

**POWER QUALITY
MONITORING AND ANALYSIS**

This is presented in partial fulfilment for the award of the

***Bachelor of Engineering (Hons)
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ABSTRACT

Power quality issue is becoming increasingly important because of the proliferation of sensitive loads at homes and industries. Power quality problems which were not important previously could now cause the maloperation of equipment that control manufacturing process. Under this situation, the whole production would stop and result in expensive losses.

This final report is concern with the findings of the power quality monitoring as was recorded at several selected site/locations in ITM vicinity. From the data collected, event analysis was done to :

- Identify the type of event that occurs.
- Compare power event summaries with the general equipment performance tolerances (CBEMA) curve.
- Extract events which exceed equipment tolerance for further power quality problem investigation/studies.
- Extract events which correlate to any recorded problems.
- Summaries the power conditions of the selected site/location.

It is intended to present an overall power quality conditions of the monitored site/locations.

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1.0 INTRODUCTION

Power quality (PQ) is an issue that needs continual attention. Power quality problems often have three perspectives. The end user needs to understand how the power disturbances will affect sensitive loads and therefore develop appropriate specifications, or install appropriate power conditioning systems. The manufacturer needs to understand the type of power disturbances and the general environment in which the systems will operate, in order to build systems that can withstand these disturbances or to recommend appropriate protection. The utility has to meet the customers' requirements for "clean" power and, at the same time, protect other customers from the power disturbances of other users, and also protect the system from user-generated disturbances.

To study the issue of power quality and its problems, it is important to understand the type of the electricity supply system that was practiced in Malaysia.

1.1 THE OPERATING VOLTAGE IN TRANSMISSION AND DISTRIBUTION SYSTEMS IN MALAYSIA.

The voltages of the main transmission networks are 275kV, 132kV and 66kV. A 500kV back-bone transmission is under construction. Voltage level in the distribution systems are at 33kV, 11kV, and 415/240 V.

The declared voltage at customers' meters is 415/240 volt with allowable variation of +5% and -10%. At Main Intake Substations the primary distribution voltage (33kV, 22kV, 11kV and 6.6kV) is normally kept constant by the transformer on-load tap changers. The frequency is maintained at 50 ± 0.5 Hz. [5]