SUMMARY

Outdoor sound propagation has been an area of interest in acoustics for a long time. Various theories and computational models have been derived in this field to predict the sound pressure level transmitted from a source. Their accuracy improves as technologies develop but are usually complicated and time-consuming.

The objective of this research is to verify the accuracy of two selected simplified mathematical models through site investigations. The power plant in Bintan Industrial Estate and its surrounding areas, without any large structural barriers, provide an ideal site for studying outdoor sound propagation. The mathematical models derived by Dr. Rufin Makarewicz are selected because they are relatively easier and practical to use by field engineers, and they consider divergence of the sound wave, the ground and turbulence effects. These are the major factors contributing to sound attenuation in an open area. This dissertation demonstrates the use of these models and examines their accuracy and limitations. Although these models are generally reliable in predicting the A-weighted sound pressure level for outdoor sound propagation, their accuracy relies on the understanding of the geographical condition of the site in order to select the suitable ground and turbulence coefficients.