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Advancements in Computer and Communications Engineering

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Chapter 7

Development of a Software Package for the Design of a Microwave Link

Md. Rafiqul Islam, Sheroz Khan, Khomsan Dao,
Selman Suvad & Nurfet Becirevic'

Introduction

This software will help users to design a microwave link without going into detailed mathematical equations. It will be easy for users to investigate different solutions for the same microwave link so that the design can be optimized.

A path profile is a graphical representation of a path between two adjacent radio link sites in two dimensions. The profile essentially assures that the proper clearance of path obstructions is achieved.

The software includes a large digital elevation data bank for sketching path profile. The software uses Digital Terrain Elevation Data (DTED) produced by National Geospatial Intelligence Agency (NGIA). This particular data has 3-arc seconds or approximately 100 meters resolution for U.S. and 30-arc seconds or about 1 kilometer resolution for rest of the world. The data covers almost all continents of the world. It is capable of predicting terrain fade and rain fade using ITU-R proposed world map with various reliability levels. It can estimate link budget and link performance with different digital modulation schemes. The link performance such as signal-to-noise ratio (SNR) and bit-error-ratio (BER) can be predicted for a wide range of environmental conditions which is a special feature of this software. All these calculations are easily performed with one click of the mouse. This software is user friendly and interactive because users can easily enter and vary input data to get desired outputs.