

Mapping of Power Transmission Lines on Malaysian Highways Using UPM-APSB's AISA Airborne Hyperspectral Imaging System

ABSTRACT

Power transmission lines routes mapping is an important technique for locating power transmission line routes and towers on mountain/hilltops to assist viewing of their impacts on the environment, operations and allocation of public utilities. A study was therefore conducted to map the power transmission lines within Bukit Lanjan PLUS highway. The main objective of this study is to assess the capability of airborne hyperspectral sensing for mapping of power transmission. By using ENVI software, the airborne hyperspectral imaging data was enhanced using convolution filtering technique using band 3 which produced a gray scale image which appeared clearer and sharper. The spectral reflectance curves were acquired for each power line which showed the same spectrum characteristics in curve or the reflectance energy. This is because of the same power lines composition material for all power lines. Ground verification was done by comparing the UPM-APSB's AISA Global Positioning System (GPS) coordinates readings with ground GPS coordinates readings of the power transmission lines footings. The ground verification result from the two matching power transmission line footings showed that the accuracy of power lines identification was acceptable. This study implies that airborne hyperspectral imagers are powerful tools for mapping and spotting of suitable large transmission towers and lines.

Keyword: Power transmission lines, Airborne spectrometry, Spectral signature, Routing