ADC Sweep

This page contains instructions on how to view the ADC Sweep data with the DDC Raw Viewer.

The ADC sweep is performed by capturing multiple DDC raw captures while stepping the ADC sample point, which is a combination of the ADC mux delay (fine steps) and ADC Clock offset (coarse steps). One or more DDC Raw Captures may be collected at each step, depending on how the ITOS proc is configured. The collection of all steps is an "ADC Sweep".

Setup

1. Open the DDC Raw Viewer (bring to front an existing one or open a new one)
2. Set the `CCD ID`
3. Start ADC Sweep ITOS procedure
4. The viewer will update when a complete DDC raw capture is received. A single raw capture may look


   something like:

> The colored regions indicate the different parts of a "line". Each raw capture contains ~11 lines of data (dependent on various OCI settings). The "INFO" annotation indicates the start of a raw capture.

Sweep Finished

When the ADC Sweep is finished, you may see something like below. (The actual shape may vary depending on the environment and other variables)
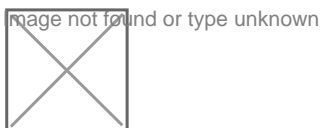
Scroll down to view the charts titled **ADC Tap** and **CDS SD Tap**. These are the main charts we will be using to analyze the ADC Sweep data.

The **ADC Tap** chart displays the ADC Counts vs. ADC Sample Point, where ADC Sample Point (x-axis) is defined as:

    ADC Sample Point = (ADC Clock Offset * 48) + Mux Delay

The `ADC Clock Offset` is also known as the coarse setting, `Mux Delay` as the fine setting.

The **CDS SD Tap** chart displays the standard deviation of the calculated CDS for the image pixels (green region) of the 11 lines per capture.

> If no data is visible, you may need to rescale the chart. You can do this 1 of 3 ways: double click on the chart, right click and select "Reset zoom", or click on the number at the top right corner of the chart.

Below are a few other notes:

- There is one **ADC Tap** and **CDS SD Tap** chart per tap.
- You may uncheck the `Per Tap Vid/Res` setting to hide the leftmost chart
- The `Sync Axes` setting will keep all of the chart axis ranges in sync. If you wish to control each chart separately, set this to `None`.
- If you wish to auto scale the y-axes, check `y auto`. This will immediately rescale the y-axes, and to any new data that arrives. A common trick is to check and then uncheck to immediately rescale all of the y-axes. Note that even with `y auto` checked, the `Sync Axes` setting is still enforced which may cause unexpected behavior.

At the end of the ADC Sweep, you may see something like this:

Image not found or type unknown
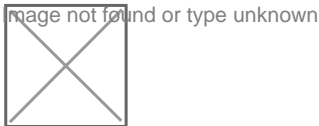
The **ADC Tap** charts are used to determine the ADC sample point settings we want to use. How this decision is made is outside the scope of these instructions.

> You may see a jump/discontinuity in the chart when going to the next coarse setting. This occurs because the actual timing delay is not continuous, but we treat and display the ADC sample point as continuous. In the below chart, you can see discontinuities at x=48 and x=96, which is where the coarse setting is incremented. This should be kept in mind when determining what sample point to use.

Image not found or type unknown
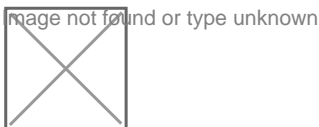
Exporting

- To export all of the **ADC Tap** charts as a single image, click the **Export ADC Charts** button.
- To export all of the **CDS SD Tap** charts as a single image, click the **Export CDS SD Charts** button.
- Each raw capture is automatically exported to disk. You can the export path in the status bar at the bottom of the window. Each raw capture is written to a single file. A corresponding hk file is exported containing relevant telemetry data for the raw capture. Unfortunately, we do not automatically group all of the raw captures for a complete ADC Sweep. You can determine this manually by using the timestamp in the filename. Zip up all relevant files for the ADC Sweep if further analysis is required.