

Experimental Study on the Heat Transfer Characteristics of the 200W Class Woofer Speaker

Authors : Hyung-Jin Kim, Dae-Wan Kim, Moo-Yeon Lee

Abstract : The objective of this study is to experimentally investigate the heat transfer characteristics of 200 W class woofer speaker units with the input voice signals. The temperature and heat transfer characteristics of the 200 W class woofer speaker unit were experimentally tested with the several input voice signals such as 1500 Hz, 2500 Hz, and 5000 Hz respectively. From the experiments, it can be observed that the temperature of the woofer speaker unit including the voice-coil part increases with a decrease in input voice signals. Also, the temperature difference in measured points of the voice coil is increased with decrease of the input voice signals. In addition, the heat transfer characteristics of the woofer speaker in case of the input voice signal of 1500 Hz is 40% higher than that of the woofer speaker in case of the input voice signal of 5000 Hz at the measuring time of 200 seconds. It can be concluded from the experiments that initially the temperature of the voice signal increases rapidly with time, after a certain period of time it increases exponentially. Also during this time dependent temperature change, it can be observed that high voice signal is stable than low voice signal.

Keywords : heat transfer, temperature, voice coil, woofer speaker

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