Development of the K-exciter for Flat-panel Speaker

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ABSTRACT

The research is focused on developing K-exciter for a stiffened composite flat-panel speaker of nano-carbon tube. The K-exciter is the only source of power in the flat-panel speaker. The exciter is designed based on K-exciter of Professor Kam. According to the design theory, this research improved the shocking efficiency of the original design and manufactured the exciter to apply the flat-panel speaker. The 3C products at the present time pursue lighter weight and smaller size. If the products were smaller, the speaker inside the products must be smaller. Hence this research was to develop a flat-panel speaker to solve this problem. The flat-panel speaker could have more efficient ways to use space and obtained higher sound pressure. This research developed the K-exciter which has the optimum shocking efficiency for the flat-panel speaker, because the traditional circular exciter could not enlarge the size to increase the sound pressure. In this research, the size of the K-exciter was defined as 17×15×5mm3. In order to improve the flux density which distributes in the air gap and increase force, the different designs of ferrosilicon will be developed in this research. The finite element analysis software, ANSYS, which was applied to analyze and simulate the flux density and the force of the exciter. Afterward, this paper would compare the results between the experiments and the simulations. The research could apply the best manufacturing parameter of the K-exciter by simulating.

Keywords : Flat-Panel Speaker ; exciter ; Final element analysis

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