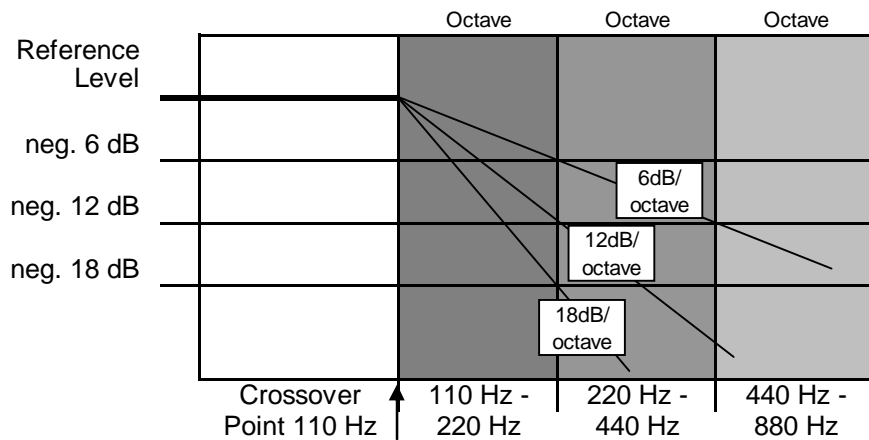
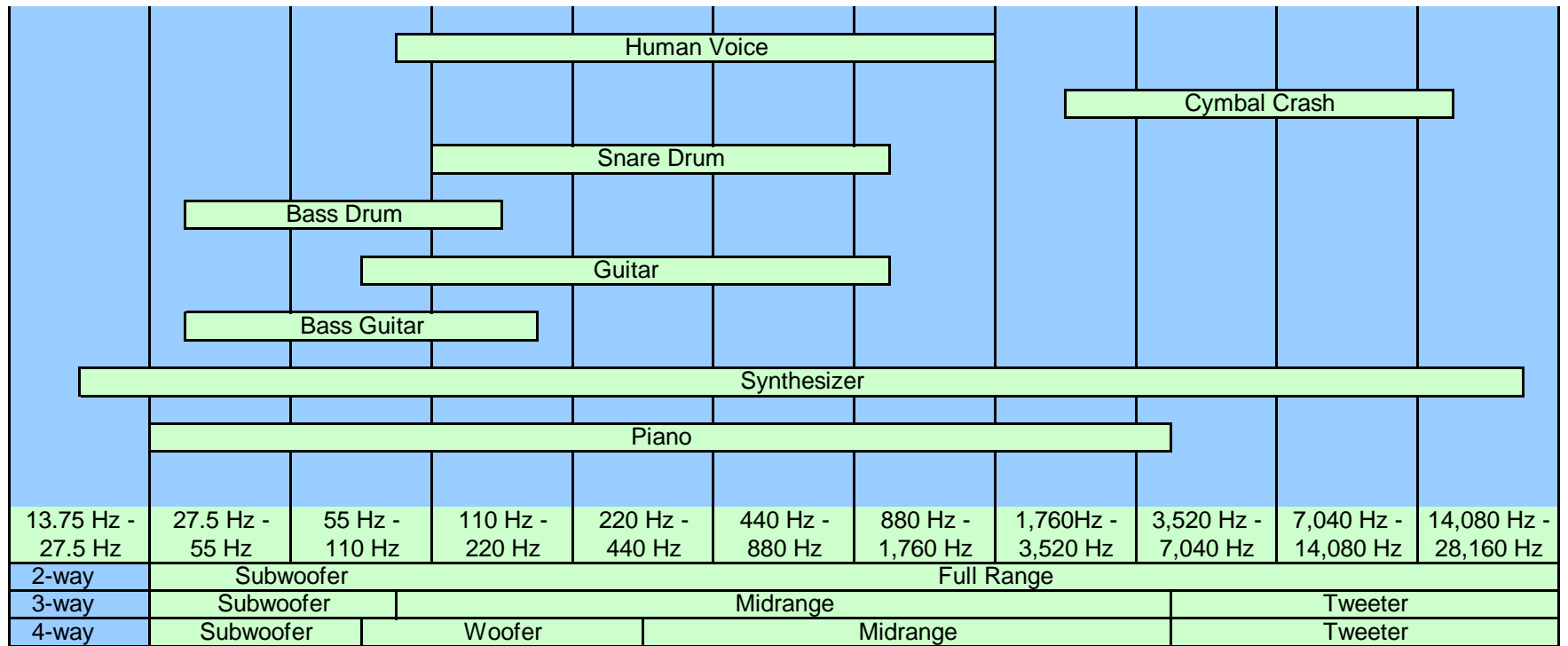


Speaker Crossover Design



Choosing crossover points...

Crossover points are dictated by the speakers' frequency response. The frequency response of adjacent speakers (the woofer and midrange) should overlap a bit in order to avoid gaps in the music. The crossover point chosen between sets of speakers should fall in that overlapping region.

With two different speakers producing sound in the overlapping region, too much sound or distortion can occur near the crossover point. Thus the need to calculate the crossover slope.

Choosing crossover slopes...

Slope is expressed as dB per octave and refers to how abruptly the crossover cuts off a speaker's sound beyond the crossover point. The higher the figure the more abrupt the cutoff. Most crossovers do not allow for adjustable slope. A steep slope, such as 12dB per octave or above, helps narrow the range in which adjacent speakers produce the same tones. This provides a smooth transition from one speaker to the next.

To ensure speakers are well matched and crossover points are OK, with crossover frequencies and crossover slopes defined determine the frequencies at which the crossovers reduce the output of the speakers by 3dB. If the speakers' frequency response specs exceed beyond these 3 dB-down points then the system is ok.