

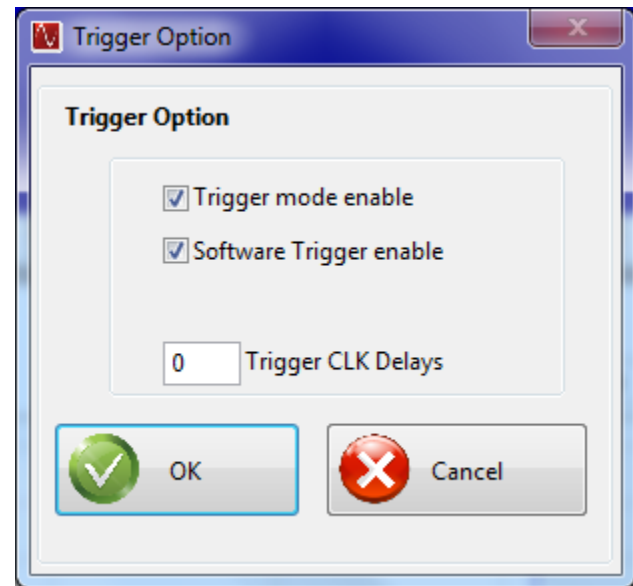
Trigger on TSW1400  
DAC and ADC  
HSDC Pro 4.10 +

# DAC Trigger functionality

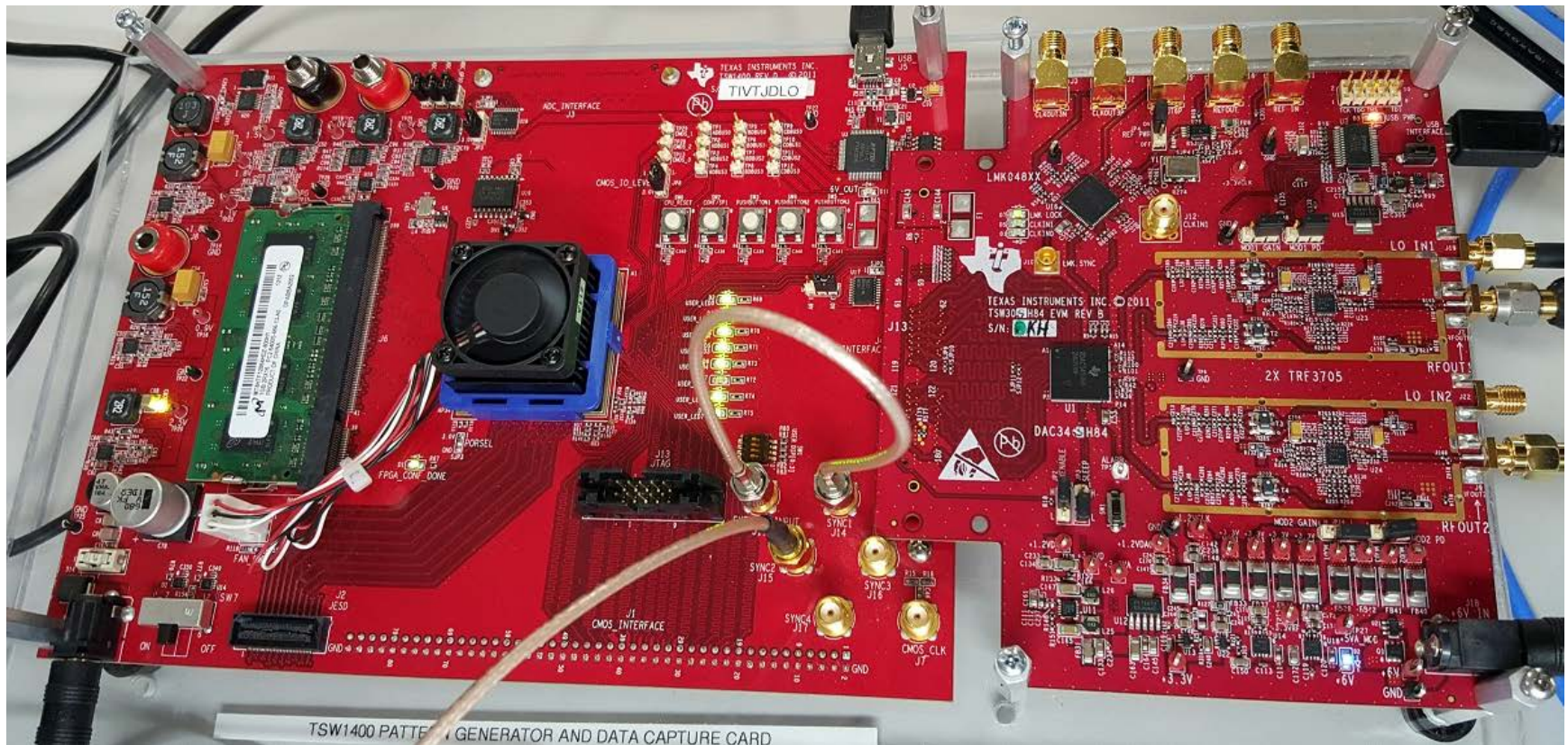
- The DAC functionality for Triggering allows an external trigger on the J11 External Trig Input SMA. This rising edge will cause the pattern to start looping.
- If only a single burst is desired, then 0s may be added to the pattern and the preamble setting may be used to cause the pattern to play the preamble (main signal) and loop on the 0 pattern at the end. Ensure that the complete pattern meets the length requirements for the TSW1400 memory

# DAC Trigger GUI settings

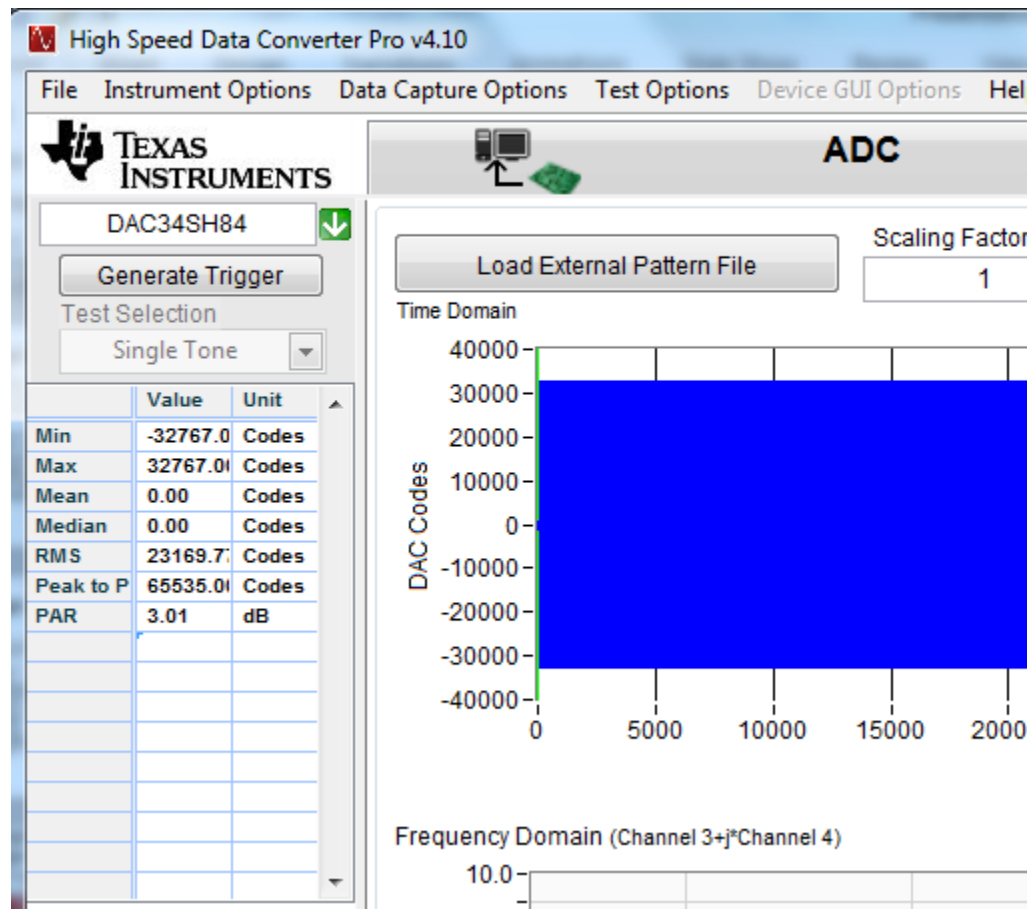
- The Trigger Options
  - Trigger Mode enable will wait for external Trigger pulse on J11 SMA input
  - Software Trigger enable will allow the normal SEND button to generate a software trigger to come out on SYNC1 J14 and SYNC2 J15. One of these needs to go to the J11 Trigger input to start/trigger the pattern playback. The other can be used to trigger another TSW1400+DAC board or TSW1400+ADC board in trigger mode



DAC Trigger Connections  
Sync1 to Trigger in start DAC loop  
Sync2 to drive external Trigger  
Sync4 pulses each time the pattern is looped



Clicking Generate Trigger will pulse the SYNC1 and SYNC2. This will cause the TSW1400 to start playing the DAC pattern. If a burst is needed, use the Preamble setting. Another click will cause it to reset and loop again.

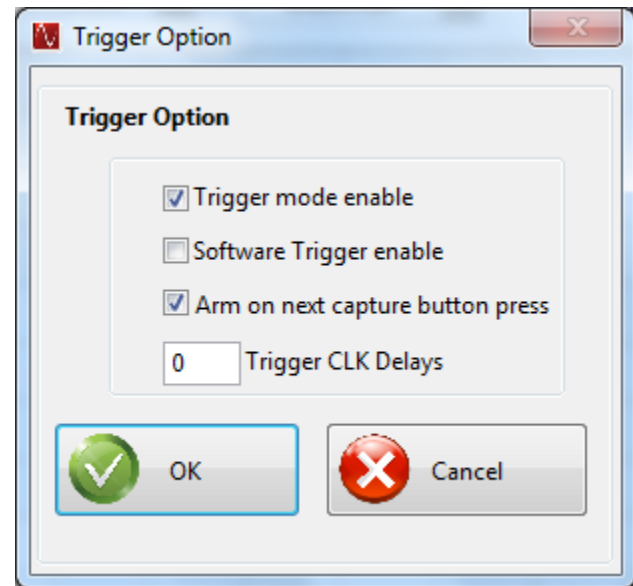


# ADC Trigger function summary

- The ADC Trigger allows external trigger on J11 Trigger in to start the capture of data from the ADC.
- An external rising pulse may be used or the pulse may be generated in the FPGA and sourced out on the 4 SYNC outputs.
- In this situation the trigger pulse is coming from another TSW1400.
- The Capture trigger has 2 modes that are slightly different.
  - 1 mode requires the user to click Capture to Arm the trigger system to wait for a trigger. If a trigger does not occur in about 20s it will time out.
  - A 2<sup>nd</sup> mode will self arm after every trigger pulse and it will wait indefinitely for a pulse to occur to update the capture buffer. The analysis is not done until the buffer is read into HSDC Pro by clicking the READ DDR memory button.

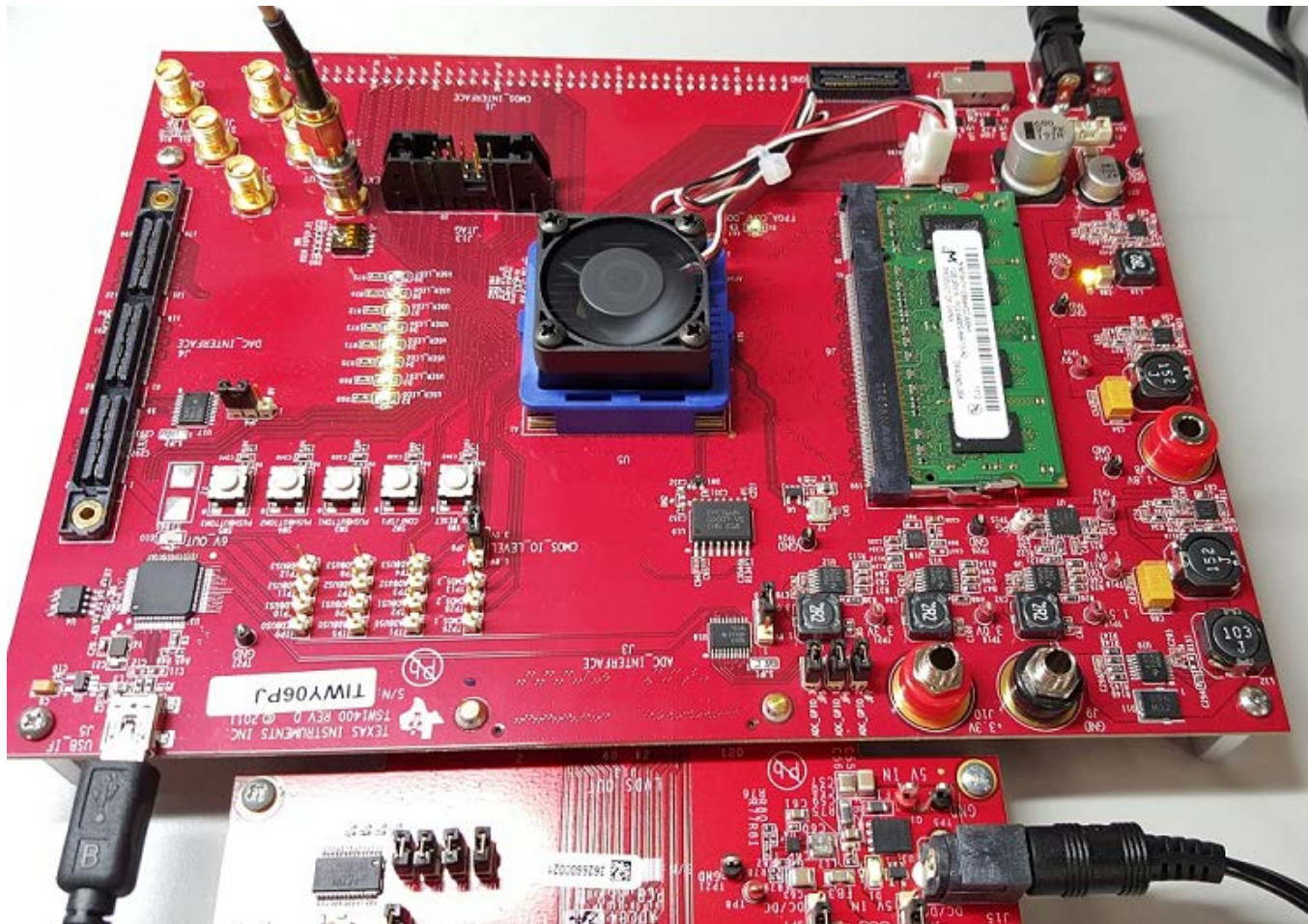
# ADC Trigger Options

- **Trigger Mode enable**
  - Wait for trigger pulse on Trigger Input J11. This must be enabled for the external trigger function
- **Software Trigger Enable**
  - The Capture button can be clicked to generate a pulse to drive the Trigger input. The pulse will come out of all 4 SYNC SMA. This should be disabled if external trigger is used.
- **Arm on Next Capture Button press**
  - In enabled you must press capture to arm the trigger, it will now wait for an external pulse
  - If disabled, it will capture on a trigger, then self arm and wait for another trigger. The data can be displayed by clicking on the READ DDR button (same as the Capture button)



## Trigger Connections for ADC

External trigger from other TSW1400 is connected to the Trigger In J11 SMA  
It will now wait for a trigger to occur. Depending on the settings for the Trigger you may have to click capture or read DDR.

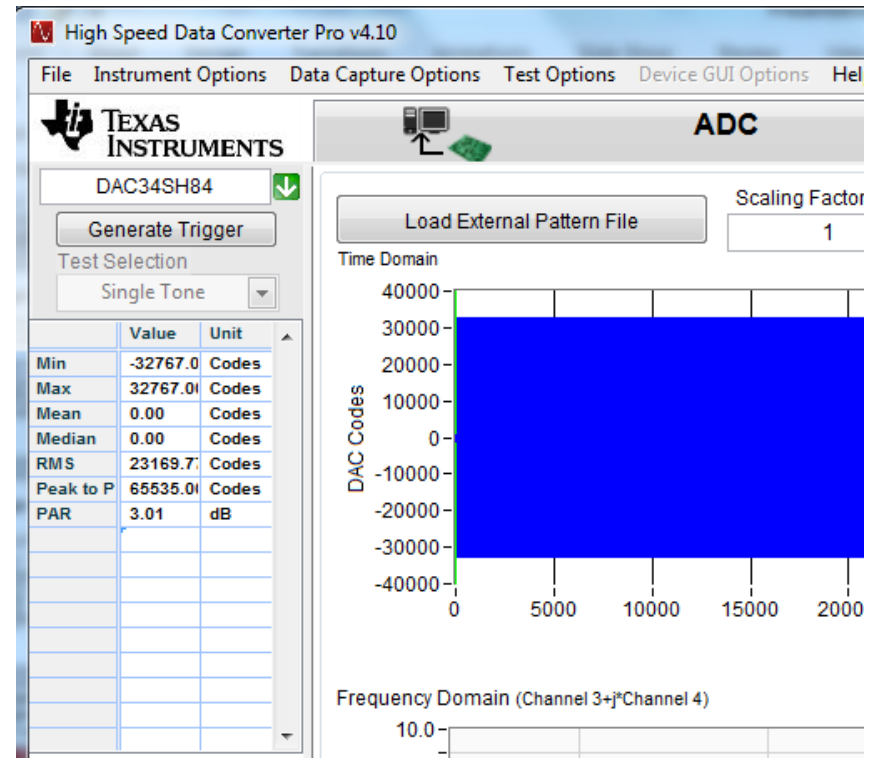
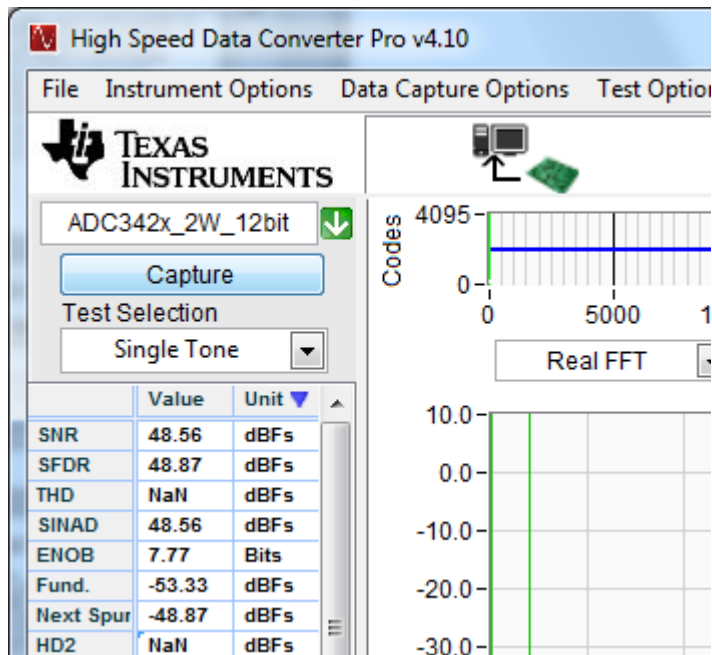




# HSDC Pro GUI

## Arm on Capture – Enabled

Capture must be pressed on the HSDC Pro on the ADC setup. It will now wait for the Trigger to occur from the DAC setup and update the plot on each capture.



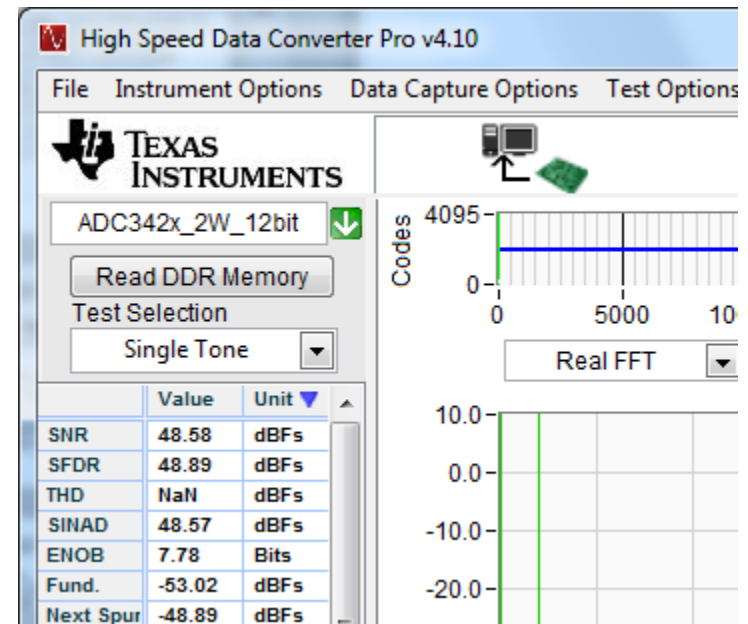
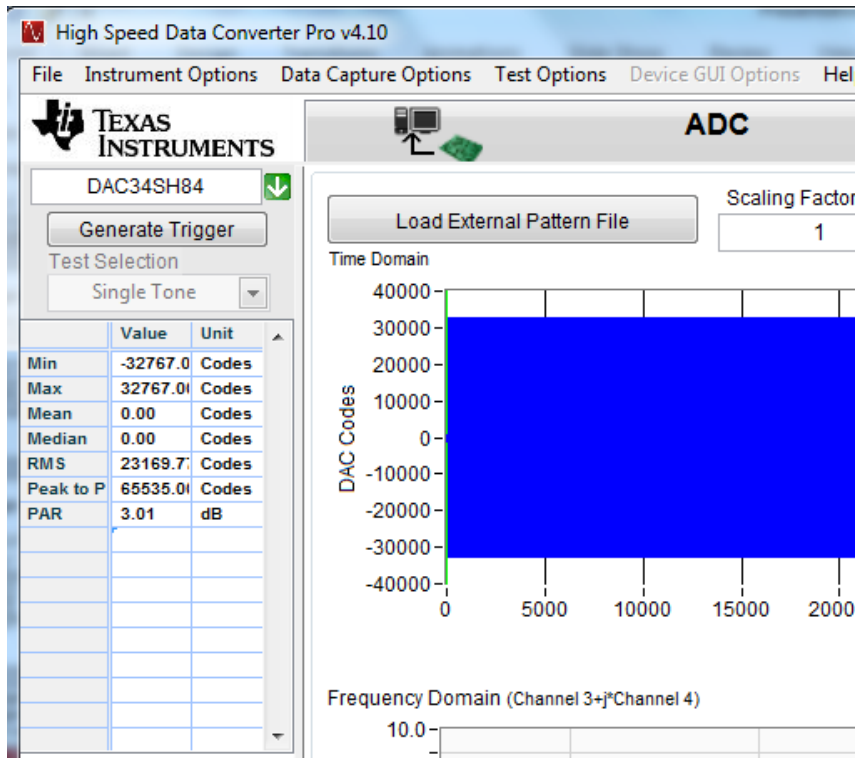
Click Capture on ADC setup – it will wait for trigger Then click Generate Trigger on DAC setup. The DAC TSW1400 will generate a trigger pulse to start itself, and also cause the ADC TSW to capture and display the data. Repeat for another ADC capture when ready.

# HSDC Pro GUI

## Arm on Capture – Disabled (Self Arming after capture)

This mode self arms and will trigger as soon as the DAC trigger occurs. This will keep capturing data in the back ground each time a trigger pulse occurs.

To look at the data you must click Read DDR



Click Generate Trigger on the DAC TSW1400 setup. This will create a pulse to self trigger the DAC TSW1400 and also send a pulse to the self armed ADC TSW1400 setup to trigger a capture. It will re-arm after a capture is done and catch the next trigger pulse. It will continue to capture and update the memory for every pulse. To analyze the data you must click READ DDR memory.