

## Message - Distortion

This purpose of this letter is to explain why many serious music lovers continually change audio components but do not achieve final satisfaction with their audio system.

Audio equipment such as CD players, turntables, DACs, preamplifiers and power amplifiers typically have 0.001% to 0.1% distortion ratings. By comparison, speakers may have up to 10% distortion. From a distortion standpoint, speakers are the worst component in an audio system!

As you know, speakers convert electrical signals to sound waves. Speakers are like distortion generators. Harmonics, transients, amplitude, phase, intermodulation, and doppler distortions commingle. This will alter the original music signal's amplitude, polarity, and phase which will make the original music sound synthesized.

Essentially, if you don't have accurate speakers, then all the effort and expense changing other audio components may just be a waste of time and money.

Acoustic Zen transmission line based speaker designs solve intermodulation and Doppler distortion. Transmission line design produces low frequency extension better than ported or sealed speaker designs.

Acoustic Zen uses ribbon tweeters and under-hung voice coil drivers to greatly minimize harmonic and transient distortions.

Using first-order crossover design and electrical phase correction, amplitude and phase distortions are virtually eliminated. All drivers line up at acoustic center.

Ideally, the best speakers should have very flat Sound Pressure Level (SPL) and smooth electrical phase that is flat at zero degrees. Acoustic Zen Crescendo speakers exhibits both very flat SPL and smooth phase centered at zero degrees. This is why Acoustic Zen speakers sound so real.

Please refer to the "white paper" that explains more about Impedance and phase problems.

We encourage all serious music lovers to bring their favorite music to Acoustic Zen to listen to our speakers.