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Flat panel speakers any good

17 December 2019 Another for those with Access to possible aid discussions. Blind testing of preferences for conventional vs flat panel speakers. Two flat non-commercial panel damping panels were able to score close to conventional speakers in testing blind preferences, while a commercial panel speaker scored much smaller. The real purpose of the scientific method is to make sure that Nature didn't mislead you thinking that you know something you don't actually know. Robert M. Persig December 18, 2019 He's not a subscriber so he can't read it, but thanks for bringing him to his attention. Very interesting. I wonder which flat commercial panel was used. I think the initials ML. (Although maybe the experimenters didn't want to use models of hybrid panels, so maybe something like Quads?). I've had the Quad 63s for a few years, and I'm enjoying the ESL 57s. I never liked the Martin Logan speakers, but I get their call. Dec 18, 2019 These are not flat panel speakers that you think of in hifi. These are instead panels that drive flat surfaces, often used in architectural audio to hide speakers behind drywall, etc. Here is a blow of them: They say that using a number of drivers with cushioned material can sound as good as typical shelf speakers (eg KEF LS50) and that standard prediction patterns (eg olive et al.) do not work for them. I mean, it sounds better than the pattern predicts. The assumption that their large size may have something to do with this. December 18, 2019 You can buy transducers that attach to any flat surface at reasonable prices. A guy put them on the guitar and used them as speakers. It's a subset of the bending wave concept. I'd rather be called a fool by objectivists telling me that I don't hear something I think I heard over being called a pie fool in the audiophile sky that peacock expensive audio jewelry telling me that I should be hearing something I don't hear. December 18, 2019 discussed here, and People tend to overestimate their hearing abilities. Use your ears to listen to music, not as an analyzer. Dec 19, 2019 These are not flat panel speakers that you think of in hifi. These are instead panels that drive flat surfaces, often used in architectural audio to hide speakers behind drywall, etc. Here is a shot of them: See attachment 42935 They say that using a number of drivers with cushioned material can sound as good as typical shelf speakers (eg KEF LS50) and that standard prediction patterns (eg olive et al.) do not work for them. I mean, it sounds better than the pattern predicts. The assumption that their great may have something to do with this. Okay, I was wondering if that's the case, since I couldn't see the paper. The real purpose of scientific is to make sure that Nature didn't mislead you thinking that you know something you don't actually know. Robert M. Persig December 19, 2019 discussed This video was the first thing that came to mind. Thanks for sharing. December 19, 2019 It's kind of amazing to me that someone would spend the time and effort of making a video showing to build these things, and show measurements, but their measurements don't make any sense (a single measuring point, 1/24 smoothing and maxing out at 7.44khz? what?), and they don't actually show any final setup metrics, despite claiming it's much flatter than previous metrics. I mean, what a mess, unless, of course, that's intentional or the guy's just semi-crazy. December 19, 2019 One I think comes to mind: If they can get these close to conventional speakers in testing blind preferences, then they should be more than good enough to use in background-music applications and could possibly be both more visually appealing (because they are invisible) and less expensive than decent in wall or ceiling speakers. December 20, 2019 There's a very long thread at Audiocircle singing the praises of the surface speakers. . Personally, while I'm a fan of the thought box, I'm also a fan of physics. Such a loudspeaker cannot be correct. Some (or even more) people like the sound of inaccurate speakers. Look at the success of B&W since they moved from reference to preference. The old Matrix 801 measured as a manual. Flat on the axis, flat off the axis. Each recent B&W has a deliberate average bath, then a deliberate tip, then occasional flatness if you listen to the right place on the axis. Depressingly, all new KEF R series have a smaller but still deliberate dip in the lower midrange. Because people prefer that sound to the listening tests. To the extreme, many people (including some supposedly experienced reviewers at Stereophile) love the sound of Essence Zu, the recipient of the worst unique set of independent metrics I've ever seen. This is not a loudspeaker, it is a tone control. I remember stories from when the recorded music first came out 100 years ago and listeners couldn't tell the difference between live and shellac. It's also what I keep banging on about with the obsession here and elsewhere that Harman's spine and house curves are the Holy Grail. They're predictors of what people like in blind tests. But that's not the same as predicting accurate speakers. December 23, 2019 It's a little too hand fluttering in this response. While I will admit that NXT type transducers are not likely to find use as full range transducers, they've found applications in commercial speakers, it would be Cambridge Aero speakers as a midrange/tweeter and as a midrange in the Audio Philharmonic BMR Philharmonic which received rave reviews and large measurements from Audioholics. Flat panel speakers rely heavily on the material on which they are mounted for the best acoustic quality. In particular, for DML speakers (broadcaster in distributed mode), sound is produced by distributing vibration modes in the panel. You can easily spend far too much on special excitatory foam or materials optimized for producing the highest quality sound. [Tech Ingredients] makes a deep dive into how to build high-quality and low-cost DML speakers using some interesting materials, such as acoustic ceiling plates and polystyrene. It analyzes their frequency based on the material and shape used and demonstrates how a full setup sounds with studio microphones and stereo speakers installed. Shapes can allow the translation of resonances for different speakers so that they do not overlap – the tips can be matched with gutters to produce a more even sound. Squares with rounded edges work best for the translation of resonance. Balsa wood is mainly used for low frequencies and polystyrene for high frequencies, although working ceiling tiles as well as either materials and are significantly cheaper. Rather than retrofitting in metal drop ceiling frames, he instead installs his panels vertically. It shows the process of preparing styrofoam and ceiling tiles for hanging, including tips for creating a makeshift circular saw for drilling holes and securing cotter needles with epoxy. [Tech Ingredients] goes through experimenting with unusual shapes and combinations of materials to produce the best possible speakers. It's a fascinating video that walks through the ins and outs of DYing's own set of speakers, and deserves a watch even just to hear about the acoustic properties of the materials. [Ed Note: Yes, this video is a little long in the tooth, but we'll keep getting tips for it, so it's news for someone! But feel free to skip if you've seen this one before.] [Thanks Digital Corpus for the tip!] Engineers investigated flat panel speakers for structural vibrations and acoustic radiation. A panel speaker consists primarily of a panel and an exciting inertia. Unlike conventional speakers, they have flexural resonance, and the panel vibrates as randomly as possible. Simulation tools facilitate the integration of the panel speaker system. In particular, the electro-mechanical analogy, the analysis of finite elements and the rapid transformation of Fourier predict vibration and acoustic radiation. The design procedures are also summarised. Sensitivity and Efficiency Issues To compare panel speakers with conventional speakers, engineers conducted experimental investigations to assess frequency response, directional response, sensitivity, sensitivity, harmonic distortion of both speakers. The results showed that the panel speakers suffered from a sensitivity and efficiency issue. In addition, to alleviate the problem, a woofer using electronic compensation based on the H2 model matching principle complements the bass response. After indicating in the result, using the combined panel-woofer system made a significant improvement to the panel speaker. Types of flat panel speakers There are several types of flat panel speakers. Engineers have been working on flat speakers for decades to reduce the size of speaker boxes. The standard flat panel speaker has an excitatory attached to a square panel. In addition, the flat panel acts as a diaphragm. Below are some examples of different designs. Engineers can also use different materials as a diaphragm, from vinyl to polystyrene. The standard flat panel electrodynamic speaker was difficult to do because it is difficult to vibrate the entire flat surface evenly, while creating a good frequency response. Thus, other types of speakers have evolved to try to make a speaker in a flat shape. Types of flat panel speakers: ribbon diffuser, magnetic plane, electrostaticMa diaphragm can have paper glued to both sides of the polystyrene to help with sound production. The structure can also consist of PET foam, polypropylene foam, polypropylene, ABS, fiberglass, and carbon fiber. The four corner points of the flat diaphragm are attached to a pillow. The excitator pushes the center of the diaphragm forward causing the surface to bend, generating sound waves. DML Distributed Mode Speakers (DML) is another type of speaker that is closely related to flat panel speakers. They produce sound by inducing vibration modes evenly distributed in the panel through a special electro-acoustic excitator. Distributed speakers work differently from most others, which usually produce sound by inducing piston-like motion in the aperture. Excited speakers in distributed mode include, but are not limited to, coil and piezoelectric moving devices. Their placement corresponds to the natural resonance pattern of the panel. NXT licenses two classes of speakers with distributed mode: SurfaceSound for traditional flat-screen applications, and SoundVu for applications that produce sound directly in front of the screen (either through a projection screen that works as a LMD or a transparent DML on the screen). texts Source