

Development of vibrating plates and planar loudspeakers

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ABSTRACT

The main purpose of this paper is developed the membrane, produced exciter, selected surround, the best design and assembly to develop a whole range of sandwich planar loudspeakers. The sandwich membrane is used most materials that are composed carbon fiber prepreg materials/carbon nanotubes, and foam board/ Balsa. The design of sandwich membrane design includes patterns, weight, stiffness would affect the high frequency range, and the overall sensitivity. The pattern design is changed to wide range of audio speakers, which is enhanced sensitivity; and steadied low-frequency. This is developed Strip-shaped exciter which is adhered the damper for what it suppress irregular vibration, to avoided large amplitude, make the deep phenomenon when the exciter possibly clash magnet. In thrust aspect, the magnet plus the washer above and underneath it to enhanced magnetic flux, so that the thrust increased. The strip-shaped exciter can according to the diaphragm size free to lengthen, no matter how much the speaker body, the strip-shaped exciter because not it become large but the thickness increases. This study is used finite element analysis and optimization Fortran program, for the sandwich of pattern membrane planar loudspeaker at the range of 20Hz ~ 20KHz used the best method to find optimal design parameters(excitation length, diaphragm material, coating areas, surround system material quality, diaphragm pattern), made the sound pressure curve to achieve the best smooth. Therefore, the optimal manufacturing parameters would manufacture sandwich planar loudspeaker to measured sound pressure curve that compared experimental values and theory values.

Keywords : Sandwich structure、 Damper、 Strip-shaped exciter、 Manufacturing parameters、 Sound pressure curve

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