1. Generate integrated noise data:

Run noise analysis with "< pts_per_summary >" set to 1 (see section 15.3.4 of ngspice manual).

Save integrated noise data in ascii format. This is done with the below code:

setplot noise2
set filetype=ascii
remzerovec
write <filename>.raw

Run the simulation.

2. Save the noise summary script:

The noise summary script is called "noise_summary.awk" and is uploaded to the below location in github:

https://github.com/SLICESemiconductor/OpenSourceTool_Examples/tree/main/Running_AC_noise_summary_in_ngspice

Save this script to your rundir and run the following command to make it executable:

chmod a+x noise_summary.awk

3. Run the noise summary script:

To run the script, simply type:

./noise_summary.awk <filename>.raw > <outputfile>.txt

This runs the script on the raw data generated in step 1 and outputs it to a text file. You can call the text file anything you want but I typically call it noise_summary.txt to be compatible with Cadence.

The script runs instantly.

4. Viewing the script:

The text file generated in step 3 will output the total/thermal/flicker noise contributions for each MOS device and resistor in the netlist (other devices can be added (e.g. diodes) but at time of writing have not).

You can simply import this file into excel and play about from there.

5. Example:

A good example is found at:

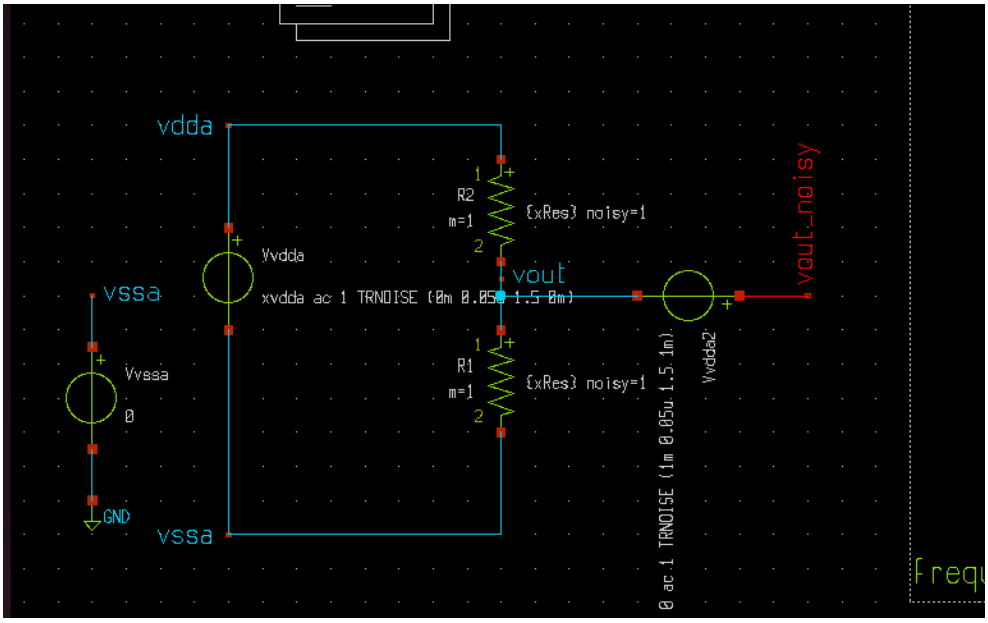
~/xschem/tran_noise

All relevant files are checked into:

https://github.com/SLICESemiconductor/OpenSourceTool_Examples/tree/main/Running_AC_noise_summary_in_ngspice

As is, this example basically runs an AC noise analysis in ngspice (using xschem) on a resistor divider. AWK script is then run on the resulting ascii raw output file.

Below shows the resistor divider:



Below shows the rundir contents. In this you are able to see the AWK script and the ascii.raw data. In addition, the code line below the rundir contents examplifies the usage of the AWK script.

```
kasdin_ProcIEEE_950501n.pdf   noise_result14.txt   noise_result4.txt    noiseSum.awk          'process(3).awk'                  tran_noise.spice
noise_breakdown.txt           noise_result15.txt   noise_result5.txt    noiseSumbu.awk        tran_noise_density.raw            tran_noise_tran1.raw
noise_contributors.txt        noise_result16.txt   noise_result6.txt    noise_summary.awk     tran_noise_integrated_ascii2.raw  tran_plot.sch
noise_int_plot.sch            noise_result17.txt   noise_result7.txt    noiseSummary.awk      tran_noise_integrated_ascii.raw   xschemrc
noise_result10.txt            noise_result18.txt   noise_result8.txt    noiseSummarybu.awk    tran_noise_integrated.raw
noise_result11.txt            noise_result19.txt   noise_result9.txt    noise_summary.txt     tran_noise_noise1.raw
noise_result12.txt            noise_result20.txt   noise_result_c.txt   parseNoise.c          tran_noise.raw
noise_result13.txt            noise_result3.txt    noise_result.txt     PN                    tran_noise.sch
slice@slice-Inspiron-16-Plus-7620:~/xschem/tran_noise$ ./noise_summary.awk tran_noise_integrated_ascii.raw > noise_summary.txt
```

Final text file is shown below:

```
1 MOS     TOTAL                     THERMAL                   FLICKER
2
3 m2      0.000000000000000e+00     0.000000000000000e+00     0.000000000000000e+00
4 r1      6.437403616939510e-04     6.437403616939510e-04     0
5 r3      0.000000000000000e+00     0.000000000000000e+00     0
6 m4      0.000000000000000e+00     0.000000000000000e+00     0.000000000000000e+00
7 r2      6.437403616939510e-04     6.437403616939510e-04     0
```