CHAPTER VI

CONCLUSION AND SUGGESTION FOR FUTURE WORK

VI.1 Conclusion

Computed results of N_S, and K in this thesis are based on the CCIR recommendation. The variation of N_S are arranged in each month according to the data from the meteorological data. The relation between N_S and K is $K = 1/(1+0,00104\ N_S)$ of which the derivation based on the average vertical structure of refractive index in the CCIR recommendation.

The radio wave refractivity at the surface of the earth and the map of the earth effective radius coefficient corresponding to N_s are plotted. The mean value of K $(\overline{K})$ can be used in case of 50 % reliability but for higher degree of reliability the use of K in the worst month is preferable for economical planning.

According to the CCIR recommendation, and the American standard for the reliability of the radio path calculation are nearly the same value, the path propagation test can be use the same value of K.

In addition, the values of meteorological data from the Meteorological Department are mean values for each month, and each station the value of the radio wave refractivity is $\overline{N}^*$ which $\overline{N}^* = N\ (\overline{P}, \overline{T}, \overline{e})$, and the earth effective radius coefficient in each month are mean values $(\overline{K})$.

This thesis tabulates the monthly variation of the radio wave refractivity at the surface of the earth $(\overline{N}_S{}^*)$ and the earth effective radius coefficient at various locations,and plotted on the map of Thailand. The lines of iso-refractivity at the surface of the earth are drawn to show the tendency of the radio wave refractivity at the surface of the earth. The seasonal and the geographical variation will be very useful for radio engineers in

prediction the strength of the received signal, and the height of antennas to be used.

The maps of earth effective radius coefficient are also drawn and are very useful for microwave engineers.

The usefulness of these values in designing radio communication system are radio communication system planning, and site selection economically which is necessary to know these values.

In conclusion, the values of the radio wave refractivity, and the earth effective radius coefficient in this thesis can be used as the base data for the radio telecommunication planning. The mean value of the earth effective radius coefficient is 1,64, and the standard diviation is equal to $0,979 \times 10^{-2}$ which is very small value. The value to be used is $1,64 \pm 0,979 \times 10^{-2}$, then the value K = 1,64 can be taken to find the relativity between N_S and K is $K = 1/(1 + 0.00104\ N_S)$ as explaned before.

VI.2 Suggestion for future work.

Since the values of the radio wave refractivity and the earth effective radius coefficient which have been evaluated in this thesis are the average values, then for the future works the following should be done.

1. Recording the value of the meteorological data for future calculation of these values, to use correlation method which is more accurated than the average vertical structure of refractive index.

2. Re-evaluated the value of N_S and K using recent available daily data of the atmosphere. Compare the results to check the value that obtained in this thesis and the correlation method.

3. Test the value that obtained, which can be done by collect the propagation data, and study the path losses between the transmitting and receiving station in each path of Thailand by using these values, and also study about K-fading by collecting the daily data of field strength.