The detailed description of the observation is shown in Table 2. The radio signal measured by spectrum analyzer was averaging. Then, it was plotted into a graph of power level against wide frequency (0-3GHz) into two different time observations. All the value of power levels was precious averaging from data measured in every second. Then, the solar radiation data was collect from Weather Station at Balai Cerap KUSZA, Merang. The solar radiation values from the start until the end of the partial solar eclipse were used to compare. All the data were transfer into the computer for analysis and documentation.

TABLE III
THE DESCRIPTION OF THE PARTIAL SOLAR ECLIPSE OBSERVATION

Description	Date	Start Time	End Time
Before	8 March 2016	11:05 am	1:05 pm
During	9 March 2016	7:26 am	9:26 am

For comparison, the solar activities and solar eclipse, data x-ray flux from GOES mission and image of Sun from SDO mission are collected from NOAA website. This data are collected on the same date of the solar eclipse.

III. RESULTS AND DISCUSSION

The full, partial solar eclipse on 9th March 2016 at Balai Cerap Kusza, Merang was recorded by a staff of East Coast Environmental Research Institute (ESERI) as shown in Fig. 4. It has been starting recorded from 07:35 am until 09:29 am at the local time. About 71% the Moon covered the Sun with maximum partial solar eclipse occurred in less than 5 minutes.

A. RFI Monitoring

The average of power levels from 0 until 3GHz for two different time observation with two hours duration were determined and plotted as Fig. 5. The baseline for each observation also was illustrated in the graph.

As shown, a grey and red line of the graph is observed before and during the solar eclipse respectively. It clearly stated that the average of RFI before the solar eclipse is -171.14 dBm, while -156.62 dBm during a solar eclipse. The difference value between two baselines is about 14.52 dBm is considered as a large gap. Then, all peak signals between before and during the solar eclipse have been observed and determined as in Table 3 and 4. Generally, all detected prominence peak have been allocated to man-made sources according to International Telecommunication Union (ITU) and Spectrum Allocation List by Malaysian Communication and Multimedia Commission (MCMC).

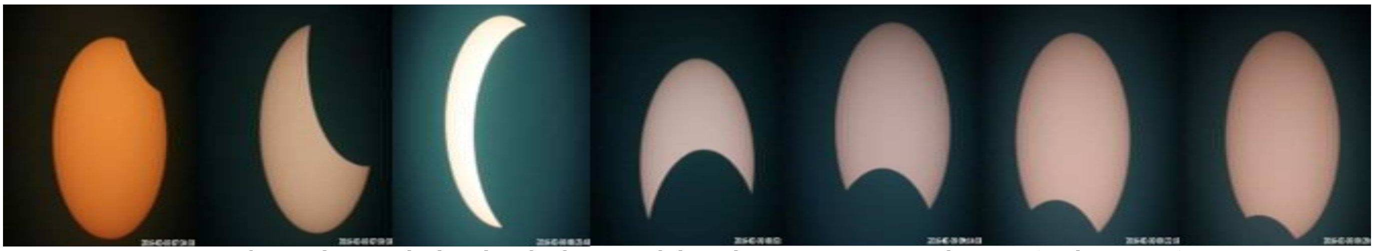


Fig 4. the complete partial solar eclipse has been recorded at Balai Cerap Kusza on March 9, 2016 (Credit to ESERI)

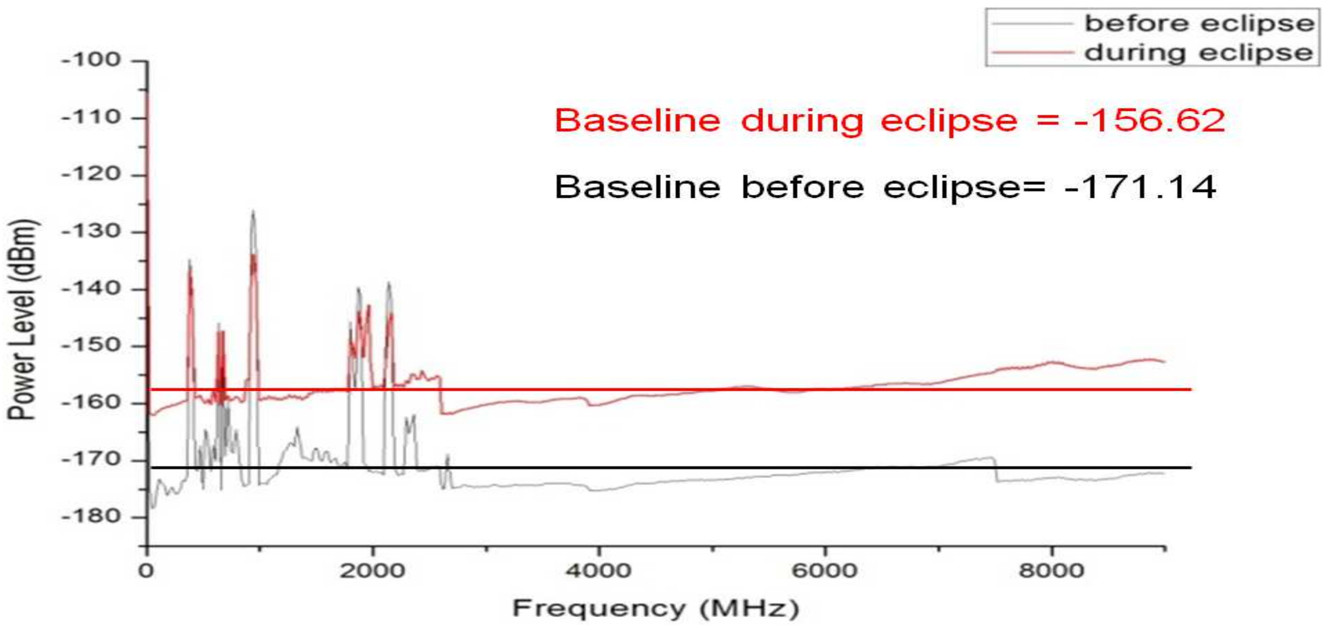


Fig. 5 The graph of frequency against the power levels with their baseline for two observations

TABLE IIIII
THE DESCRIPTION OF PROMINENCE PEAKS AND THEIR SOURCES FOR BEFORE SOLAR ECLIPSE

Frequency (MHz)	Sources
382.5	Digital Trunked Radio System
630	Analogue TV and Digital Terrestrial Television including Terrestrial Sound Broadcasting (Channel 41)
945	Cellular Mobile Service ([EGSM/GSM]/IMT)(Celcom)
1327.5	Global System for Mobile 1800 (GSM 1800) Lower Band (Celcom)
1867.5	Global System for Mobile 1800 (GSM 1800) Upper Band (DiGi)
2127.5	International Mobile Telecomuniccation-2000(IMT 2000) Frequency Division Duplex (FDD) Lower Band (maxis)
2362.5	International Mobile Telecomuniccation-2000(IMT 2000) Frequency Division Duplex (FDD) Upper Band (DiGi)

TABLE IVV
THE DESCRIPTION OF PROMINENCE PEAKS AND THEIR SOURCES FOR DURING SOLAR ECLIPSE

Frequency (MHz)	Sources
382.5	Digital Trunked Radio System
675	Analogue TV and Digital Terrestial Television including Terrestial Sound Broadcasting (Channel 46)
945	Cellular Mobile Service ([EGSM/GSM]/IMT)(Celcom)
1957.5	International Mobile Telecomuniccation-2000 (IMT 2000) Frequency Division Duplex (FDD) Lower Band (DiGi)
2160	International Mobile Telecomuniccation-2000 (IMT 2000) Frequency Division Duplex (FDD) Upper Band (DiGi)

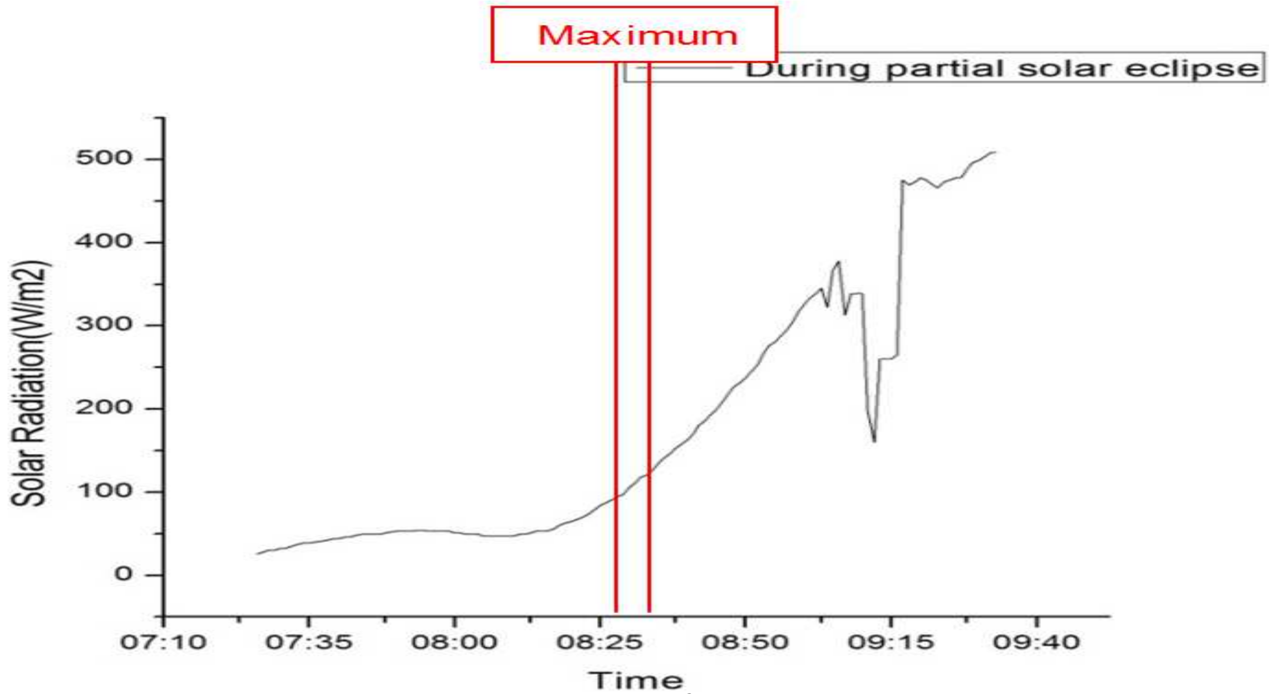


Fig. 6 Graph of solar radiation (W/m^2) against local time (AM)

The decreasing the number of peak signal before and during the solar eclipse was clearly reduced from seven into five peaks. And the width of each peak signal during the solar eclipse also is not wide as before solar eclipse. The clear radio frequency has been considered as an RFI-free frequency window by [11].

B. Solar Radiation

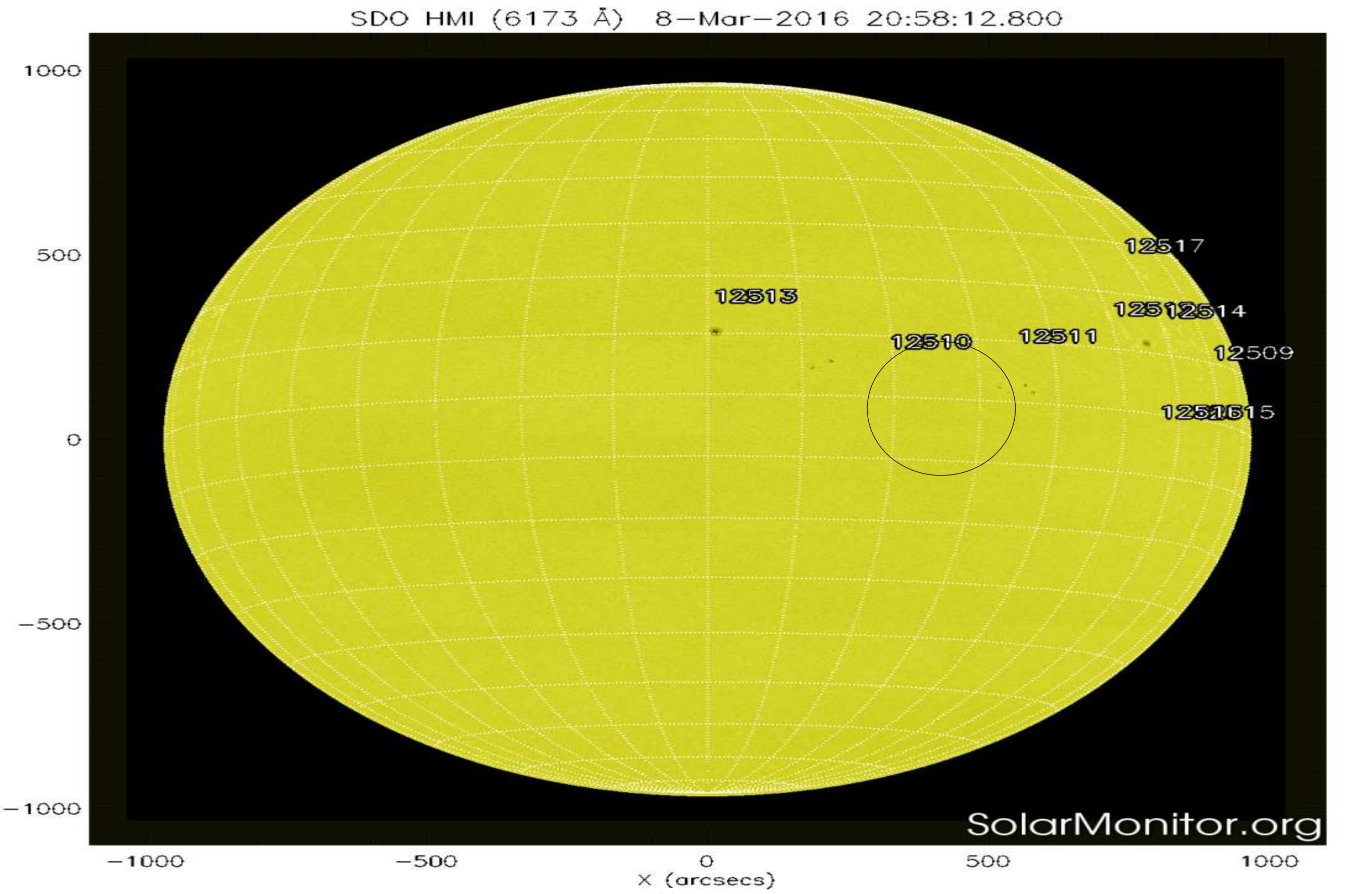
The solar radiation was recorded by Weather Station and plotted as following Fig. 6. The measurement of solar radiation was increasing following the time.

During the maximum of the partial solar eclipse, the solar radiation is increasing with normal rate. However, start from 9:11 am until 9:16 am, the solar radiation was decreased by more than 50%. This is because maybe the cloud was blocked the solar sensor at the instrument. Then, solar radiation was continuously increased at the time.

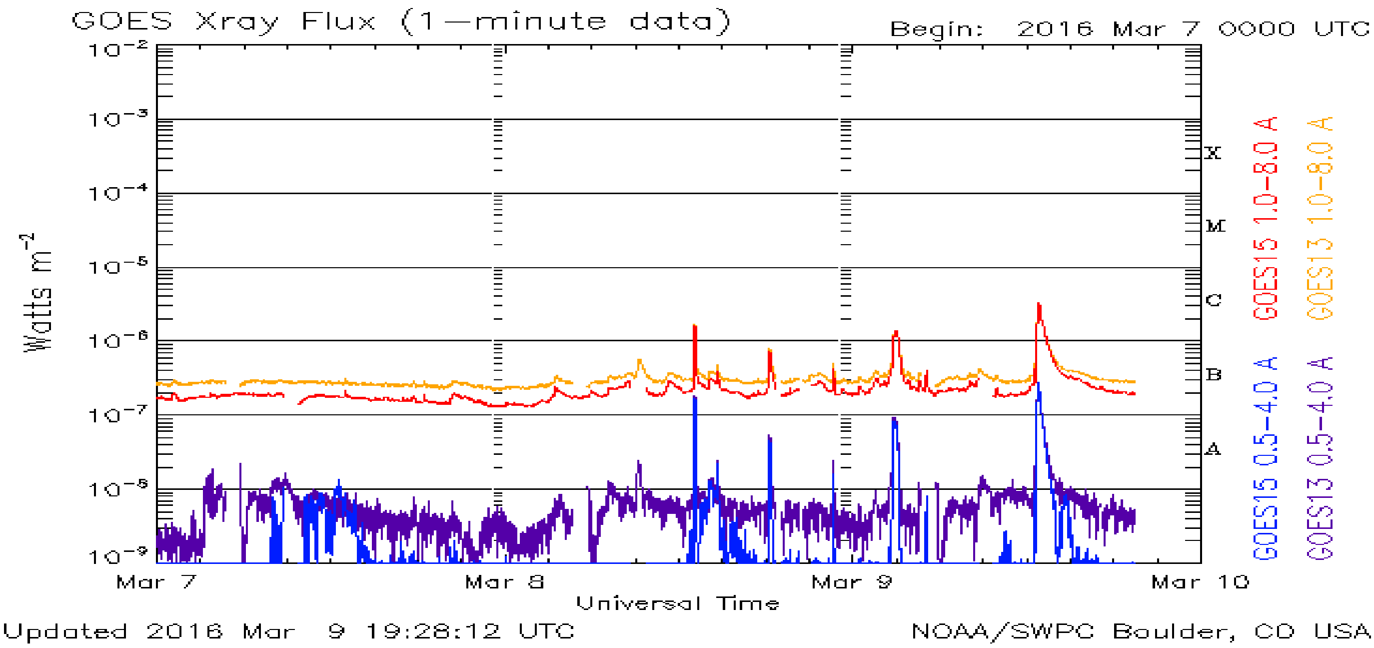
C. Solar Activities

In the other hand, NOAA report that the solar flare type C occurred at 13:03 UTC, 8th March 2016 observed by their spacecraft as Fig. 7 (b). This type of solar flare continues to emit from Active Region 12511 (AR12511) and does not produce any solar radio burst.

It can be concluded that the solar radio burst was impossible to occur at the same time and date of the solar eclipse. This is because solar radio burst was associated with a huge of solar flare and CME during active solar cycle [12]. In addition, the year of 2016 is the minimum of 24th of solar cycle as referring to NOAA, so that the number occurrence of radio burst [15] and sunspots was decreasing.



(a)



(b)

Fig. 7 a) The active region 12511(AR12511) located on the Sun at 8th March 2016 (dark circle) and b) GOES mission recorded x-ray flux data from 7th until 10th March 2016

IV. Conclusion

Malaysia is one of the countries that have experienced a partial solar eclipse on 9th March 2016 with about 67% until 80% the Moon covered the Sun. As observation conducted on that day at Balai Cerap KUSZA, Merang, Terengganu found that this phenomenon is not enough proving to give an effect of the radio signal and solar radiation. Although the baseline of radio signal [14] before (-171.14 dBm) and after (-156.62 dBm) of the partial solar eclipse on 9th March 2016 showed the difference result about 14.52 dBm, and the number of prominence peaks also decreased from 7 peaks to 5 peaks during the partial solar eclipse, yet, it was still unable to prove in a scientific result.

In addition, insignificant prove of solar radiation are shows from the changes of solar radiation before and during the maximum of the partial solar eclipse. This result may not affect due to less percentage of Moon covered the Malaysia during a partial solar eclipse. Also, active regions and solar flares taken by the NOAA space mission shows they are not facing the Earth directly.

Even though, this work is a part of an initial survey for partial solar eclipse in Malaysia. It is hoped that the radio signal observation and others parameters that can be affected from solar eclipse will continue. It should be noted that the solar eclipse may affect other factors. It is also hoped that this work can contribute the initial investigation toward partial solar eclipse.

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