



# HIDDEN TALENT?

**Will hidden or integrated speakers always lack a little bit of performance when compared to stand-alone, or are we passed that now? Wayne Hyde, Technical, Sales and Marketing Support at distributor CAVD has a listen.**

Well, you'd think it would be lacking, wouldn't you? After all, most of us have grown up believing that a good loudspeaker is box-shaped and sits on a stand, a shelf or on the floor. And contrary to that, custom installation speakers that fit in a chopped-out hole in the wall or ceiling are a compromise, a stripped-back version of a real loudspeaker.

The thing is, there's an advantage that speakers installed like this can have over a typical HiFi speaker, and it's all about the bass, and predictable results! Imagine a traditional speaker with a tweeter and woofer drivers in the front baffle, and both have the same sensitivity rating - i.e. they give you 90dB output, for 1W of power. A phenomenon occurs, whereby the bass signal leaves the box-shaped cabinet of the speaker omnidirectionally, but the mid and high frequencies are more directional and fire forwards only. The designer has to build in something called baffle-step compensation into the crossover network, which effectively

brings down the mid and high levels in line with the bass or LF levels. This could be as much as 6dB of attenuation.

But how much compensation should be allowed for? The designer can only guess at where the speaker will be placed in a room, and if it's close to a rear wall, there'll be more bass anyway, thanks to the boundary effect. If the speaker is brought out further away from the wall, then the perceived bass output will reduce. So, as you can see, it's very hard to produce a speaker that will sound good in all living rooms, in various positions. And especially if the customer or installer doesn't have the time to find the perfect position or is simply unable to because of interior design limitations.

## A DIFFERENT OPTION

Now, in steps the custom install speaker, which will be placed in a wall or a ceiling, period. As long as the surface area around the speaker

is nice and flat, 1-2m away from corners or dropped-ceiling edges, then this surface is beginning to act like an infinite baffle, the speaker is firing into half space and all bass, mid and highs are heading forward, only towards the listener. If sound is leaving the in-wall speaker from behind, it doesn't get to interfere with the sound we hear at the front, because there's a wall surface surrounding the CI speaker.

The speaker performance matches that which was measured and intended by the manufacturer, plus the designer has not had to incorporate baffle step compensation into the crossover network. We get a predictable result with the direct sound from the CI speaker, that's repeatable as you place more speakers around the property.

CAVD supplies a wide array of advanced loudspeaker systems for CI along with design support services.