An Inverted Hi-Fi Audio Signal Path Using Passive Filtering and Multichannel Amplification

Introduction

This document presents a non-traditional audio signal path designed by the author. Unlike conventional hi-fi audio setups, this configuration reverses the typical order of signal distribution and amplification. The setup utilizes passive filtering and multichannel amplification in a novel way that delivers superior stereo imaging and clarity, particularly in the midrange frequencies.

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Technical Description

1. Signal Source:

The system begins with the headphone jack output of Amplifier A. This amplifier is not used for speaker output but instead functions purely as a preamplifier.

2. Passive Filtering:

The signal is routed through a high-quality passive filter. This component divides the audio spectrum without any active electronics, preserving the purity of the signal.

3. Multichannel Amplification:

Instead of using a traditional stereo power amplifier, a high-fidelity five-channel surround amplifier is used. RCA cables carry the filtered signal to this amplifier, which is configured as follows:

- Channel 1: Low frequencies - Left
- Channel 2: High frequencies - Left
- Channel 3: Low frequencies - Right
- Channel 4: High frequencies - Right

The fifth channel is unused.

4. Direct Speaker Drive:

The amplified signals are routed directly to the loudspeakers without any further crossover or filtering stages. This ensures minimal signal degradation and maintains clarity.

5. Resulting Performance:

According to subjective listening tests, the system provides extremely clean audio reproduction, excellent stereo imaging, and unexpectedly strong midrange presence despite the absence of an active crossover

network.

Conclusion

This configuration challenges conventional hi-fi paradigms by reversing the amplification and filtering stages, with promising auditory results. It offers an alternative for audiophiles seeking high clarity and stereo performance without extensive DSP or active crossover management. Further measurements and evaluations are encouraged to quantify performance characteristics.

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