

## ABSTRACT

The application of powerline communication technology faces many obstacles such as attenuation for various cable impedances of powerlines, distortion for multipath signal and noise from electrical appliances connected to power line.

Between those three obstacles, noise is the most crucial factor influencing digital communication over power line network. Based on the generator, noises can be classified into five types, which are coloured background noise, narrow band noise, periodic impulsive noise asynchronous to the mains frequency, periodic impulsive noise synchronous to the mains frequency, and asynchronous impulsive noise<sup>[15]</sup>. This final project investigates about noise characteristic influencing digital communication over power line network. The methods are by measuring the noise required from power line then comparing to noise model two-term gaussian mixture so an analysis of system can be resulted.

The measurement result shows that there are significant distinction in noise level for measurement was applied in different place, time, and noise sources. For the background noise, the highest level is happened at UKM (Unit Kegiatan Mahasiswa) PCM (Persatuan Catur Mahasiswa). On the other side, the time with the highest level is happened at 11 AM in some places like UKM PCM, laboratorium riset PLC (Powerline Communication) and laboratorium praktikum SisKom (Sistem Komunikasi). For impulsive noise, the highest noise level is happened on dimmer lamp.

From the measurement result can be concluded that background noise influenced by place and time where measurement was applied. Meanwhile, impulsive noise influenced by types of electronic equipment working near the measurement location.

Password: Powerline communication, coupling capasitif, noise background, noise impulse