Subject: Placing speakers against the wall
Posted by cwemoy on Thu, 04 May 2017 17:45:29 GMT
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I've heard speakers placed against a wall produce great sound and a stronger bass response. Nonetheless, I have heard that this is strongly discouraged when dealing with a recording studio?

Subject: Re: Placing speakers against the wall
Posted by Singlow on Fri, 05 May 2017 19:32:49 GMT
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I am not an expert in these matters but it kind of makes sense when you think about the vibrations that will be coming off the wall if the speakers are leaning up against it. Or am I wrong?

Subject: Re: Placing speakers against the wall
Posted by gofar99 on Sat, 06 May 2017 16:20:41 GMT
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Hi, I'm sure Wayne will have the best answer on this...but when you place a speaker against a wall it reduces the space it has to work into. Hanging in the middle of a room it sees about a full spherical space, on the floor about a 1/2 sphere, against a wall 1/4 sphere and in a corner 1/8th. This dramatically increases low frequency response. However, it will almost certainly harm mid range and high frequencies. Some problems possible are a "hole in the middle" sound spectrum because the speakers are too far apart to create a central image. Basically exaggerated separation. Too much reflection from side walls of high and mid frequencies. Probably other stuff I missed. All of this means you ought to move the speakers around to find a good compromise. I find with many speakers that sitting on the floor is OK, but I like the sound best when they are about 3-4 feet away from the rear and side walls. This would vary depending on the actual size of the room.

Subject: Re: Placing speakers against the wall
Posted by Wayne Parham on Tue, 09 May 2017 01:59:41 GMT
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The problem is early reflections, and the frequency response anomalies that result.

If the sound source is acoustically close to the boundary, it's a good thing. But if not - and that's usually impossible - then the boundaries give unwanted reflections. Too close, and they give early reflections, which is the worst kind. Reflections further away just blend together to create the reverberent field.

For more detailed explanations, do a search here for "soffit mounting" and for "wavefront launch."

Subject: Re: Placing speakers against the wall
Posted by cwemoy on Tue, 09 May 2017 16:56:31 GMT
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A lot of valuable information here. I had no idea that placing a speaker against the wall harms the mid range and high frequencies. Wayne, thank you the links; very resourceful indeed!

Subject: Re: Placing speakers against the wall
Posted by Wayne Parham on Tue, 09 May 2017 17:58:19 GMT
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Just to be clear for those that don't study the material in the links:

Placing a speaker against the wall that is not designed for it has disadvantages. But a speaker can be designed to be placed against a wall, turning potential problems into strengths.

It is all about acoustic scale and distance with respect to wavelength.

Two things happen at boundaries: 1. Boundaries limit the space a sound source radiates into, and 2. Boundaries reflect sound.

As to the first point, limiting the space a sound source radiates into: That increases sound pressure level for sound sources that are acoustically close, i.e. less than 1/4 wavelength away. It's easier to place a loudspeaker acoustically close to a boundary at bass frequencies because the wavelengths are longer. In fact, most loudspeaker placements transition from being acoustically close to a boundary at bass frequencies to acoustically distant at midrange frequencies. This makes bass seem louder as a result.

The baffle forms a sort of small truncated boundary too. It constrains the radiation angle to the forward direction at midrange frequencies upward. So while it has no impact on bass, it tends to raise the midrange frequencies. This has an effect of making the midrange seem louder as a result, often referred to as a "baffle step."

You may see how a design can take advantage of these two competing properties, with boundary loading increasing bass to offset the baffle increasing the midrange.

Ideally, all sound sources would be on an infinite baffle so there would be no transition. This is what soffit mounting does because it puts all sound sources on a single wall. Even better to have a constant directivity cornerhorn, because it puts all sound sources at the trihedral junction of a room's corner.

And this brings me to the second point, which is that all boundaries cause reflections. If the source is acoustically close, then the direct sound is in-phase with the reflection, making the boundary a launch point rather than a reflector. It acts like a baffle and nothing more. If the sound source is acoustially very distant, then the reflections are late enough they don't adversely affect response and simply contribute to the reverberent field. The really troublesome reflections

are early reflections, which interact with the direct sound to create anomalies in response.

Here again, the ideal would be to have all sound sources on an infinite baffle so there would be no early reflections. This is what soffit mounting does because it puts all sound sources on a single wall. And again, it's even better to have a constant directivity cornerhorn, because it puts all sound sources at the trihedral junction of a room's corner. That prevents an adjacent wall from causing early reflections.

Subject: Re: Placing speakers against the wall
Posted by mamoss on Wed, 10 May 2017 17:53:50 GMT
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I'm one of those people that don't delve so much into such kinds of material and I think you have pretty much simplified it. Now I know that a wall has to be specifically designed.

Subject: Re: Placing speakers against the wall
Posted by sawyer25 on Mon, 04 Sep 2017 10:34:33 GMT
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Actually there's a lot that goes into getting that ideal sound for your room, be it small or big. I place my speakers a few meters from the wall because at times you get distracting vibrations.
