OBSERVATION OF EQUATORIAL PLASMA BUBBLE IONOSPHERE DUE TO GEOMAGNETIC STORM EVENT IN MALAYSIA

This thesis is submitted in partial fulfillment for the degree of the Bachelor of Engineering (Honours) in Electronic (Communication) UNIVERSITI TEKNOLOGI MARA (UiTM)

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Table of Contents

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Abstract

Global Positioning System (GPS) is the space based navigation satellite system (GNNS) to be widely used around the world and provide alternative way to investigate the ionosphere irregularities. These irregularities give impact to performance of certain equipment such as GPS. The irregularities or depletion exits in an ionosphere layer called plasma bubbles. The main objective is to observe occurrence of equatorial plasma bubbles (EPBs) ionosphere at Malaysia due to Geomagnetic Storm. Several techniques can be implementing such as ionosonde, radar and Global Positioning System (GPS)-receiver. This project, focused on data taken by GPS receiver. This determination is made for satellites in Malaysia on 3th April 2010 until 7th April 2010. In this research data used taken from GPS Ionospheric Scintillation and TEC Monitoring (GISTM) monitored by University Kebangsaan Malaysia (UKM) station. The important parameter for detect occurrence of Equatorial Plasma Bubble (EPBs) in this research is the value of TEC depletion. Magnetic activity appears to suppress Equatorial Plasma Bubble (EPBs) with time delay of more than 3 hours and may last for 9 hours. It is shown that most equatorial plasma-bubble events commence at 10:00 UT – 22:00 UT on 5th April 2010.