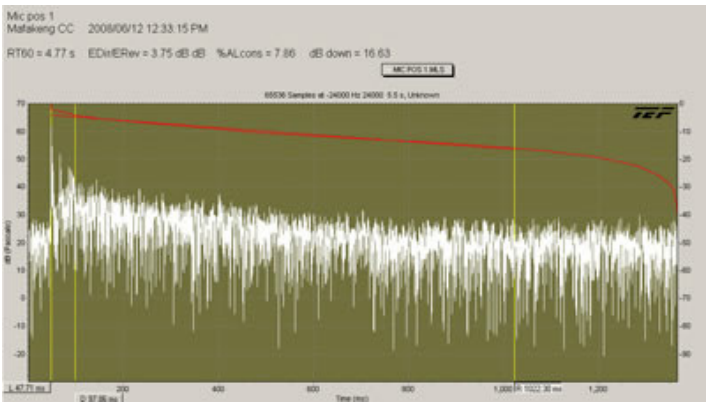

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$$L_T = L_W + 10\log\left(\frac{Q * Me}{4 * \pi * D^2{}_x} + \frac{4 * N}{S\bar{a} * Ma}\right) + K$$

L_T = Total sound pressure level

L_W = Sound pressure level from the loudspeaker

Q = Directivity factor of the loudspeaker

D_X = Distance from the source

N = Ratio of total output to output aimed at the listeners

S_a = Average absorption coefficient of the space

M_e = Electro acoustic modifier

M_a = Architectural modifier

The Hopkins Stryker equation allows the total sound pressure level to be determined in a reverberant environment at a given listener distance. The first part of the equation affects the direct sound level whilst the second part affects the reverberant sound level.

The direct field can be improved by

- Increasing Q
- Move the listener closer to the source
- Increase absorption
- Reduce the number of sources
- Aim the loudspeakers at the listener

Note that by increasing "N" from 1 to 2 will also increase the level of the reverberant field by 3dB. Keep the number of loudspeakers to an absolute minimum in difficult acoustic environments.