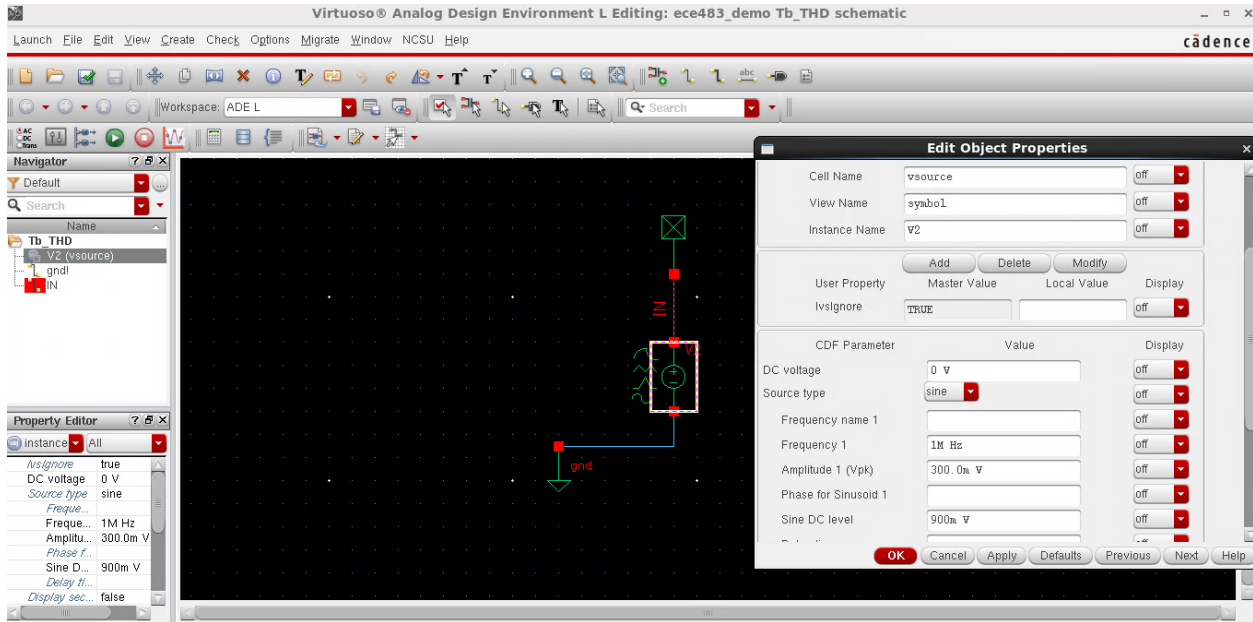


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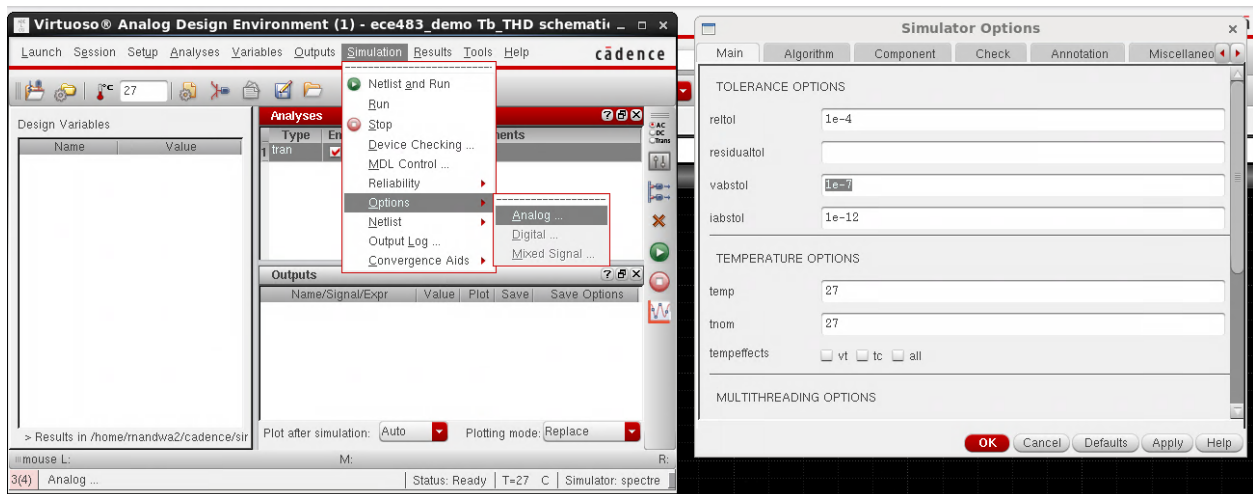
Instructions Calculating Total Harmonic Distortion

Here is a brief description on how to take FFT and calculate THD in cadence.

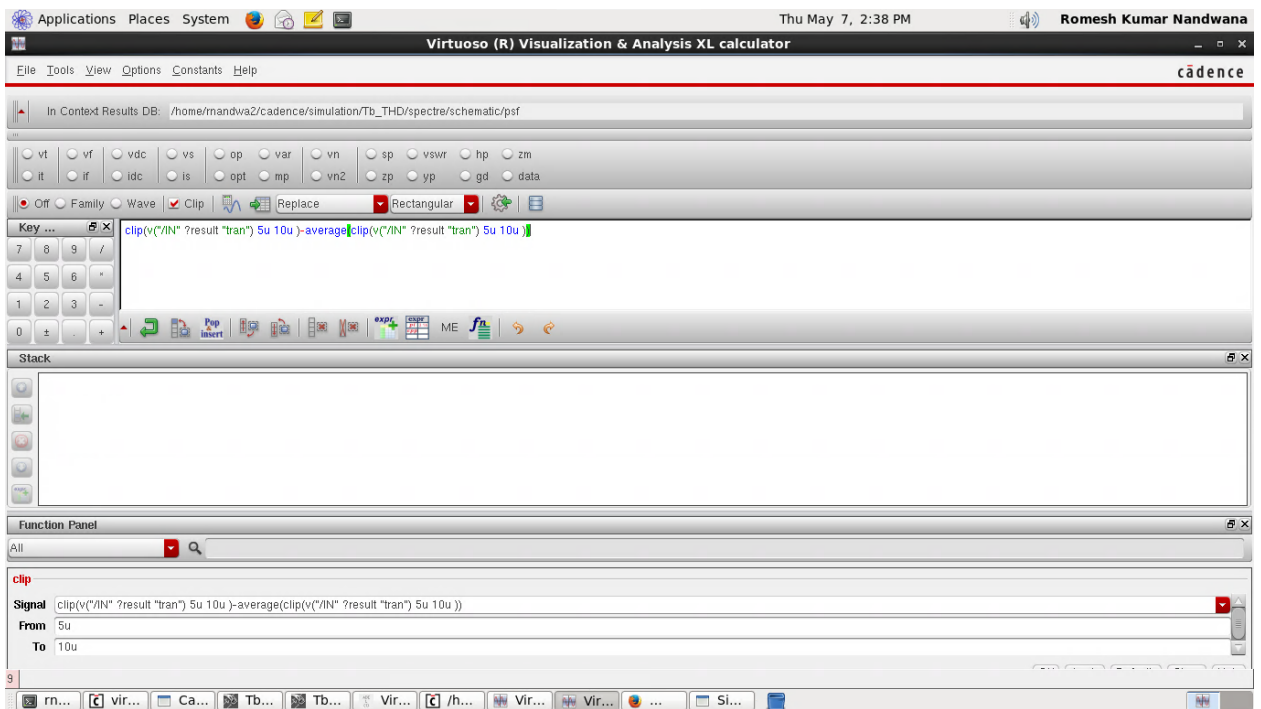
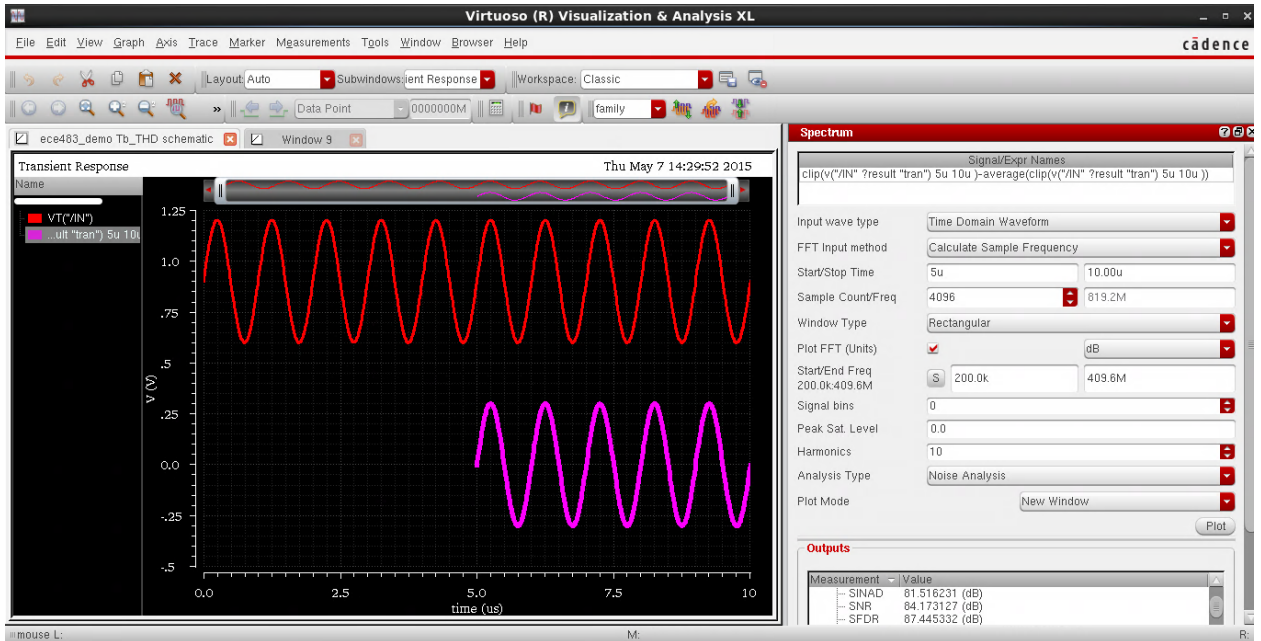
1. I used the following ideal input sine wave for which I want to calculate THD.



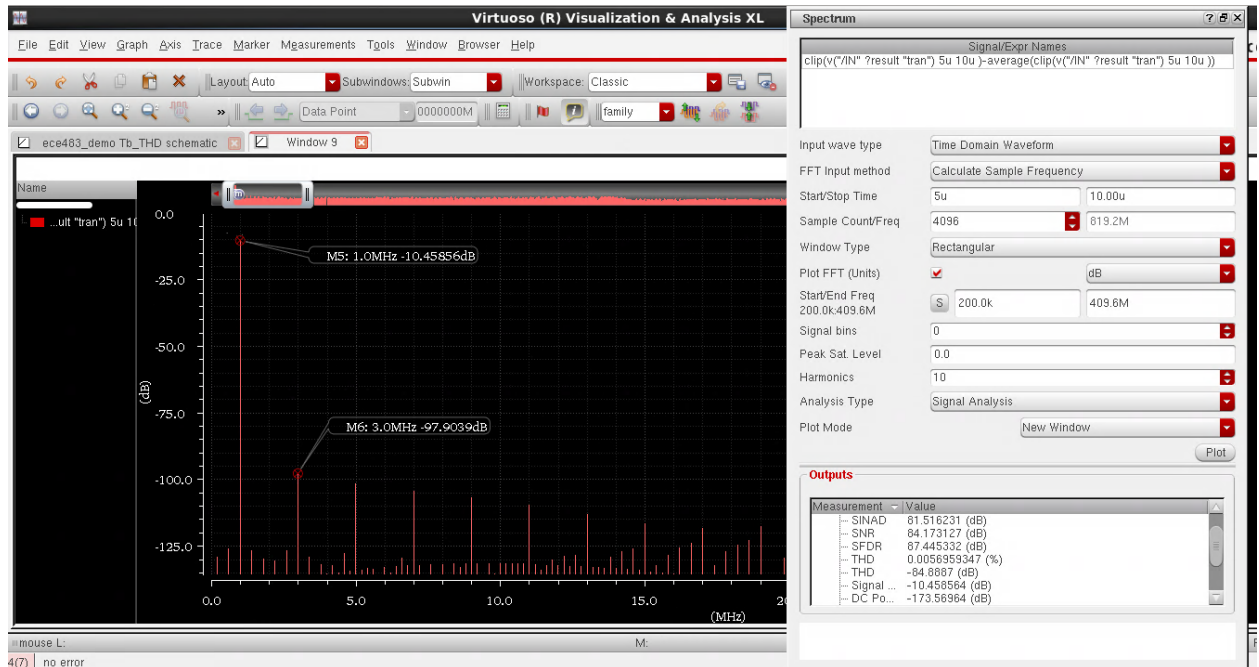
2. To improve the accuracy of my transient simulation I run it for atleast 10 cycles of my input (10 usec) in converavtive mode. To improve the simulation accuracy even further change the abstol and reltol options on your simulator as shown below.
3. Here I changed the abstol to $1e-7$ and reltol to $1e-4$ by making it even smaller you can improve your simulation accuracy. But the reltol at least 100X larger than abstol.



- Since the transient output waveform has the DC component in it and also might have some initial settling errors, so first I removed the initial 5us of the timing waveform using “clip” function from the calculator. Then the DC component is removed by subtracting the average of the waveform. The two waveforms looks like the following. The clipped and averaged waveform is centered around zero.



- Then use the spectrum window as shown in the following to generate your spectrum plot. THD in this case is calculated as -84dB with first harmonic power as -10dB and third harmonic as -97dB.



Helpful Link

Open the following link in a web browser on EWS machine or in your fastx.

<file:///software/cadence-Dec2013/IC616/doc/vivaxlug/aapJ.html#1205661>

You can open this link only on the EWS machines. It properly explains the method with screen shots.