

Troposcatter Radio Link Estimation Software

1. Introduction

A software for Troposcatter radio link estimation has been developed for the Link Margin Estimation for tactical tropospheric communication. This software provides a visual interactive realistic way to view elevation profile on 3D globe. Using this software, the user and the planner shall be able to predict whether a tropospheric communication is possible or not between two locations considering the varied terrain and atmospheric factors supported by various parameter calculations.

2. Brief Description

Radio communication is widely being used in military for voice and data since a long time. Major options in radio wave communication includes LOS (Line of Sight), Diffraction and Tropospheric. For longer distances (order of 200 km) Tropo communication may be employed for propagation modelling and transmission. In hilly region, the earth surface profile between two communication station plays an important role. There may exist one or more hillocks that may intercept the path of radio waves thus resulting in heavy communication loss or sometimes no communication at all. These hillocks play an important role in deciding the elevation angles of antennas at source and destination stations.

For any link to be established various other losses are also need to be considered and computed. These losses decide whether a link may be established between two stations. This software computes Link Margin and predicts Link possibility. User can also generate the graphical and textual report for future references and record keeping purposes.

3. Features

The main features of the software are listed below.

- 3D Globe based Interface
- Interactive pan, tilt, zoom operation
- Integrated DEM & Vector layers
- Get, Set operation for antenna site
- Area selection by name
- Computation of height profile
- Estimation of range & critical horizon
- Computation of elevation & scatter angle
- Interactive antenna parameter control
- Computation of link possibility
- Generation of graph/plot
- Link report generation
- Use of state of the art GIS technology