

Investigation of Energy Consumption and Sound Quality for Class-D Audio Amplifiers using Tracking Power Supplies - DTU Orbit (08/11/2017)

Investigation of Energy Consumption and Sound Quality for Class-D Audio Amplifiers using Tracking Power Supplies

The main advantage of Class-D audio amplifiers is high efficiency which is often stated to be more than 90 % but at idle or low power levels the efficiency is much lower. The waste energy is an environmental concern, a concern in mobile applications where long battery operation is required and a concern in other applications where multiple amplifier channels are generating heat problems. It is found that power losses at low power levels account for close to 78 % of the energy consumption based on typical consumer behavior investigations. This paper investigates the theoretical limits of stepless power supply tracking and its influence on power losses, audio performance and environmental impact for a 130 W class-D amplifier prototype as well as a commercialized class-D amplifier. Both modeled and experimental results verify that a large improvement of efficiency can be achieved. The total harmonic is found to be unaffected by stepless power supply tracking due the high supply rejection ratio of the used amplifiers under test.

General information

State: Published

Organisations: Department of Electrical Engineering, Electronics, Acoustic Technology

Authors: Yamauchi, A. (Intern), Schneider, H. (Intern), Knott, A. (Intern), Jørgensen, I. H. H. (Intern), Andersen, M. A. E. (Intern)

Number of pages: 9

Publication date: 2015

Host publication information

Title of host publication: Proceedings of Audio Engineering Society 138th Convention

Publisher: Audio Engineering Society

Article number: 9287

Main Research Area: Technical/natural sciences

Conference: Audio Engineering Society 138th Convention, Warsaw, Poland, 07/05/2015 - 07/05/2015

Source: PublicationPreSubmission

Source-ID: 105989355

Publication: Research - peer-review › Article in proceedings – Annual report year: 2015