IGN AND DEVELOPMENT OF A HIGH EFFICIENCY LOW DISTORTION POWER AMPLIFIER

DESIGN PROJECT

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Undergraduate Design Project
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ABSTRACT

RAYMOND L. ERSANDO and MA. JINNEEH A. FERRER. Design and Development of a High Efficiency Low Distortion Power Amplifier. Undergraduate Design Project. Bachelor of Science in Electronics and Communications Engineering in Cavite State University, Indang, Cavite. March 2007. Adviser: Mr. Cesar C. Carriaga.

The Design and Development of a High Efficiency Low Distortion Power Amplifier was conducted at Windward Hills Subd., Dasmarinas, Cavite from August 2007 to December 2007.

The project specifically aimed to design a 50% to 55% efficiency power amplifier, construct its power supply, tone control circuit, and power amplifier circuit. The power amplifier was tested and evaluated.

The device was a two-channel stereo amplifier that was compatible to 500 watts, 8 ohms speaker system for each channel. It has four channels for auxiliary inputs and two channels for speaker outputs. It also has volume, balance, bass and treble controls to be adjusted depending on the preferred output.

The designed power amplifier underwent actual. The device was set-up with DVD and MP3 format players and was connected to 500 watts speaker. The output voltage and current was measured using the multimeter. The rated power output of each channel was 506.25 watts. The two-channel stereo amplifier delivered a total output of 1012.5 watts. It was also evaluated using oscilloscope where it resulted to almost the same waveform for the input signal and output signal which implied that the device has low distortion.

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DESIGN AND DEVELOPMENT OF A HIGH EFFICIENCY LOW DISTORTION POWER AMPLIFIER [1/]

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[1/] A design project presented to the faculty of the Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University (CvSU), Indang, Cavite in partial fulfillment of the requirements for graduation with the degree of Bachelor of Science in Electronics and Communications Engineering with contribution number ECE–2007–08–007. Prepared under the supervision of Engr. Cesar C. Carriaga

INTRODUCTION

Nowadays, we use mobile systems that are equipped with high power speakers. These speakers can only be matched by a high power amplifier. Amplification can be defined as the process of increasing the magnitude of a variable quantity--especially the magnitude of a voltage and current, without substantially altering any other quality. An electronic amplifier is a device for increasing the power of a signal. It does this by taking power from a power supply and controlling the output to match the input signal shape but with larger amplitude. An amplifier can be considered to be any device that uses a small amount of energy to control a source of a larger amount of energy, although the term today usually refers to an electronic amplifier. The relationship of the input to the output