

ToroAir™

Leading-edge inductors without signal contamination

In loudspeaker design, there is typically a conflict between preserving high-frequency detail and avoiding a harsh, bright, analytical sound. This conflict would not exist if crossover circuits followed the theoretical ideal.

The reason for the conflict is that speaker crossovers typically suffer from cross-contamination: the delicate tweeter's inductors pick up undesired electromagnetic energy from the low-frequency circuit.

As a result, the tweeter loses high-frequency detail, since a large portion of its dynamic range is wasted on low-frequency leakage. Music typically contains much more bass and mid energy than treble, which amplifies the problem. YG Acoustics™ ToroAir™ inductors are unique in eliminating cross-talk through their use of toroidal geometry. They have the added advantage of being completely distortion-free since they use a non-magnetic core (a.k.a. air-core).

Competing designs are forced to choose between two clearly flawed design options – either leave the tweeter's level in a correct (neutral) setting and lose high-frequency detail, or artificially "bump-up" the tweeter and suffer from harshness and brightness.

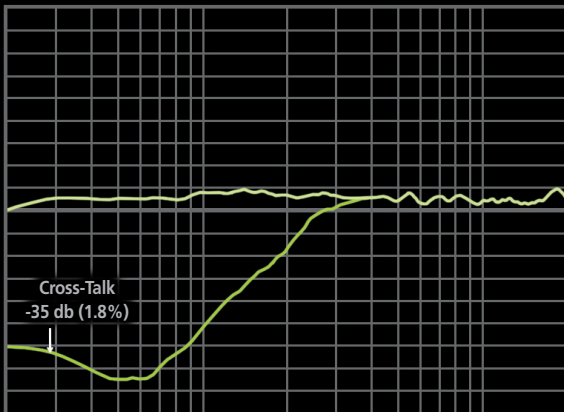


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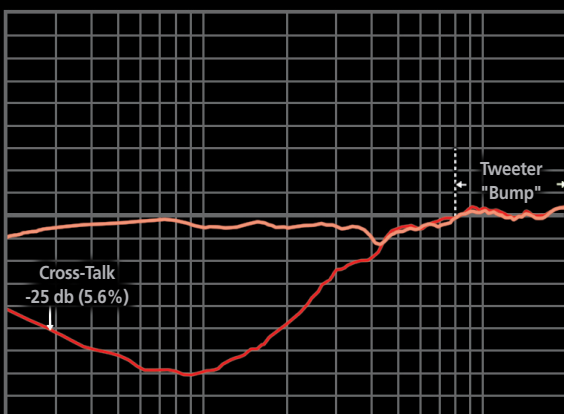
Measurements

Below is evidence that YG Acoustics™ crossovers using ToroAir™ inductors eliminate cross-talk over three times better than traditional coils, and as a result the speaker maintains both high-frequency detail and proper, natural sound. The competitor in this case uses an elliptical filter, which is hard to recognize from the graph, due to high cross-talk. This forced the competitor to bump-up the tweeter to maintain detail, and the speaker suffers from brightness and sibilance as a result.

YG Acoustics™
Tweeter's frequency response
Entire speaker's frequency response
200~20k Hz, 5 dB div.



Competitor
Tweeter's frequency response
Entire speaker's frequency response



Engineered by Yoav Geva

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