TIADC]$ od -t x2 100ms.bin | more
0000000    07fd    07f6    07f8    07f6    07fc    07f9    07fc    07fe
0000020    07f7    07f7    07fd    07fa    07fd    07fb    07fa    07fb
0000040    07fc    07f9    07fb    07f7    07fd    07fd    07f8    07f9
0000060    07fe    07fb    07f8    07fb    07fa    07f8    07fa    07f9
0000100    07f8    07fd    07fe    07fe    07fa    07fa    07fc    07fb
0000120    07f9    07f7    07f9    07f7    07fc    07fd    07fb    07fe
0000140    07fc    07fa    07f9    07fb    07fb    07f9    07fa    07f6
0000160    07fc    07fa    07f8    07fa    07fd    07fa    07fc    07f7
0000200    07fa    07f9    07fb    07f8    07f8    07fb    07f9    07fb
0000220    07fb    07fa    07fb    07ff    07fa    07fa    07fa    07f8
0000240    07f7    07fa    07fa    07f9    07fc    07fa    07f8    07f8
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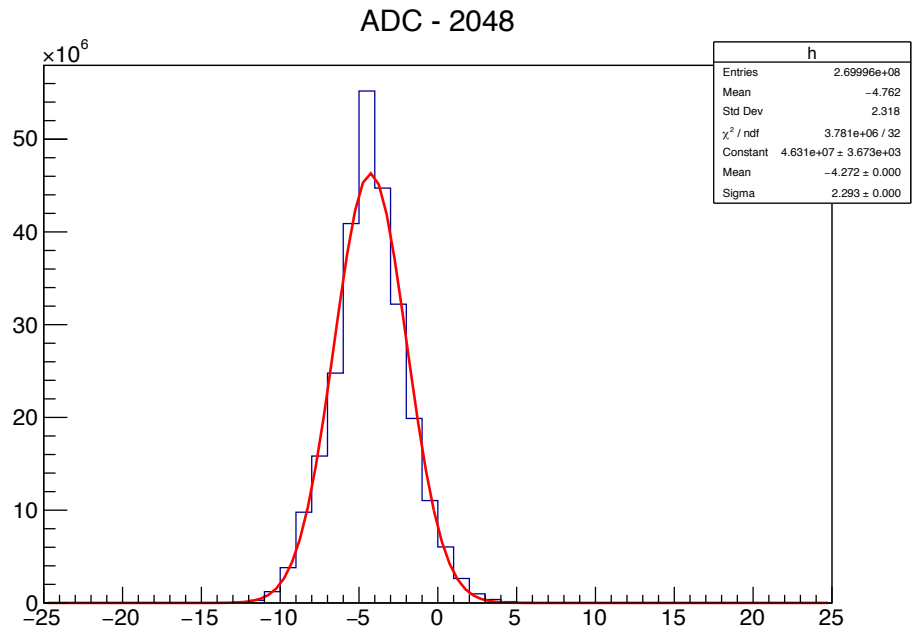

https://drive.google.com/folderview?id=0B0S-7Wbfr7kFWG1PTXJ6SHJ4eDA&usp=sharing

Concerns and things to do

- We need to look at some signals with this ADC to make sure we have straight the sample ordering and see that there are no oddities caused by the interleaving
- It's pretty slow to get data out of this, although I haven't done anything other than push the buttons on the GUI yet (100 ms of data = 270M samples = 540 Mbyte takes 2x43 s to read out)
- It's Windows….