

GPS IONOSPHERIC SCINTILLATION AND TOTAL
ELECTRON CONTENT DURING PARTIAL SOLAR ECLIPSE
IN MALAYSIA

WAN MUHAMMAD FAIZHAQIMI BIN WAN HASBULLAH

FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
MALAYSIA

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**This is presented in partial fulfillment for the award of the
Bachelor of Engineering (Hons.) Electronics (Communication)
UNIVERSITI TEKNOLOGI MARA (UiTM)**



**WAN MUHAMMAD FAIZHAQIMI BIN WAN
HASBULLAH
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM,
SELANGOR, MALAYSIA**

JULY 2013

**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA**

ACKNOWLEDGEMENT

With the name of ALLAH Most Gracious Most Merciful praise to the ALLAH Almighty for giving me the strength in order to complete this research and giving me the chance to complete this thesis successfully.

First of all, my sincere gratitude goes to my dad and mom and family for their support, understanding and encouragement. I would like to share my deep wisdom of gratefulness and appreciation to my supervisor Dr. Norsuzila Bt Ya'acob for her kindness, support and being the source of my inspiration. She had guided me a lot of knowledge and giving valuable information in order to finishing this research and UKM, Bangi for their cooperation for giving me the data. I also desire to show my highest appreciation for friends whose helping me in completing my final year project successfully. Lastly I would like to say may Allah bless you all.

Thank you.

ABSTRACT

The most famous and known effects of space weather is fluctuation in the amplitude and phase radio signal that propagates in the ionosphere. This fluctuation is also known as scintillation which will intense, degrades the signal quality, reduce the information content, or cause failure of the signal reception. During solar eclipse day, there are some fluctuation to the signal received by GPS (Global Positioning System). The analysis of fluctuation can be used to predict the behaviour of ionosphere during solar eclipse. The phenomenon in solar activity which is solar eclipse will occurs when the Moon passes between Earth and the Sun, thereby totally or partially obscuring the image of the Sun for the viewers on Earth. Scintillation at the ionosphere during the solar eclipse seems to be different compared to normal time. So, this research is mainly focuses on the effect of ionosphere corresponding to scintillation during solar eclipse. The method that will be used is analysing the GPS Ionospheric Scintillation and TEC Monitor (GISTM) data obtained from UKM Bangi station and Langkawi station using MATLAB. Before that, raw data that obtained from GISTM station will be converted into ASCII format using PARSEIM software. The result will be recorded in graph and tables to see the different of parameters value during solar eclipse happened and two days before and after it happened. The finding from this research is Total Electron Content (TEC) was decreasing when solar eclipse occurs. Then amplitude scintillation also decreasing. From this research, it shows that during solar eclipse occur, there will be a reduction in Total Electron Content (TEC) value because ion and electron will recombine and decrease the number of electron but the scintillation did not have an effect during solar eclipse that can be related to the reduction of ionizing radiation.

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