ABSTRACT

Currently lamps using light emitting diodes or led as lighting devices is commonly used, such as in rooms, roads to vehicles. in uses led as lighting device has negative effect, which is produce a harmonic distortion. This distortion occurs because there are non-linear properties generated by the LED itself and led driver. There is an international regulation that regulate the minimum limits of harmonic distortion on a device, the author refers to the regulations of IEC 61000-3-2 which specifically regulates about harmonic distortion limits in lighting devices.

In this final project lamp will made by using light emitting diode and linear driver. there is also a filter with passive filter type used to reduce harmonic distortion in the circuit. Filter design will use a single-tuned filter based on component such as resistor, capacitor and inductor. and there is a device to controlling on/off the lamp, monitoring voltage, current and power of the lamp by using an internet network. it can be accessed through a smartphone application.

The results of final project are led driver can give a voltage $\pm 3.1V$ and a current $\pm 265mA$ to led 5watt. A single tuned filter designed suppress 3th harmonic distortion at 150Hz from 68,5% became 63,5%. An also integrated system with internet networks using modular wi-fi connected to a server to send monitoring data voltage, current, power and control on and off of lamp that can be accessed through Blynk application on smartphone.

Keyword: harmonic distortion, light emitting diode, filter, IoT