Subject: Re: Soffit (Flush Mount) Reference Speakers
Posted by Wayne Parham on Thu, 16 Dec 2010 01:19:28 GMT
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I would suggest simply building the speakers as designed and mounting them in the wall. If you can close the gap so the wall is the baffle, that's great but as long as the gap is small it is acoustically invisible.

Radiating into half-space does increase sound compared to freespace. The so-called baffle-step compensation is done to conjugate the transition from the region where the baffle is acoustically large to where it is acoustically small.

At low frequencies, the baffle is acoustically small so sound radiates omnidirectionally. At high frequencies, where the baffle is acoustically large (i.e. large compared to wavelength), the front of the speaker causes the sound to radiate into halfspace. (Unless of course the driver's directivity is already making a tighter beamwidth anyway)

So what you have here is changing directivity, and this causes on-axis response changes. It does not modify the power response though. Power response is the total energy radiated in all directions. On-axis is the response straight forward. So if a speaker has constant directivity, they're equal. If not, then the on-axis response changes as beamwidth changes.

used with their backs against the wall already. But to tell the truth, there are still some transitions between where the baffle is acoustically small to large, and then again where the room has influence, and wall mounting will help this. So there is a benefit in soffit mounting like that.

And don't forget multisubs...

By the way, here's another good link of permanent installation:
Three 4Pi's in Basic Black for Home Theater Build Thread