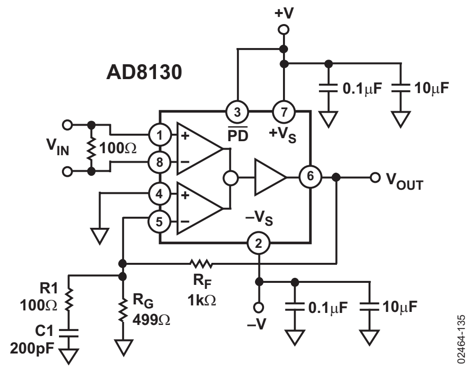


Figure 134. An Equalizer Circuit for Composite Video Transmissions over 300 Meters of Category-5 Cable

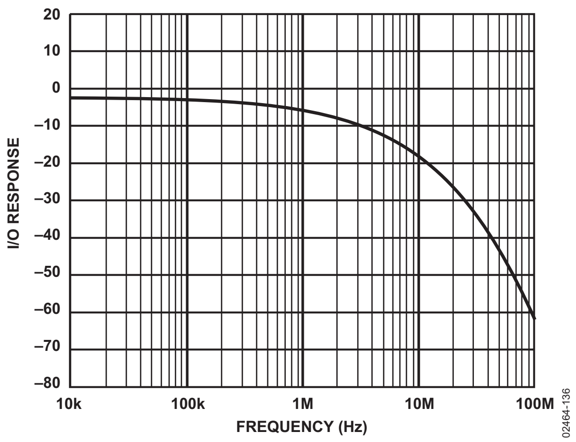


Figure 135. Transmission Response of 300 Meters of Category-5 Cable

The feedback network is between Pin 6 and Pin 5 and from Pin 5 to ground. C1 and $R_F$ create a corner frequency of about 800 kHz. The gain increases to provide about 15 dB of boost at 8 MHz. The response of this circuit is shown in Figure 136.

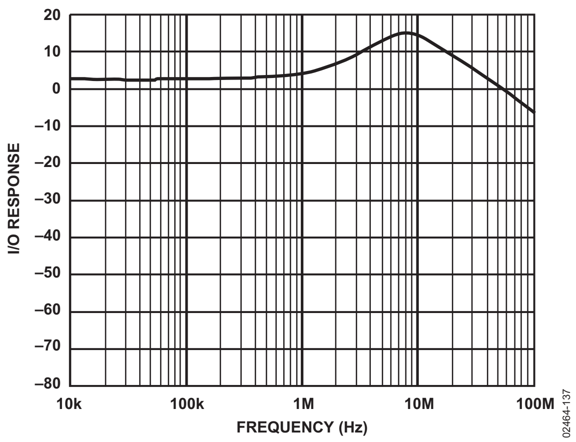


Figure 136. Frequency Response of Equalizer Circuit

It is difficult to calculate the exact component values via strictly mathematical means, because the equations for the cable attenuation are approximate and have functions that are not simply related to the responses of RC networks. The method used in this design was to approximate the required response via graphical means from the frequency response and then select components that would approximate this response. The circuit was then built, measured, and finally adjusted to obtain an acceptable response—in this case, flat to 9 MHz to within approximately 1 dB (see Figure 137).

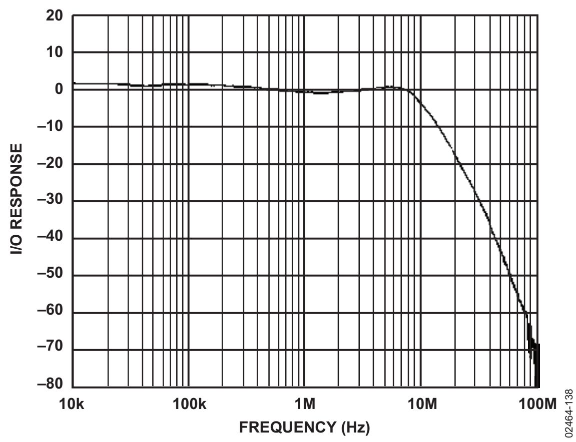


Figure 137. Combined Response of Cable Plus Equalizer

## OUTPUT OFFSET/LEVEL TRANSLATOR

The circuit in Figure 133 has the reference input (Pin 4) tied to ground, which produces a ground-referenced output signal. If it is desired to offset the output voltage from ground, the REF input can be used (see Figure 138). The level $V_{OFFSET}$ appears at the output with unity gain.

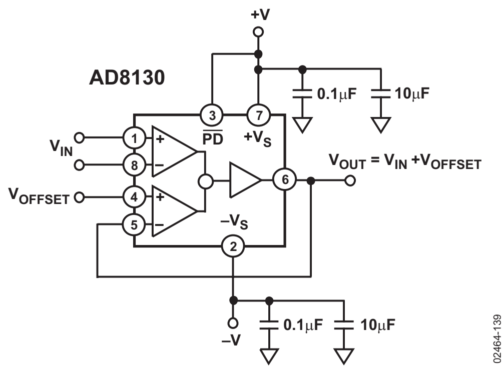


Figure 138. The Voltage Applied to Pin 4 to the Unity-Gain Output Voltage Produced by $V_{IN}$

If the circuit has a gain higher than unity, the gain must be factored in. If $R_G$ is connected to ground, the voltage applied to REF is multiplied by the gain of the circuit and appears at the output—just like a noninverting conventional op amp. This situation is not always desirable; the user may want $V_{OFFSET}$ to appear at the output with unity gain.