Sunfire's exclusive Sonic Holography™ algorithm adds dimensionality and realism to your favorite music and movies. Based on the Bob Carver's legendary (and much sought after) Carver C-9 Sonic Holography Generator, the latest Sunfire electronics feature a DSP implementation of this original circuit. The basis for this processing is to overcome a fundamental flaw in stereo reproduction.

THE PROBLEM

Imagine yourself seated in the front row of a piano recital…

During this **live concert**, each ear will receive one direct sound arrival only. Each of your ears will hear the sounds and your brain will tell you accurately the position of the musician – **both depth and lateral positioning cues will be identified**. You will think to yourself: *"The pianist is located about 10 feet back on the stage and slightly to the left".* Refer to Figure 1 below.

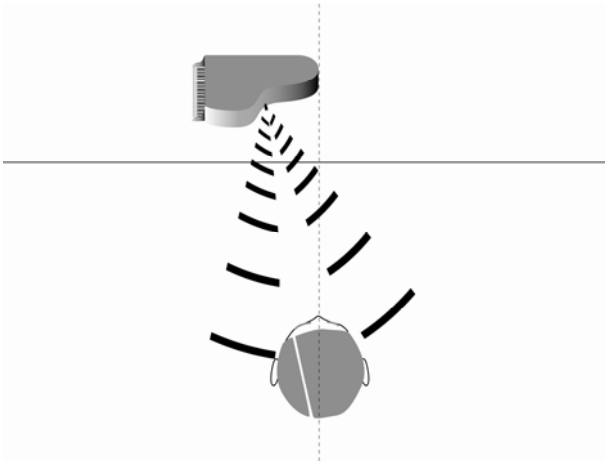

Figure 1: Live piano recital

Notice that you are able to localize the piano as being in a certain point in three-dimensional space, versus simply "hanging" in a two-dimensional plane.

In a **stereo recording** of this same piano recital, the sound of the piano will be heard from both speakers. The left ear will hear the left speaker, which is fine, but it will also hear sounds from the right speaker. These extra sounds tend to confuse your brain and prevent you from building a true sense of acoustical space. This makes it difficult to pick the exact location the sound is coming from. Refer to Figure 2 below.

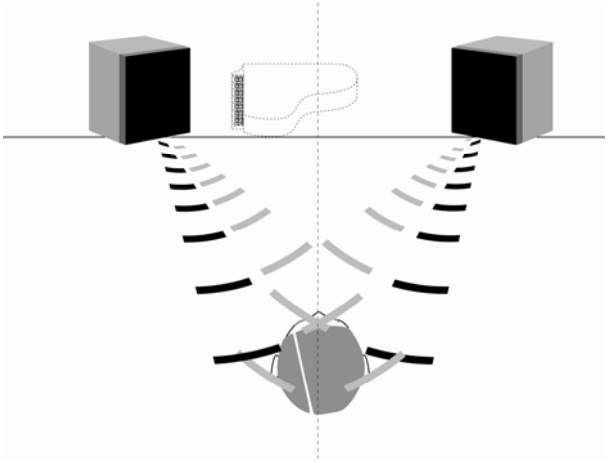

Figure 2: Conventional stereo playback

Here we are presented with a flat curtain of sound. The piano sounds as if it is shifted slightly to the left, but the depth cues are gone so we feel the piano is no farther away from us than the speakers.

SUMMARY OF THE PROBLEM

- **A real musical event will create only two direct sound arrivals, one at the left ear and one at the right.**
- **Stereo playback will give four arrivals, as both speakers are heard by each ear. These second sound arrivals reduce our naturally accurate sense of positioning.**

THE SOLUTION

The Sonic Holography circuit was designed to cancel out the unwanted second arrivals. The left ear will mainly hear the left speaker and the right ear will mainly hear the right speaker. This is accomplished by sending a complex crosstalk signal from the left and right speakers in addition to the normal program. These extra signals are virtually identical to the unwanted second sound arrivals but they are out-of-phase and therefore cancel the unwanted signals.

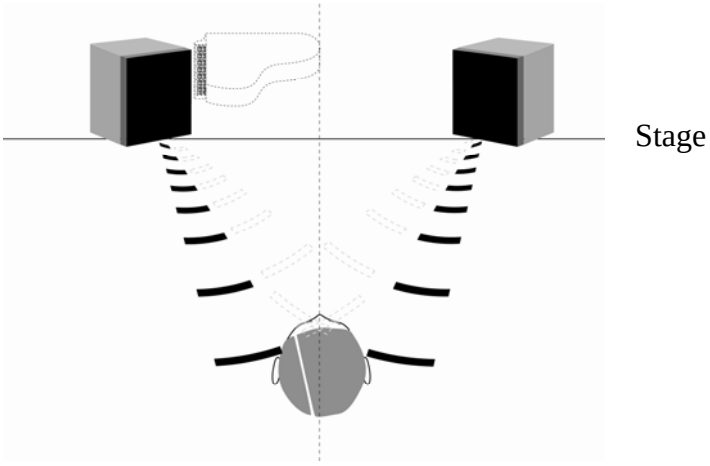

Figure 3: Accurate reproduction using Sonic Holography™

The result is a more three-dimensional and wider soundstage, where the positioning cues are restored. In a way, the musicians have been freed from the confines of the flat plane between the speakers. You will perceive them as playing forward or playing behind the speakers or to one side or the other, not just somewhere in between. We recommend that you experiment with its effect, remember that you are listening for a more accurate sense of the location of the different musicians.

Because Sonic Holography works by phase cancellation of the unwanted second sound arrivals, accurate speaker positioning is required. You must make sure that the left speaker is the same distance away from you as the right speaker. Follow the front speaker placement recommendation in your owner's manual for optimum positioning. These speaker locations do not have to be different than their conventional stereo placement. To realize the benefits of Sonic Holography, simply ensure the left and right speakers are accurately positioned.

Sonic Holography may be engaged using the remote control or from the front panel. Please note that there is a short mute period when engaging/disengaging this circuit.