dedicated room

Moderators: kendale, Aaronw, John Sayers

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Author	Message
valentin	**Post subject:** dedicated room **Posted:** Mon Aug 27, 2007 1:38 pm
offline **Joined:** Mon Aug 27, 2007 12:59 pm **Posts:** 58 **Location:** Mexico	Forum members I am new to your forum but I have been reading it for a time I has been very use full thank to all I now ask for your help directly I am involved in the construction of a dedicated listening room in Mexico and I want to share my ideas and design of so you can tell me if I am doing thing correctly.

Let me describe the room

Dimensions
Long 6.30m
Wide 3.90m
High 3.07 acoustic tile

The actual room is made out of concrete block with a thin layer of plaster the floor is at ground level and it is cement layered the celling is also cement at 3.75 and we need about 60 cm for ducts

There are 2 doors to the back wall one leads to a bathroom and the other to a hallway
There are no windows.

The dedicated room will be primarily used for stereo but with the possibility for HT 5.1
Classical music is in mind so we prefer a live room and sacrifice HT performance

I have decided on an acoustical tile ceiling at a height of 3.07 with the use of clouds at refection points. I have chosen this dimension because of the efficiency of the panel system for the walls (Les cutting, standard panels and frames)

(I will include some pictures.)

The floor will be solid ¾ wood floor over a ¾ frame work.

	This leaves me with a room with volume of : Volume 75.48 m2 Wall area Front Wall 11.98m2 Left Wall 19.35m2 Back Wall 11.98m2 Right Wall 19.35m2 Ceiling 24.58m2 Floor 24.58m2 Total Area 111.81m2 continuous
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valentin	**Post subject:** **Posted:** Mon Aug 27, 2007 1:42 pm
offline **Joined:** Mon Aug 27, 2007 12:59 pm **Posts:** 58 **Location:** Mexico	Having the dimensions I started to by placing the sweat spot following the 38% rule Placing the listener at 62% from the front wall (or 38% from back) as I have read that you can use either front or back wall. I chose this point because it leaves you space behind the front speakers for the screen and treatment and a reasonable space behind. Having this point I could build around the treatment

Let me start with the side walls

Lateral walls consists of the next treatment:

8.5 diaphragmatic panels tuned at 100hz for a total area of 6.33
6 diaphragmatic panels tuned at 150hz for a total area of 4.47
8 perforated panels 19.63% open space 5.95
Corner trap with quadratic diffusers front 4 inch oc 703 2.60
Image of diaphragmatic panel trap

Image of angled perforated panels

The floor will be of ¾ solid wood on frame construction. And we will use a zonal carpet of 2.70m x 1.70m for first reflection points

The celling will be of acoustical tile with one acoustic cloud consisting of 122 x 244 of 10cm inch oc 703 in a box with 10 cm of air cloth front centred at first refection point

Front wall

Centred will have a 122cm high x 183cm wide 10cm oc703 with 10cm air

In the corners quadratic diffuser then a cd rack behind 10cm oc703 and helmholtz tuned at 53hz
In the bottom part of this wall there is a space for the electronics and above that the video screen

The back wall will have a centered absorber 122cm x 122cm and on the sided on the doors quadratic diffusers 61cm wide 122cm high also on top in horizontal orientation near the ceiling 3 more quadratic modules.

I have used Chris Whealy calculators and this are the results

RT60 using various formulae

Formula 125Hz 250Hz 500Hz 1KHz 2KHz 4KHz
Sabine 0.33 0.30 0.27 0.29 0.34 0.36
Eyring 0.27 0.24 0.21 0.23 0.29 0.30
Fitzroy 1 0.39 0.27 0.21 0.24 0.35 0.32
Fitzroy 2 0.25 0.24 0.21 0.24 0.29 0.30
Arau 0.31 0.25 0.21 0.24 0.31 0.31
Millington 0.25 0.23 0.18 0.19 0.24 0.28

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gullfo

Post subject:
Posted: Mon Aug 27, 2007 2:53 pm

offline

Moderator

it looks like the start of a nice home theater

Joined: Wed Jul 13, 2005 3:55 am
Posts: 4582
Location: Old Tappan, NJ USA

have you measured the room to determine if the panel traps are actually needed at the frequency you have specified? maybe more broadband treatment is the way to go until you can measure the room and determine what needs to be tweaked.

_____
Glenn

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valentin

Post subject:
Posted: Tue Aug 28, 2007 1:27 am

offline

Joined: Mon Aug 27, 2007 12:59 pm
Posts: 58
Location: Mexico

Thanks
you have a good point there

The actual room is under construction so i cant measure right away

but i will leave 4 panels open 2 a side in different positions with 4 inch oc703

I decided on tuned panes filed with glass fiber based on the modal response of the room.

correct me if i am wrong but these diaphragmatic panels are efficient to about 1/2 octave to the tuned freq since they are filled with 2 inch oc 703
giving a a nice even coverage from the 70 hz to the 225 hz.

	please comment on the above still i will leave some panels open and i can measure them empty or filed (it a great idea thanks)
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gullfo	**Post subject:** **Posted:** Wed Aug 29, 2007 8:50 am
offline Moderator  **Joined:** Wed Jul 13, 2005 3:55 am **Posts:** 4582 **Location:** Old Tappan, NJ USA	i would wait to build the panels until measuring is done. otherwise you might find you have to tear them back down to reconfigure them. as an option you can put up a couple and leave the rest for once you have firm measurements in hand (like i think your suggesting...) the panel traps with insulation - say a 1/3 octave more like it as they tend to be used where you need specific control rather than broad band and expanding the Q is likely to result in loss of efficiency. I'd argue for more of the perf board resonators more likely being useful... _____ Glenn