DESIGN OF BIO HARMONIC AUDIO TECHNOLOGY WITH SMARTCHIP SERIES WT5001 USING THE SOLAR CELL TECHNOLOGY

by Dr. Supardi, M.Si, Agus Purwanto, S.Si, M.Sc., Drs. Nur Kadarisman M.Si

ABSTRACT

The objectives of this research are: (1) to design Bio Harmonics Audio (BHA) with smartchip WT5001 and equipped with solar cell module as power supply provider, (2) to know the magnitude of peak frequency deviation, through peak frequency test on "garengpung" sounds file and peak frequency test on the output sounds of the BHA, (3) knowing the effectiveness of using the solar cell module as the BHA power supply provider, through the discharge test and charge test using the solar cell.
Methods in this study include preparation, design/manufacture, and testing. Preparation is the creation of sound instrument circuit with WT5001 sound module and preparation of "garengpung" sound files in SDcard. The design of the tool is the creation of a tool's work configuration scheme, consisting of sound player system and charging system. Sound source instrument is sound files of "garengpung" which have frequencies 2000 Hz, 3000 Hz, 3500 Hz, 4000 Hz, 4500 Hz, 5000 Hz, and 6000 Hz. The output of WT5001 is amplified by the PAM8610 amplifier, and is connected to a horn speaker to produce "garengpung" sounds. The charging system uses a 10 Wp solar cell module, connected to a 12-volt battery through the charger controller. The testing of tool include the peak frequency test on output sounds produced by the tool, the peak frequency test of sound source files, battery discharge test, and battery charging test using solar cell.
The result of this research is a tool of BHA which has been tested, composed of "garengpung" sound system player with WT5001 and electric charging system using solar cell module with solar energy source. Result of peak frequency test on "garengpung" sound files and peak frequency test on output sounds produced by the tool, shows the deviations of peak frequency that are 13,46-140,81 Hz. Based on the results of the discharge test for 15 hours by the on mode playing and battery charging test for 7 hours, indicating that the use of 10Wp solar cell module is effective enough to provide ABH electrical power in 12 V 7.2 Ah battery.

Kata Kunci: *BHA, WT5001, solar cell module.*