



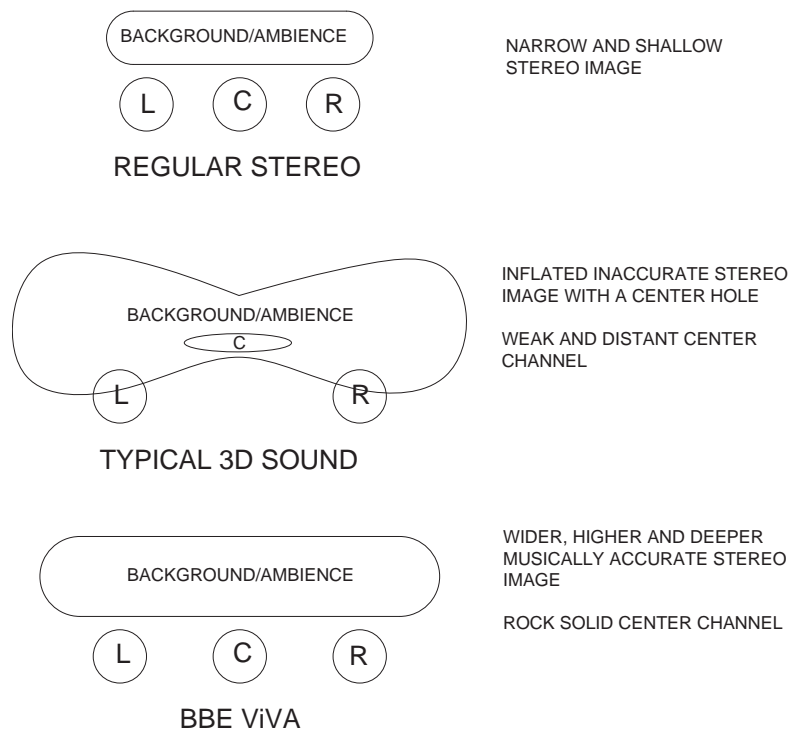
High Definition 2-Speaker 3D Sound with BBE Process

For TV Applications

LCD TV, Plasma TV, CRT TV, Rear Projection TV

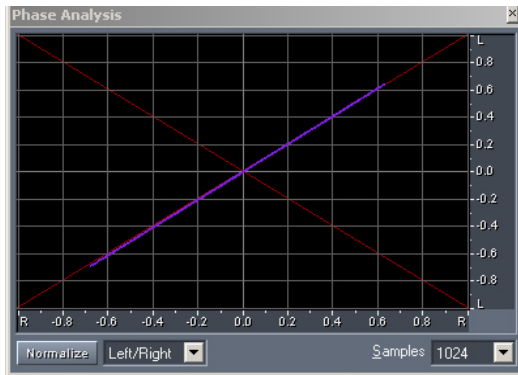
1. BBE ViVA High Definition 2-Speaker 3D Sound

- Musically accurate natural 3D image with **Hi-Fi Sound**.
- Increased width, depth and height of sound image keeping **Clear Directionality**.
- Rock solid **Center Channel**.
- **Elevates Sound Image**.
- **Compatible with All TV Programs**.

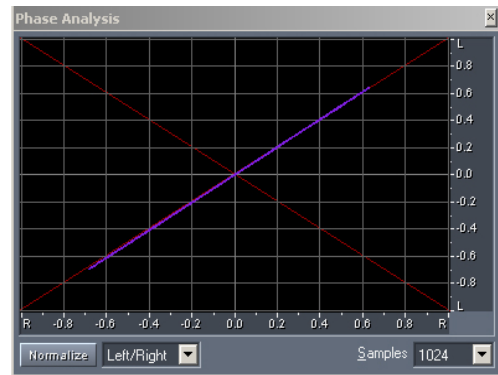


(BBE ViVA is a 2-Speaker 3D Sound System. Center channel is imaginary.)

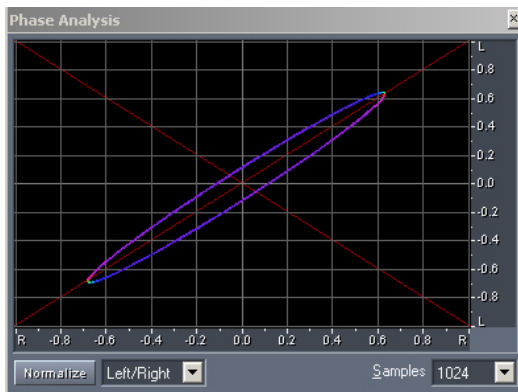
The following pictures show the actual performance of the BBE ViVA process. The left two pictures are 880Hz monaural sine waves (0 deg phase difference) and stereo (10 deg phase difference) sine waves. The right pictures are the results of the BBE ViVA process applied on the each signal in the left. Notice that the monaural signal has no change (monaural is strictly kept in monaural) after the BBE ViVA process, while the 10 deg stereo material is enhanced to nearly 30 deg.



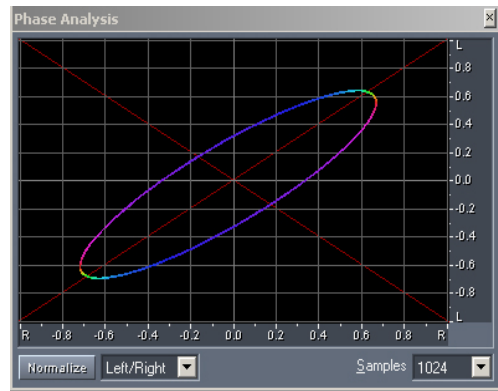
880Hz Monaural Sine Wave



**880Hz Monaural Sine Wave
BBE ViVA Processed**



880Hz 10 Deg Stereo Sine Wave



**880Hz 10 Deg Stereo Sine Wave
BBE ViVA Processed**

This means that the monaural source (news announcement, movie dialogue, solo vocal) is clearly kept in the center, while the stereo information (ambience sound, chorus, orchestra, sound-effects) is emphasized to increase the width, height and depth. The BBE process optimizes the sound clarity and intelligibility.

Since this 3D enhancement process is performed linearly, the directionality of the sound is kept right.

BBE ViVA is not a virtual surround process. It provides a natural three-dimensional sound image to relatively small audio systems with limited speaker placement. BBE ViVA keeps the character, image, directionality, and musicality of the original sound source. It is called the BBE ViVA HD3D (High Definition 3D) Sound process.

BBE ViVA is most effective to improve the sound of acoustically-poor PDP and LCD TVs.

2. BBE ViVA Solves All Problems Conventional 3D Sound Process Have

The conventional 3D sound processes had three critical problems: (1) lack of high-fidelity, (2) lost directionality of sound, and (3) a weak and distant center channel. As a result, we have been experiencing lost musicality, unclear movie dialogues, and strange “hollow” sound (as if the news announcer were speaking in a cave). BBE ViVA solves all of these problems.

3. Elevates Sound Image

BBE ViVA elevates sound image to the proper height when speakers are placed below the picture. (Rear Projection TV and LCD TV)

4. Wide Compatibility

- BBE ViVA is compatible with News, Dramas, Movies, Music, Sports and Games. *(BBE ViVA can be left on at all times. No need to switch the audio modes every time program changes.)*
- Monaural program is kept in monaural to preserve the format.
- When monaural information (e.g. news announcements, movie dialogues, solo vocals) and stereo information (e.g. ambience sounds, choruses, orchestras, sound-effects) are both present in a given material, BBE ViVA automatically detects them and properly processes the sound, keeping the correct sound image.

5. BBE ViVA+

BBE Mach3Bass bass enhancer is added to the BBE ViVA to provide deeper bass.

6. BBE ViVA2 (with Compressor/AGC)

BBE’s unique professional quality Compressor/Limiter/AGC is added to the BBE ViVA. The compressor based AGC helps to maintain the equal volume level between TV channels and programs without showing bothersome artifacts. The BBE ViVA2 uses a 1-band compressor.

7. Solutions

Analog and Digital

BBE Sound, Inc. May 30, 2004

www.bbesound.com

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