

A PORTABLE, DIFFERENTIAL AMPLIFIER FOR RECORDING HIGH FREQUENCY EEG SIGNALS AND EVOKED POTENTIALS

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Abstract – In a clinical context, EEG refers to recording the brain’s spontaneous electric activity, using small electrodes placed on the scalp. The signals collected are electric “potentials” measured between two electrodes. Usually, for a healthy adult, these signals have small voltage (10 μ V to 100 μ V) and frequencies in the 0-40 Hz range. In the scientific literature, there are mentioned EEG signals and evoked potentials that have higher frequencies (up to 600Hz) and amplitudes lower than 500nV. For this reason, building an amplifier capable of recording EEG signals in the nV range and with frequencies up to couple of kHz is necessary to continue research beyond 600 Hz. We designed a very low noise amplifier that is able to measure/record EEG signals in the nV range over a very large frequency bandwidth (0.09 Hz -385 kHz).