

## An Audio Compressor/Peak Limiter Circuit - Part III

The object of this lab is to test your compressor/limiter with a “real-world” audio signal. Allen Robinson has set up a microphone and a preamplifier on a solderless breadboard to generate the signal. The circuit is on the first bench to the right as you enter the lab. For each of the following steps, obtain appropriate screen shots from the oscilloscope.

- Verify that your compressor is working before doing the following steps.
- Connect the output of the preamp to the oscilloscope and power up the preamp circuit.
- Talk, sing, whistle, or make obscene sounds into the microphone and watch the signal on the oscilloscope. You can see the preamp clip if you get too close to the microphone.
- Connect your compressor to the output of the preamp. Connect channel 1 of the oscilloscope to the input of the compressor and channel 2 to its output. Talk into the microphone and note the difference between the two signals on the oscilloscope. The peak levels at the output of the compressor should be much better controlled than those at its input.
- Set the oscilloscope for  $x - y$  operation. Talk into the microphone and watch the slope of the straight line change with signal level. The slope is equal to the gain of the compressor circuit. You should see the gain decrease in magnitude each time the input signal to the compressor exceeds 1 V peak. The gain then returns to approximately unity when the peak value of the input signal goes below 1 V in magnitude.
- The voltage output of  $A_4$  controls the gain of the circuit. Connect channel 1 of the oscilloscope to the input to the compressor and channel 2 to the output of  $A_4$  and talk into the microphone. Observe the gain-control voltage change when the input exceeds one volt peak. The gain is controlled by the charging and discharging of capacitor  $C_2$  in the circuit. When the voltage on  $C_2$  goes negative, the voltage output of  $A_4$  goes more positive and the gain decreases.

In your report, show that you understand how each part of the circuit works by including a short word description of how each part works.