

**Research Title:** Attenuation of Electromagnetic Interference (EMI) in Lighting System

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## ABSTRACT

T5 fluorescent lamp and Light Emitting Diode (LED) lamp become nowadays increasingly widely used in lighting system both inside and outside the buildings due to their efficient performance, light weight, low electrical loss resulting in energy savings. In addition, they are environmentally friendly because they do not contain toxic substance. For functioning, T5 fluorescent lamp and LED lamp need electronic ballast and driver, respectively. These additional devices produce harmonics and/or electromagnetic interference (EMI) in the system owing to their switching operation; this may cause malfunction or damage to nearby sensitive electrical/electronic equipments. Consequently, in this research, overall performance, illumination on the working area and harmonics or EMI reduction are all investigated. The noise level must be conformed to IEC 1000-3-2 (or EN 61000-3-2) standard.

In this research, comparative study of different brands of ballast electronics and LED lamp drivers is carried out in order to know the performance and harmonics generation. It is later found that the brand with low cost and without any standards has the highest harmonics and exceeds the applied standard. Hence, this type is used for harmonics filter design. After adding the filter, the overall system generates less harmonics and its performance is presently fairly equivalent to the high quality and high cost one, and also respects to the EMC standard. This could finally save cost for the consumers when using this lamp.

**Keywords :** Electronic ballast, Lighting System, filter, LED, T5 Fluorescent lamp, Electromagnetic Interference, Harmonics