The sound pressure level due to the direct sound from the loudspeaker at the listener's position in the room is given by:

$$L_p^{listener}\left(\vec{r}_{listener}\right) = L_{Pwr}^{Spkr} + 10\log_{10}\left(\frac{Q_{spkr}}{4\pi r^2}\right)$$

The sound pressure level associated with the direct sound fed back to the microphone at angle θ from the loudspeaker and from the reverberant sound field in the room is given by:

$$L_p^{mic}\left(\vec{r}_{mic}\right) = L_{Pwr} + 10\log_{10}\left(\frac{Q_{spkr}}{4\pi d_1^2} + \frac{4}{A}\right) - G_{spkr}\left(\theta\right) - F_{mic}\left(\varphi\right)$$

The sound pressure level associated with the sound picked up by the microphone from a non-directional (i.e. uniform/isotropic/directivity factor Q = 1) source – in this case, the human speaker, located at $\vec{r}_{human}$ with a voice sound power level of L_{Pwr}^{Human} is given by:

$$L_p^{human}\left(\vec{r}_{human}\right) = L_{Pwr}^{Human} + 10\log_{10}\left(\frac{1}{4\pi d_2^2}\right)$$

The sound engineer needs to design the sound system such that $L_p^{listener}\left(\vec{r}_{listener}\right)$ will provide sufficient clarity/intelligibility for listeners e.g. seated at the back of the room/auditorium, while simultaneously $L_p^{mic}\left(\vec{r}_{mic}\right)$ will be small enough to prevent acoustic feedback from the mic. The angular factors $G_{spkr}\left(\theta\right)$ and $F_{mic}\left(\varphi\right)$ are well within the sound engineer's control, and note also that if human speakers keep the microphone as close to their mouth as possible, thereby minimizing the distance d_2 in the immediately above formula, that would also be of significant help in this regard!