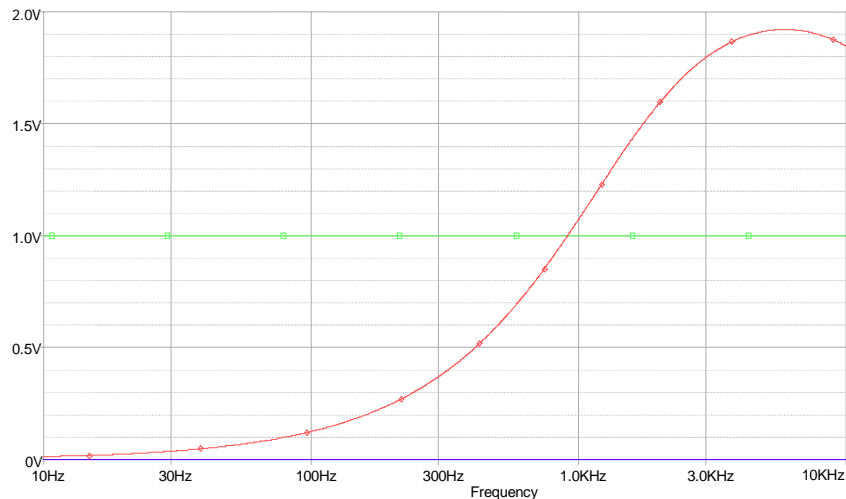


Feature - Dual Tone

Dual-Tone Feature (🎵) of STUDIO 4.1 telephone - amplifier becomes useful, above all, in the situations of low comprehensible reception, due to a narrowing of the frequencies response band involving especially it's higher part. Effectively, the enabling of the circuit (**treble** position) takes to the modification of the frequencies spectrum, boosting the high band (1200 ÷ 3300) Hz and lowering respective the low one (300 ÷ 600) Hz. The disabling of the circuit (**bass** position) returns the amplifier channel reception to the original, natural frequency response.

Fig. 1.



*Frequency response diagram of the "Dual-Tone" circuit, position **treble**.
(Green – Input Signal, Red – Output Signal).*

In the circuit response diagram can be noticed a doubled efficiency for the high frequencies band and halved efficiency for the low frequencies band:

$$\begin{aligned} @ 3400\text{Hz}, & \quad V_{out} = 2 \cdot V_{in}, G = 20 \cdot \log_{10}(2) = 6\text{dB} \\ @ 300\text{Hz}, & \quad V_{out} = V_{in}/2, G = 20 \cdot \log_{10}(1/2) = -6\text{dB}. \end{aligned}$$

Therefore the effect is a 6db higher response for the high frequencies and a 6dB lower response for the low frequencies.

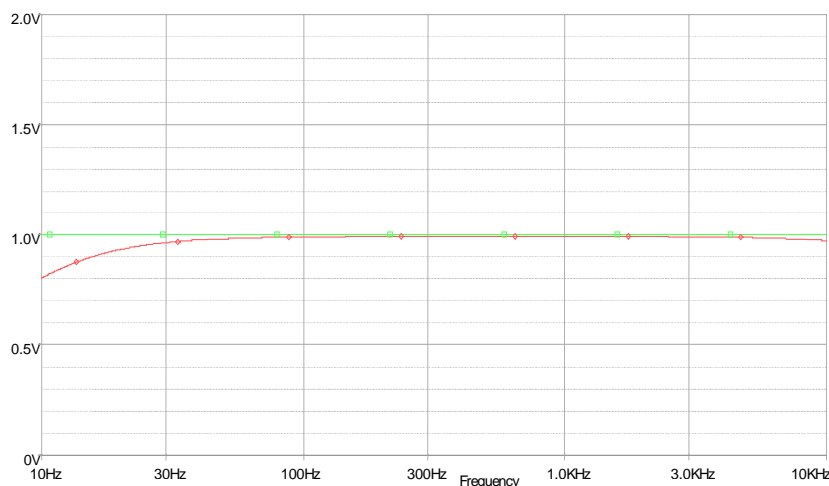


Fig. 2.

*Diagram of the "Dual-Tone" circuit frequency response (bass position).
(Green curve marks the input signal, Red curve marks the output signal).*

As you can notice in the diagram 2, the "Dual-Tone" circuit, if disabled, does not modify the original frequency response of the receive channel.