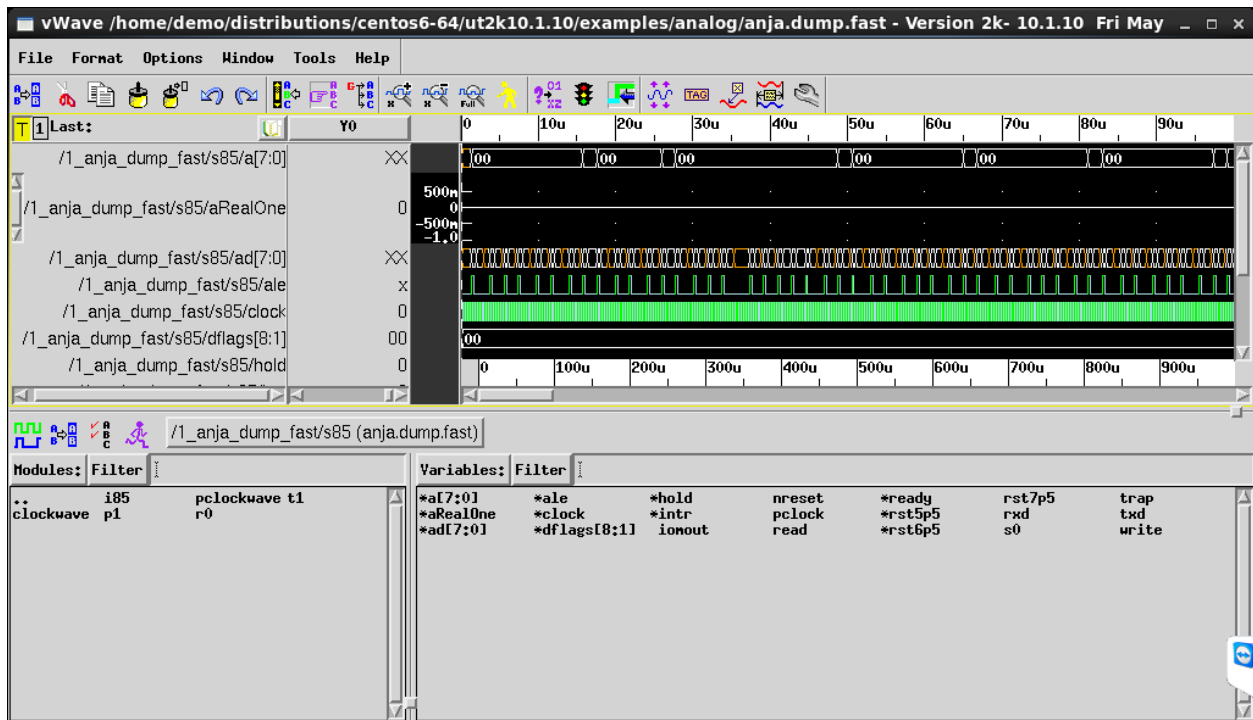


## VERITool's TUTORIAL FOR VWAVE

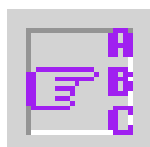
### VWAVE



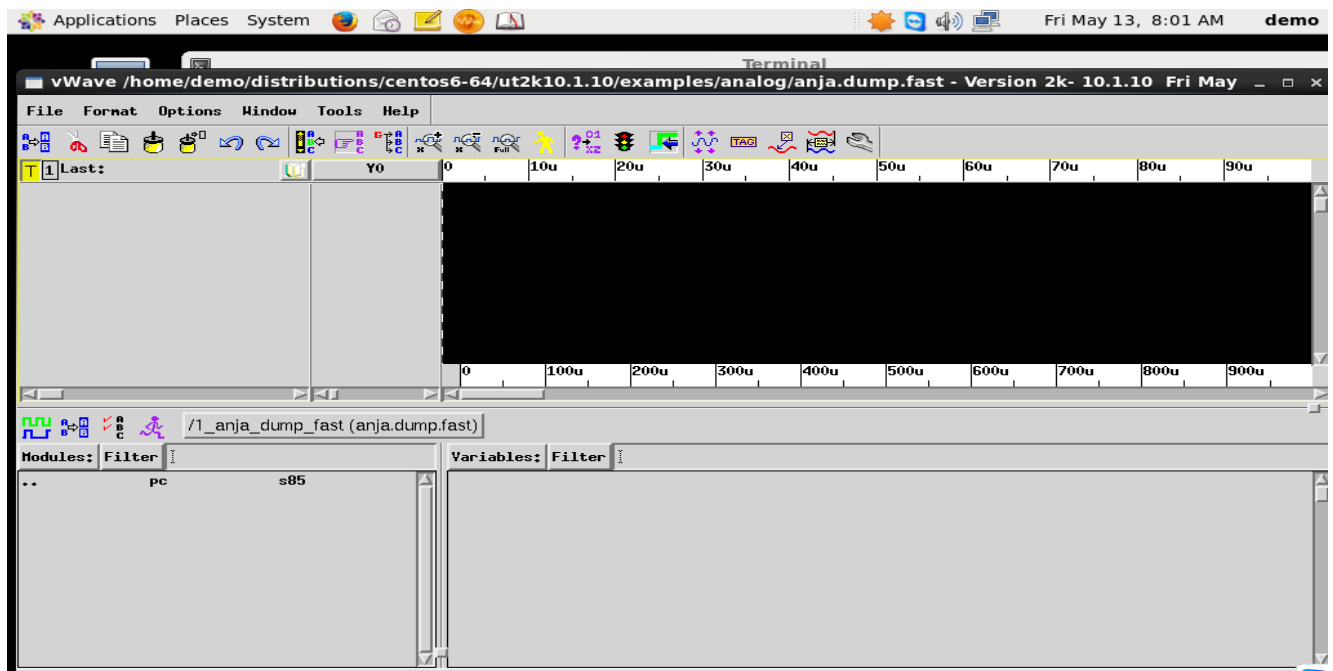
This graphical tutorial will introduce the user to the Veritools' vWave waveform viewer.

To start this tutorial load the `anja.dump.fast` into the vWave using:

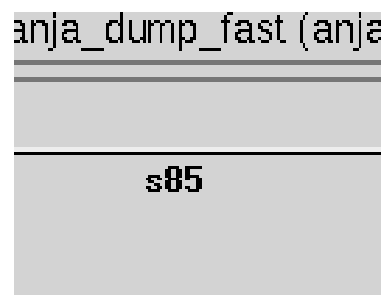
File -> Open File. Then, select **anja.dump.fast** from the list of files, then press the **Open** button. This file is in the software distribution directory: **<distribution>/examples/analog**. Then press the Choose icon in the icon bar, the icon shown below:



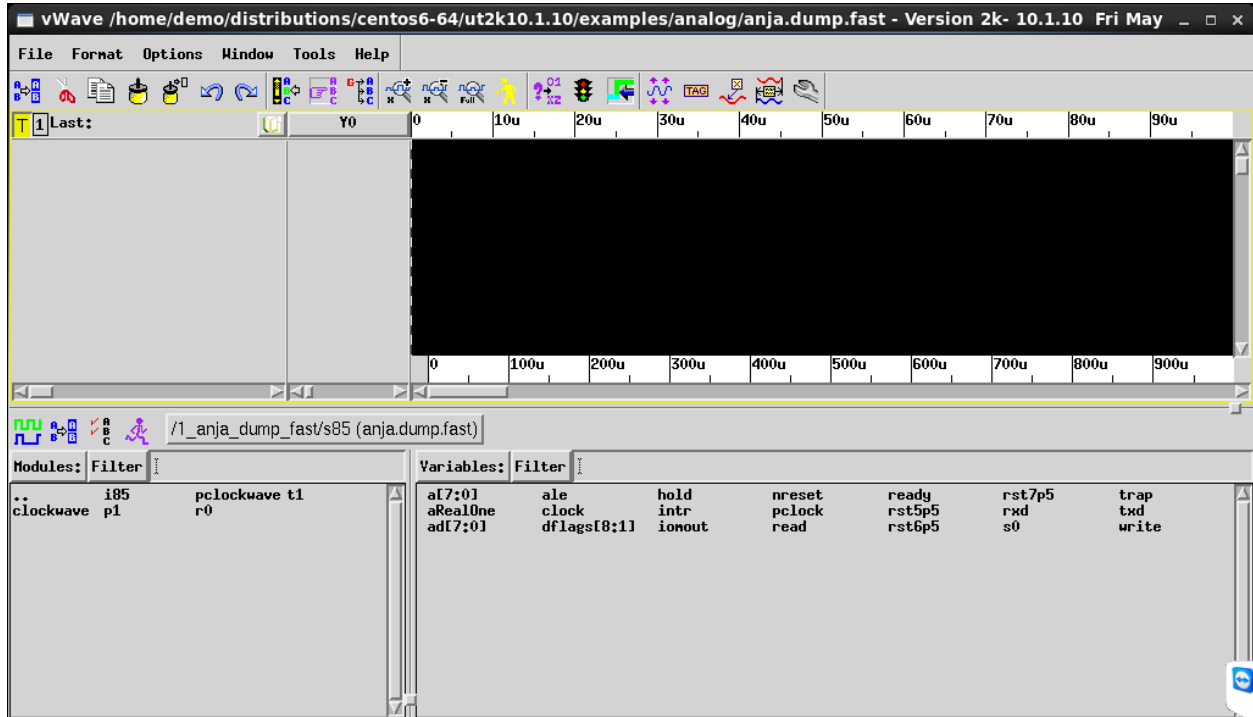
After you press the Choose icon, the vWave Graphical User Interface (GUI) will display as below:



The left bottom window shows the design modules at this level, the right bottom window lists the signals at this level. Next select a module name from the module window:

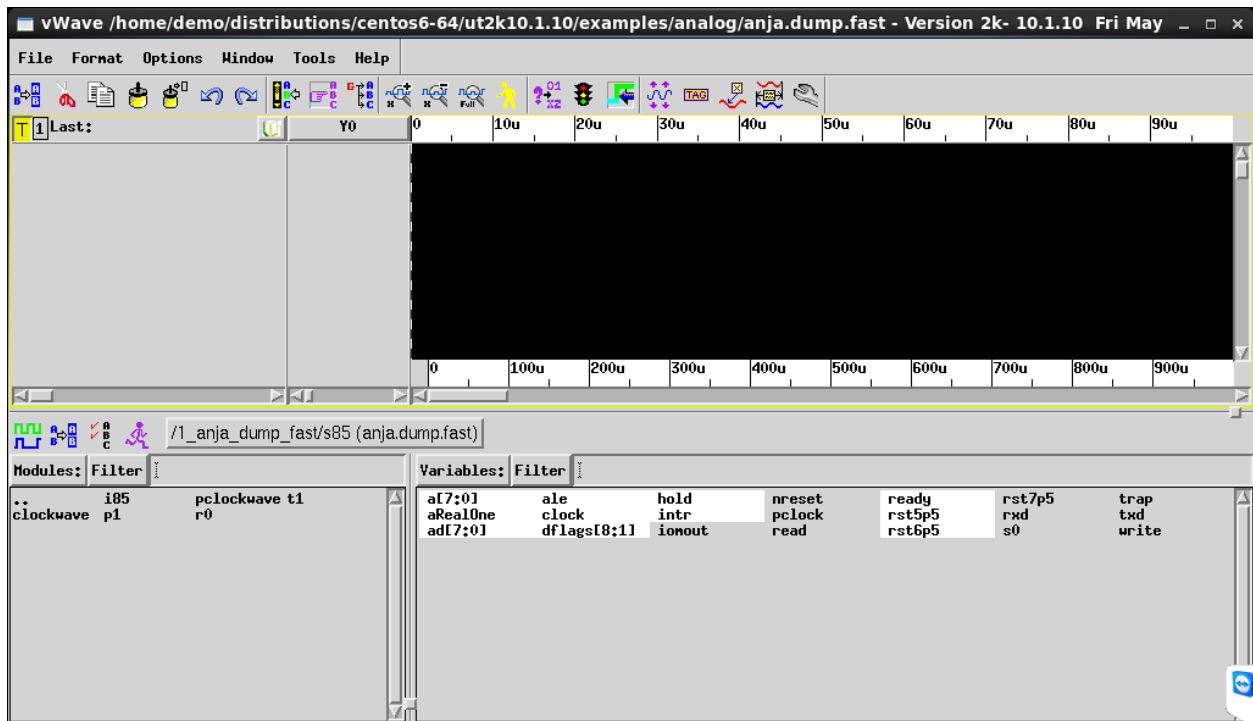


In this case we select **s85** using the left mouse button. The resultant window is below:

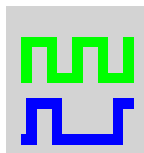


The design signals at this level are shown in the right lower window above.

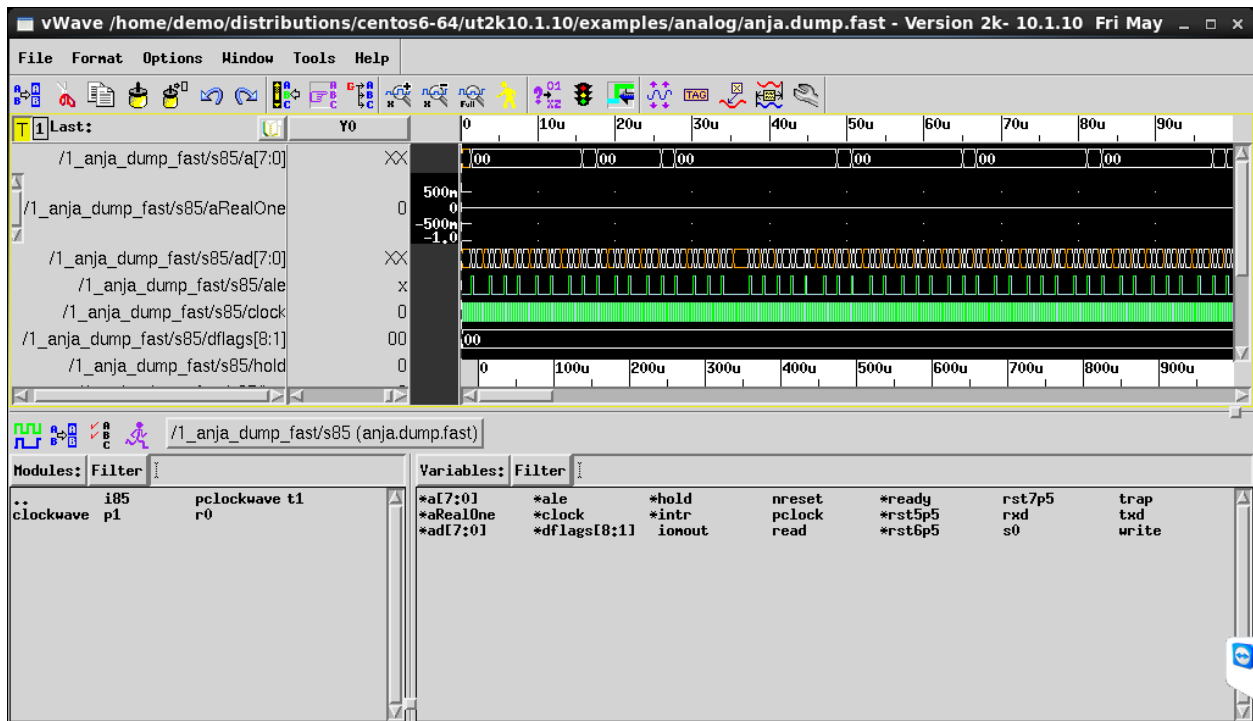
Next, select the signals you want to display in the waveform window.



Next press the Display Icon, this is the icon on the left as shown below:

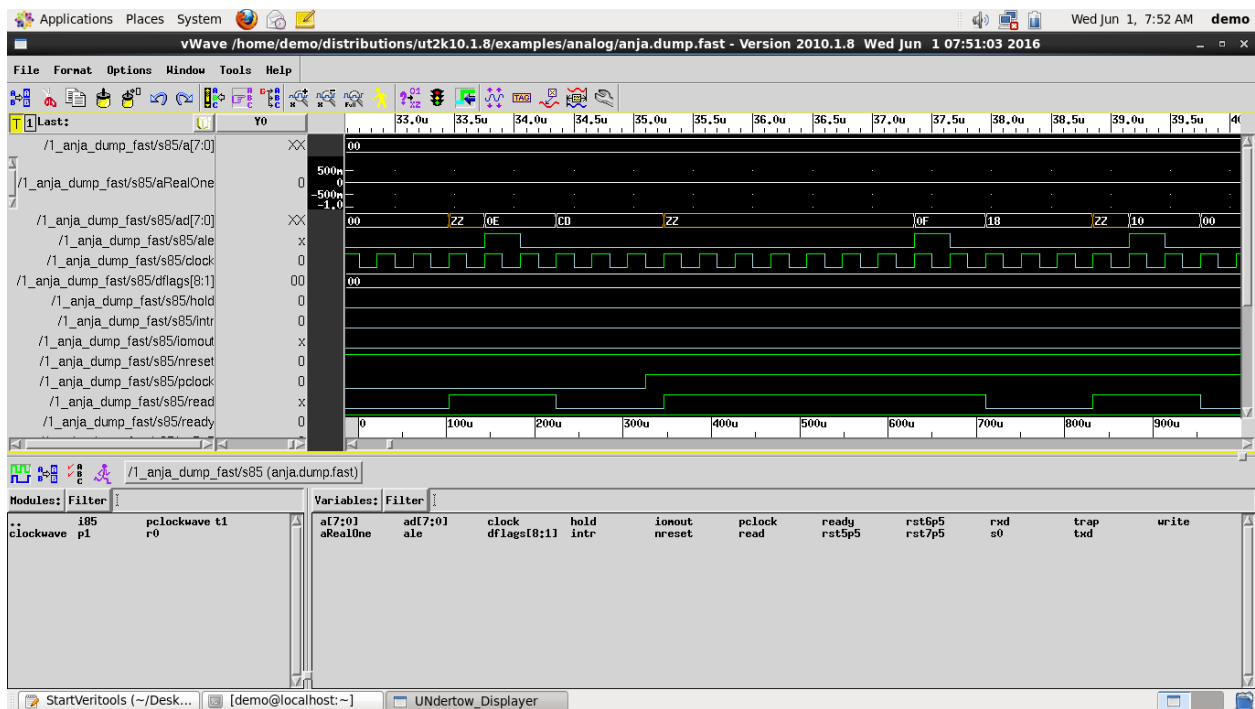


This will place the waveforms on the display window as shown below:

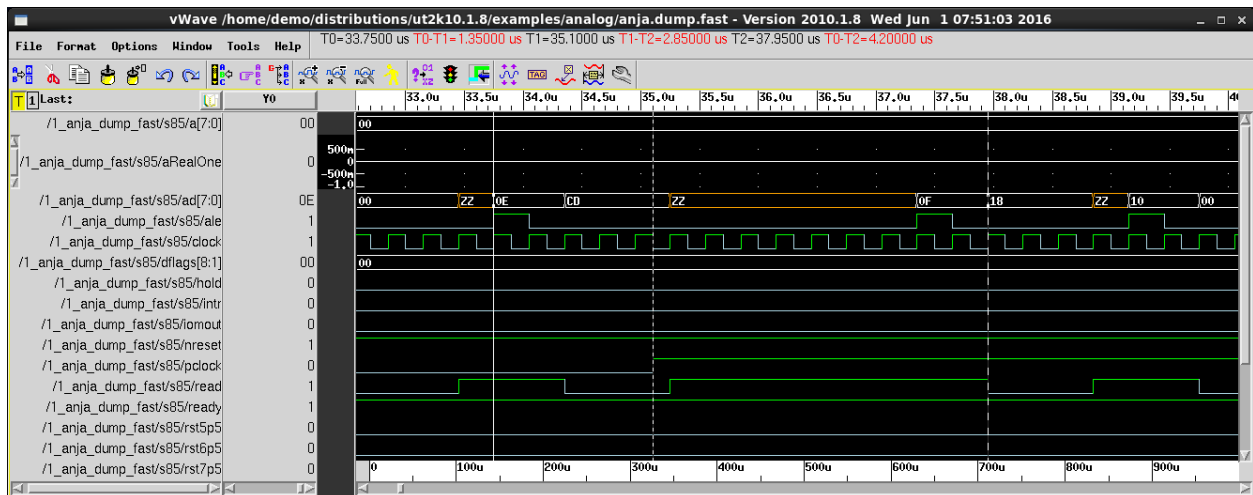


The above screen shows waveforms (top right), signal names (top left) and values of the signals at the T0 cursor (the top area between the signal names and the waveform window). In the bottom portion, the module hierarchy window displays module names on the left, and signals for the selected module bottom right.

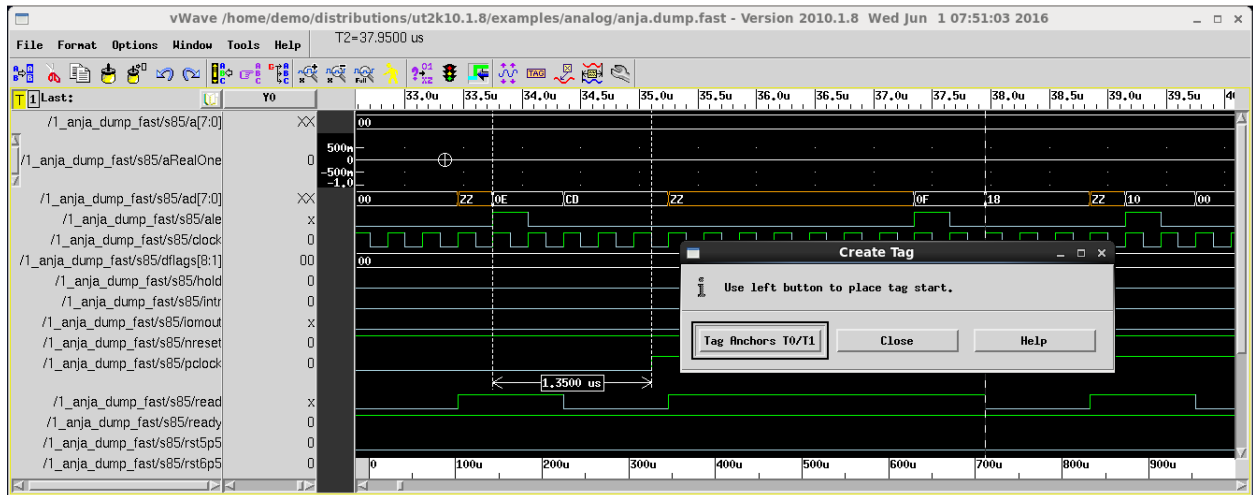
The selected module, **s85** is displayed in the file selector box above the module hierarchy window: /1\_anja\_dump\_fast/s85 (anja.dump.fast)




To zoom into any area in the waveform display, press the right mouse button down and slide over the area you want to view. Or, zoom by clicking the left button in the bottom time scale to define the left edge, left click again to define the right edge, and right click to zoom between the two points.

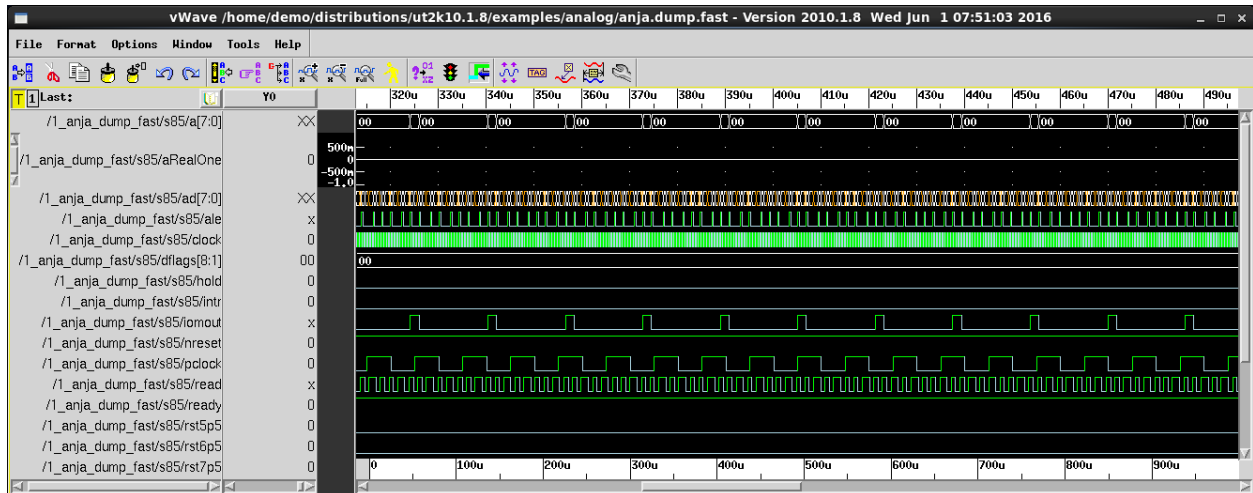


To place time cursors, click with the left mouse button close to a signal edge, to define the location of the T0 cursor. Click with the middle mouse to define the location of T1 cursor and use <shift-middle-mouse> to define the location of the T2 cursor. Note, the time values of each cursor and the deltas are shown at the top of the waveform display window (same level as the Menu items), as above.



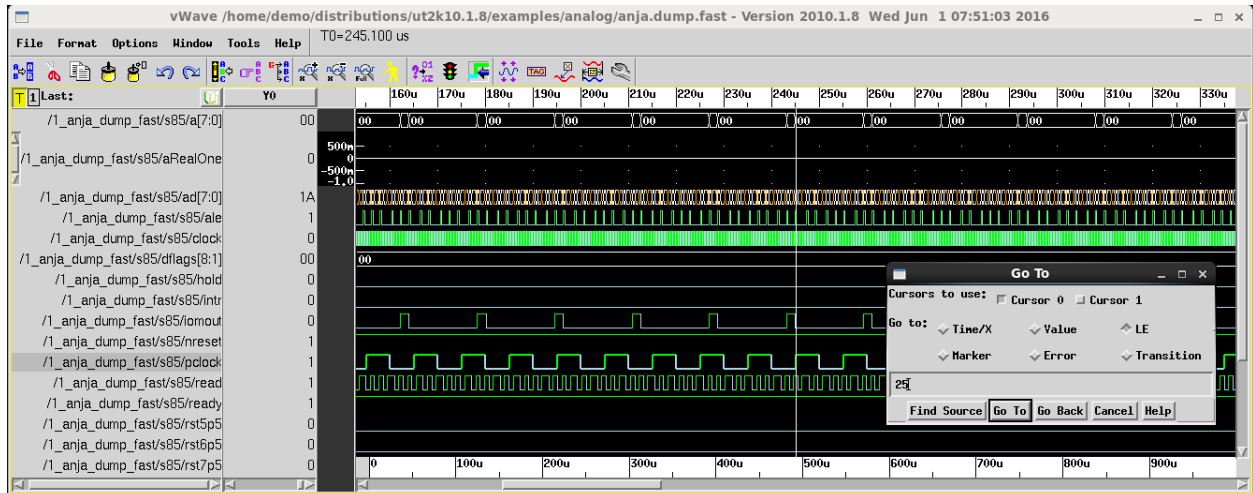
To add a measure tag between the T0 and T1 cursors, press the Measure Tag icon:  (Second icon from the right.) Pressing the icon brings up the Create Tag dialog box as shown. If you click the **<Tag Anchors T0/T1>** button, this will display the measure tag between the T0 and T1 cursors. Or, instead of pressing the **<Tag Anchors T0/T1>** button, the user can press the left mouse on any signal edge, and the middle mouse on any additional edge, to define a measure tag between these two points. And then simply close the Create Tag dialog box.



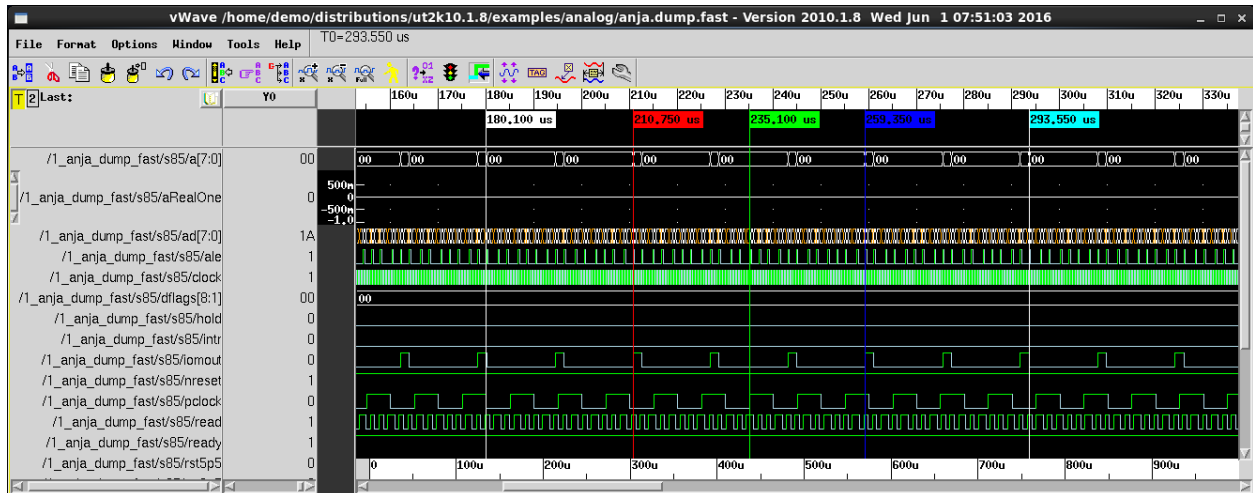


Users can shrink or expand the scroll bar by setting the left mouse in the lower time scale, and then setting the left mouse again at another point in the time scale, then pressing the right mouse to display the waveforms between these two points.

Also, the scroll bar may be dragged with the middle mouse button.

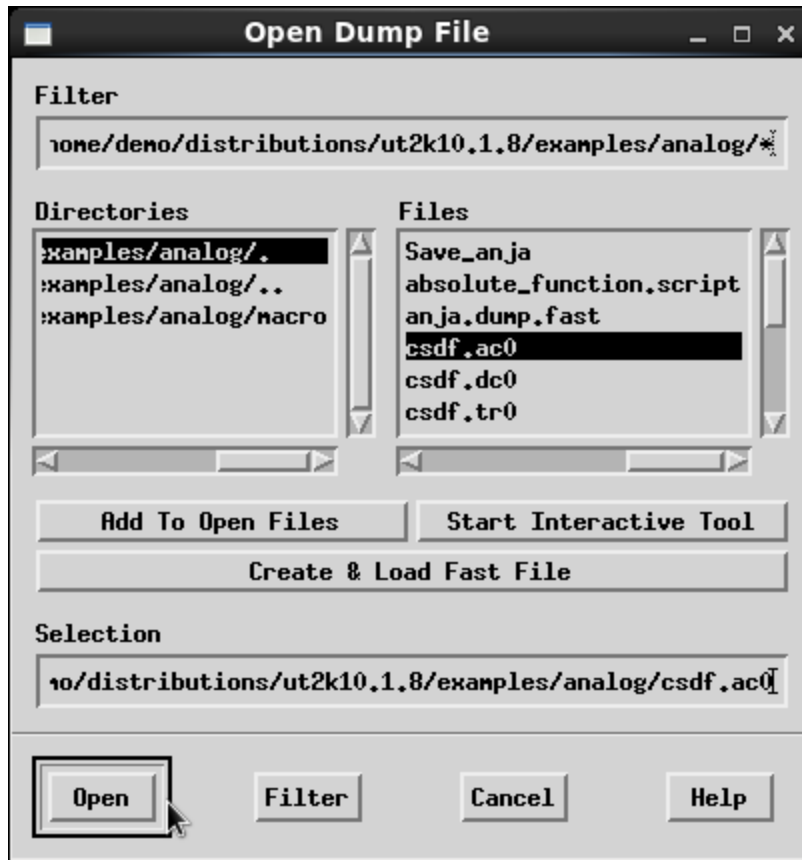


Users can select the GoTo icon (Traffic Light symbol) to bring up the Go To dialog box. Users can select a signal (gray background as shown) and Go To any of the parameters available, such as Leading Edge (LE). In the above display, the LE (Leading Edge) was selected, 25 was entered into the text area, and a clock signal was selected. After the Go To button is pressed, the T0 cursor is moved out 25 clocks on this clock signal, and will display in the center of the waveform display.



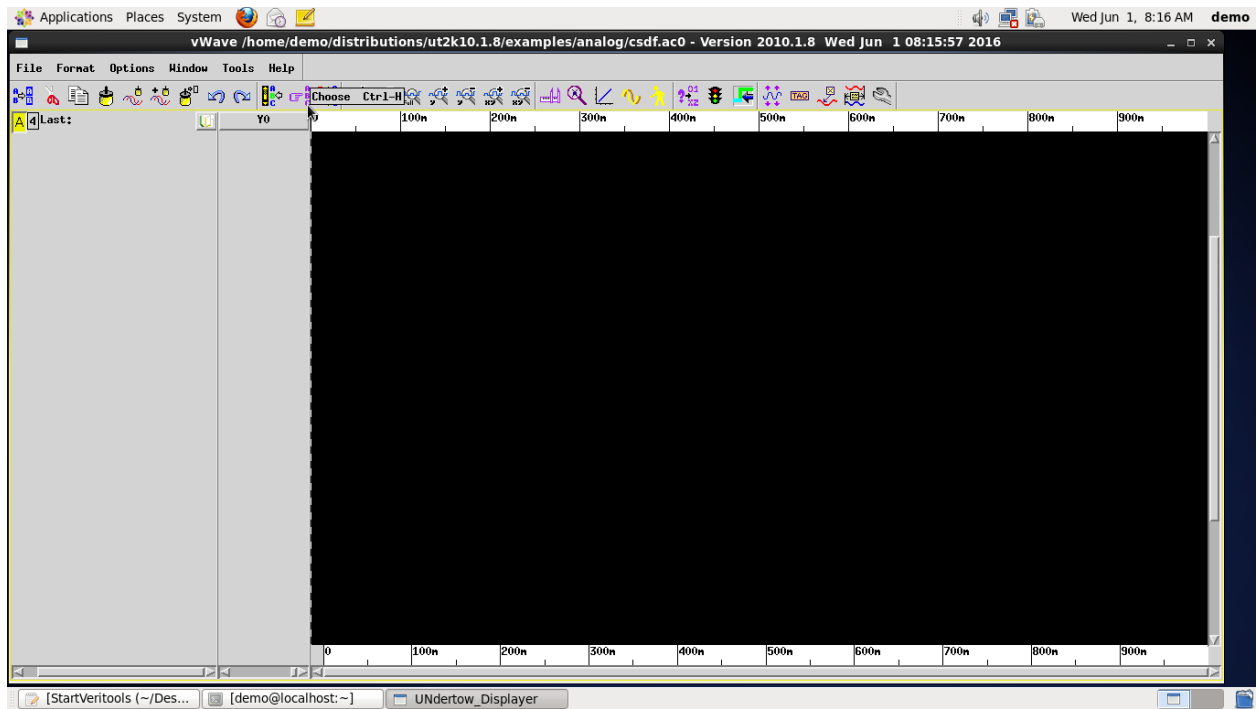
To add in any number of cursors on the waveform display, select Waveform Actions (Yellow Man icon), and choose **Add Cursors**.

Users can add as many cursors as they wish, each with a flag defining its time point.

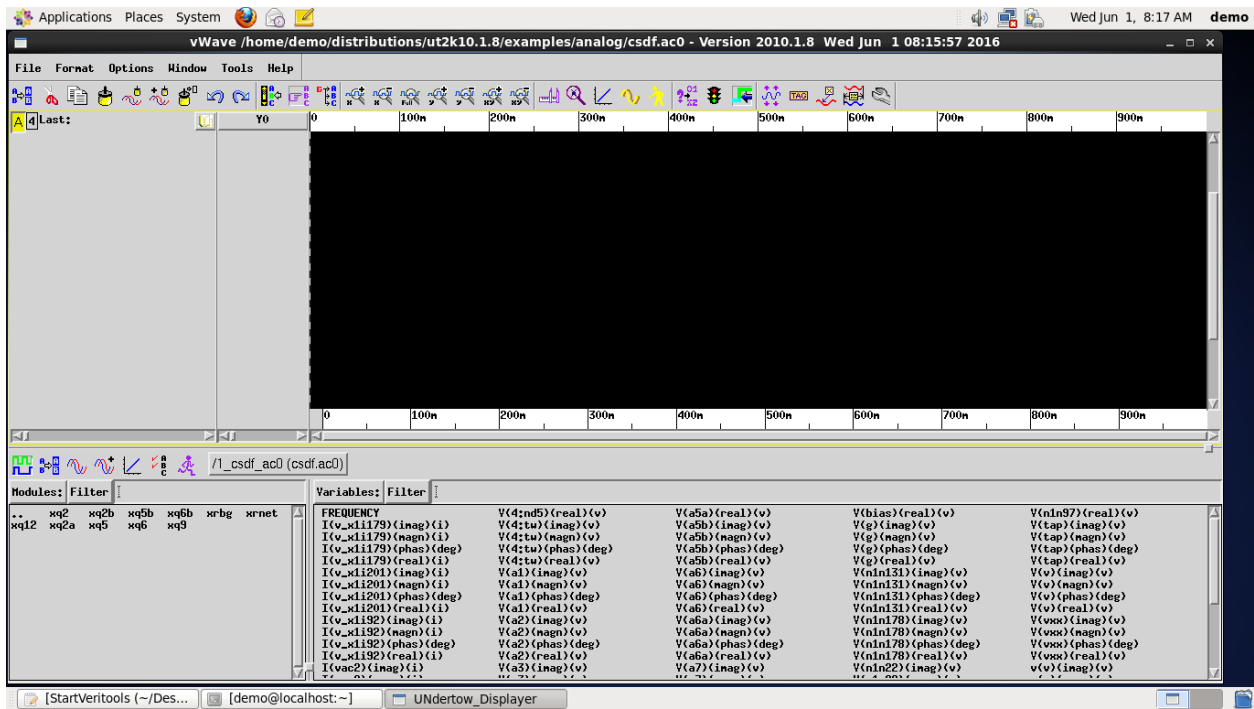


The user can leave the vWave GUI open, and bring in either a new file or add an additional file. Pressing **Open** closes the current file, and brings in a new file. Pressing **Add to Open Files** brings in an additional file, allowing the user to bring in multiple files.

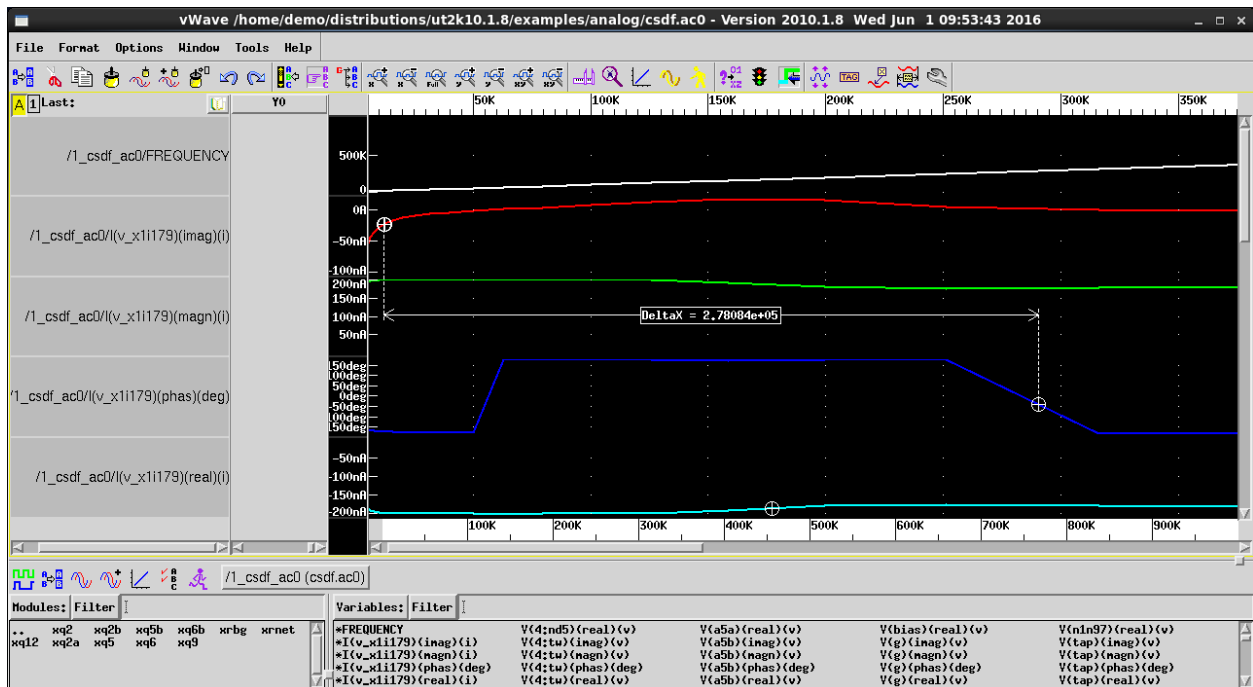
Users can bring in analog, digital or mixed-signal files. In this case, we are bringing in an analog “.ac0” file. Select the file, and click **Open**.



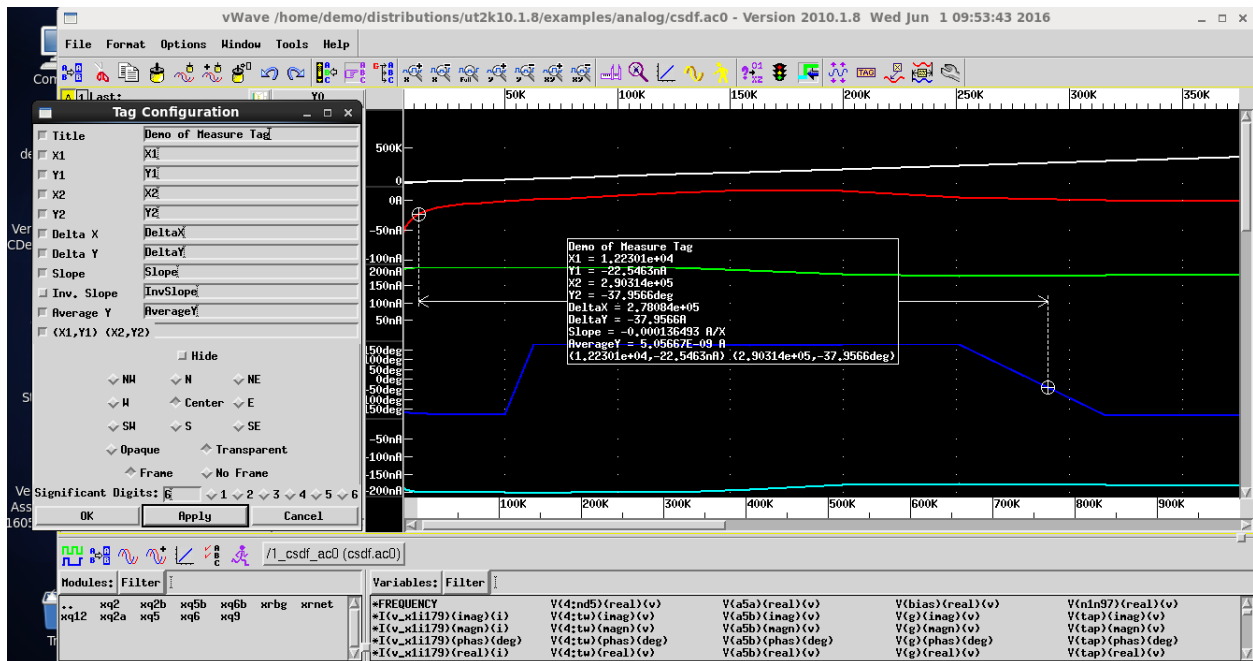
Immediately after bringing in the “.ac0” analog file, the waveform window will appear as above.



By selecting the Choose icon, the hierarchy design window appears below the waveform window, as above.



Selecting signals in the signal list area (left bottom) allows users to add signals to the waveform window. Users can select a number of signals from the list of displayed signals (upper left window, left of the waveforms), and press Fit to expand those signals to an area of the waveform window. Pressing **Add Measure Tags** allows the user to set the left time point of a tag, pressing the middle button sets the right time point on this signal or a different signal. This automatically adds the measure tag with the delta calculation to the window, as above. Click **Close** to close the dialog box (not shown).



Users can press the right mouse button on any tag to bring up the tag configuration window for this tag (as above, to the left of the waveforms), and select the parameters they wish to see. Users may also enter a Title for the Tag.