High Pass Filter

1 Theory

A High Pass Filter or HPF, is the exact opposite to that of low pass filter circuit as the filter's output signal (Vout) being taken from across the resistor(whereas for low pass filter output is taken across the capacitor).Where as the low pass filter only allowed signals to pass below its cut-o frequency point, the passive high pass filter circuit as its name implies, only passes signals above the selected cut-off point, eliminating any low frequency signals from the waveform. The reactance of the capacitor is very high at low frequencies so the capacitor acts like an open circuit and blocks any input signals until the cut-off frequency point is reached. Above this cut-o frequency point, the reactance of the capacitor reduces sufficiently, and it behaves like a short circuit allowing all of the input signal to pass directly to the output.

2 Schematic Diagram

The schematic diagram of High Pass Filter circuit in eSim is shown below

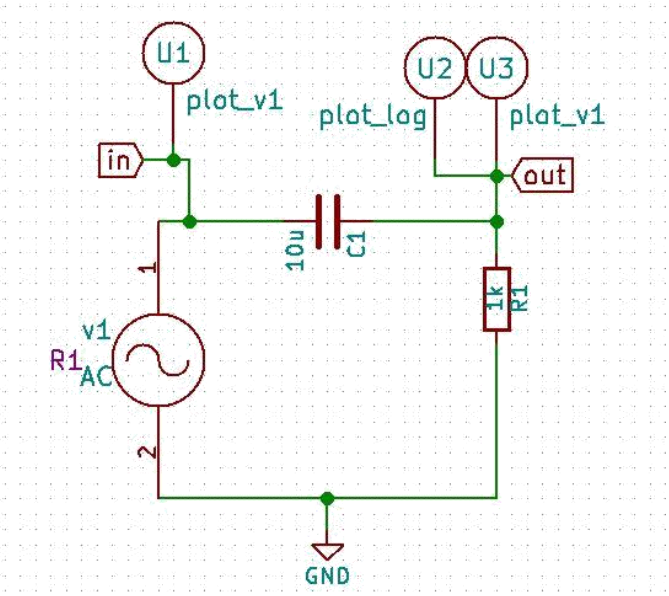

Figure 1: schematic diagram of High Pass Filter circuit

3 Simulation Results

1. Python plots:

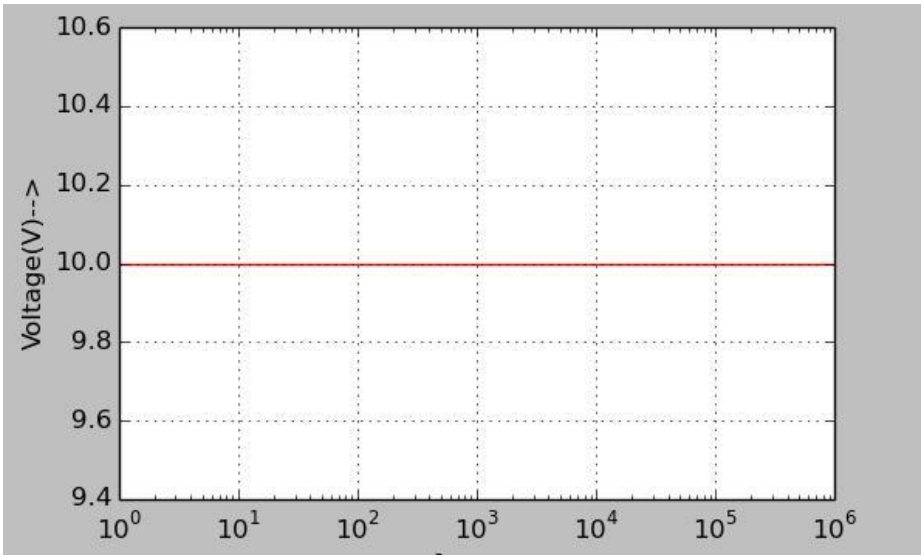

Figure 2: input plot

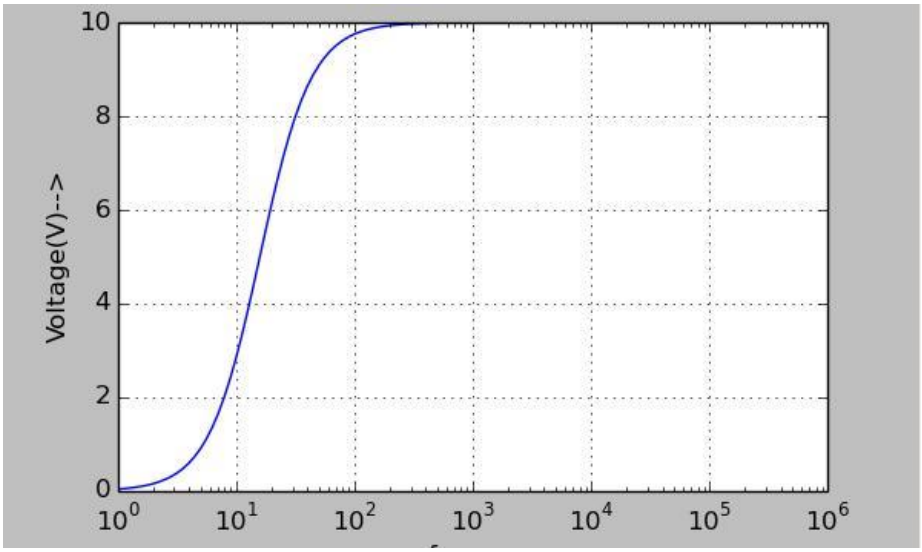

Figure 3: output plot

2. Ngspice plots:

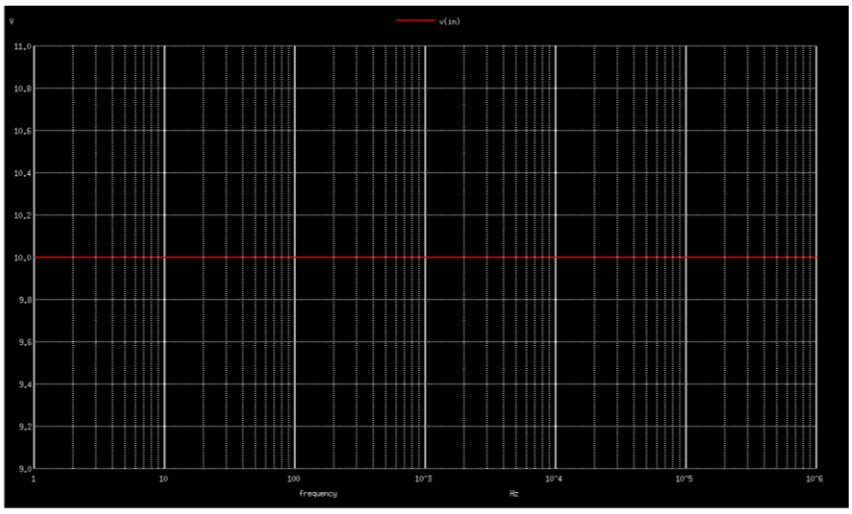

Figure 4: input plot

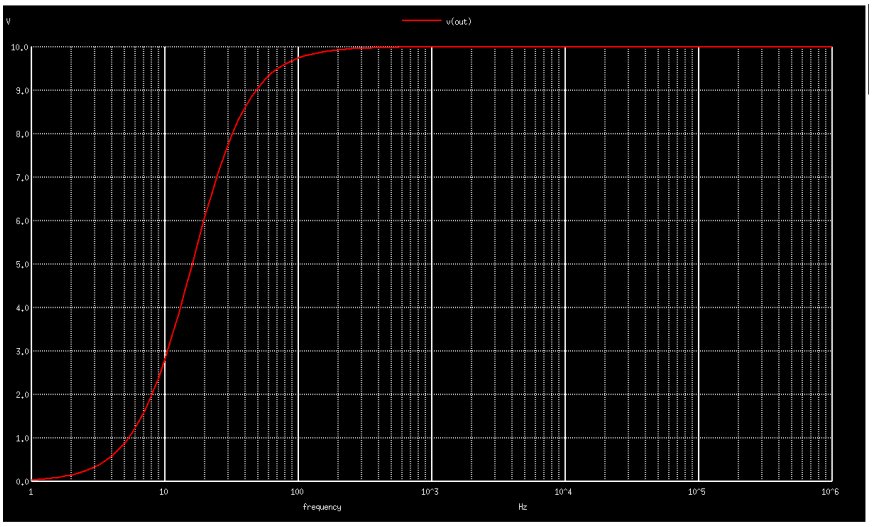

Figure 5: output plot

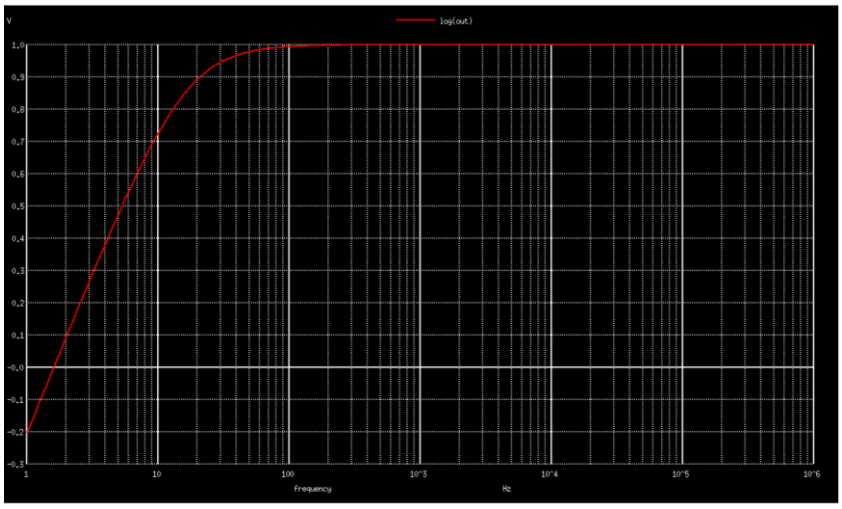

Figure 6: log plot

4. Reference:

[1] http://www.electronics-tutorials.ws/filter/filter_3.html referred on 15/04/2017.