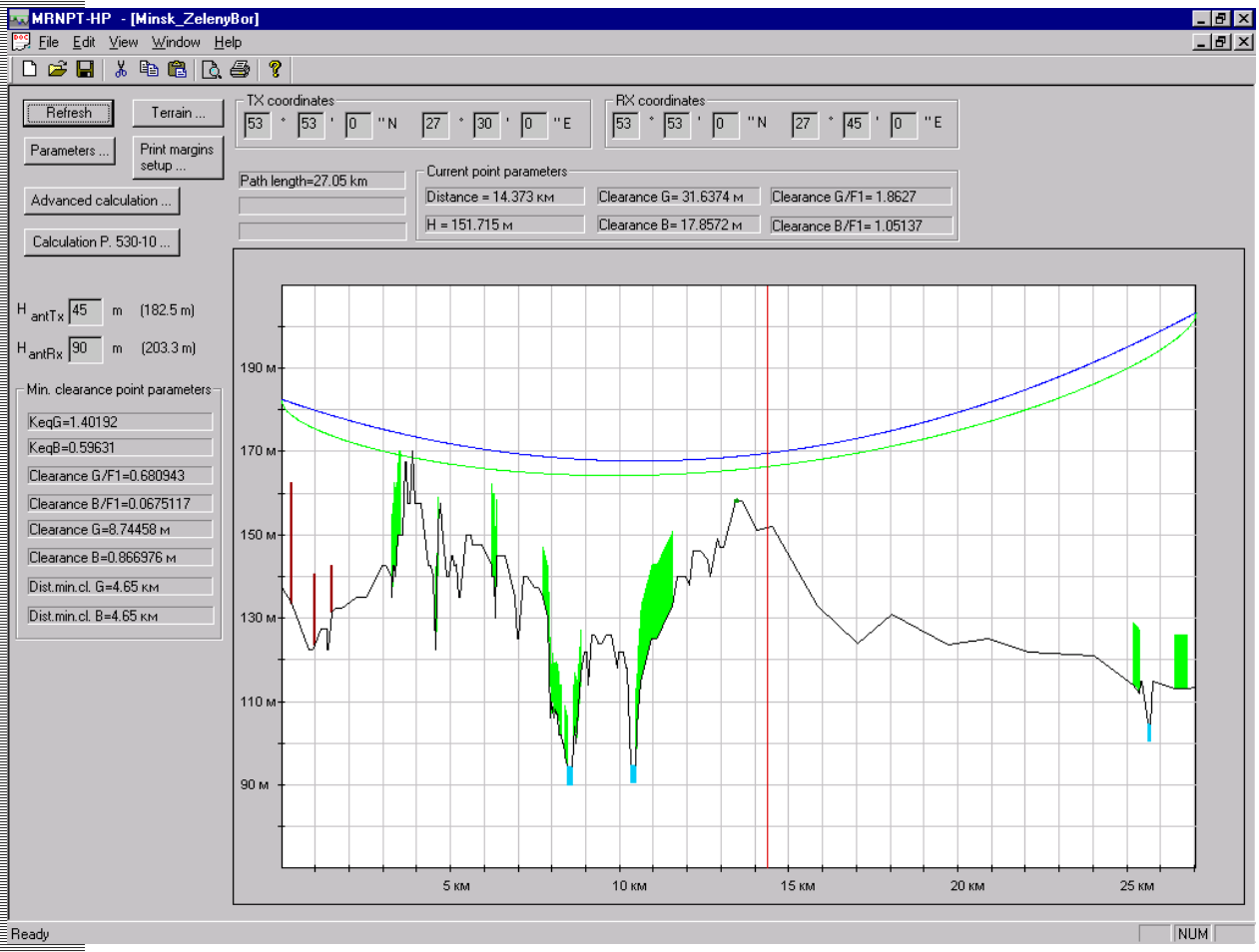
New capabilities in radio network design!

Microwave Radio Network Planning Tools:

Hop Designer

Application Area:

Hop Designer is developed to automate link budget calculation for line-of-sight digital radio-relay links

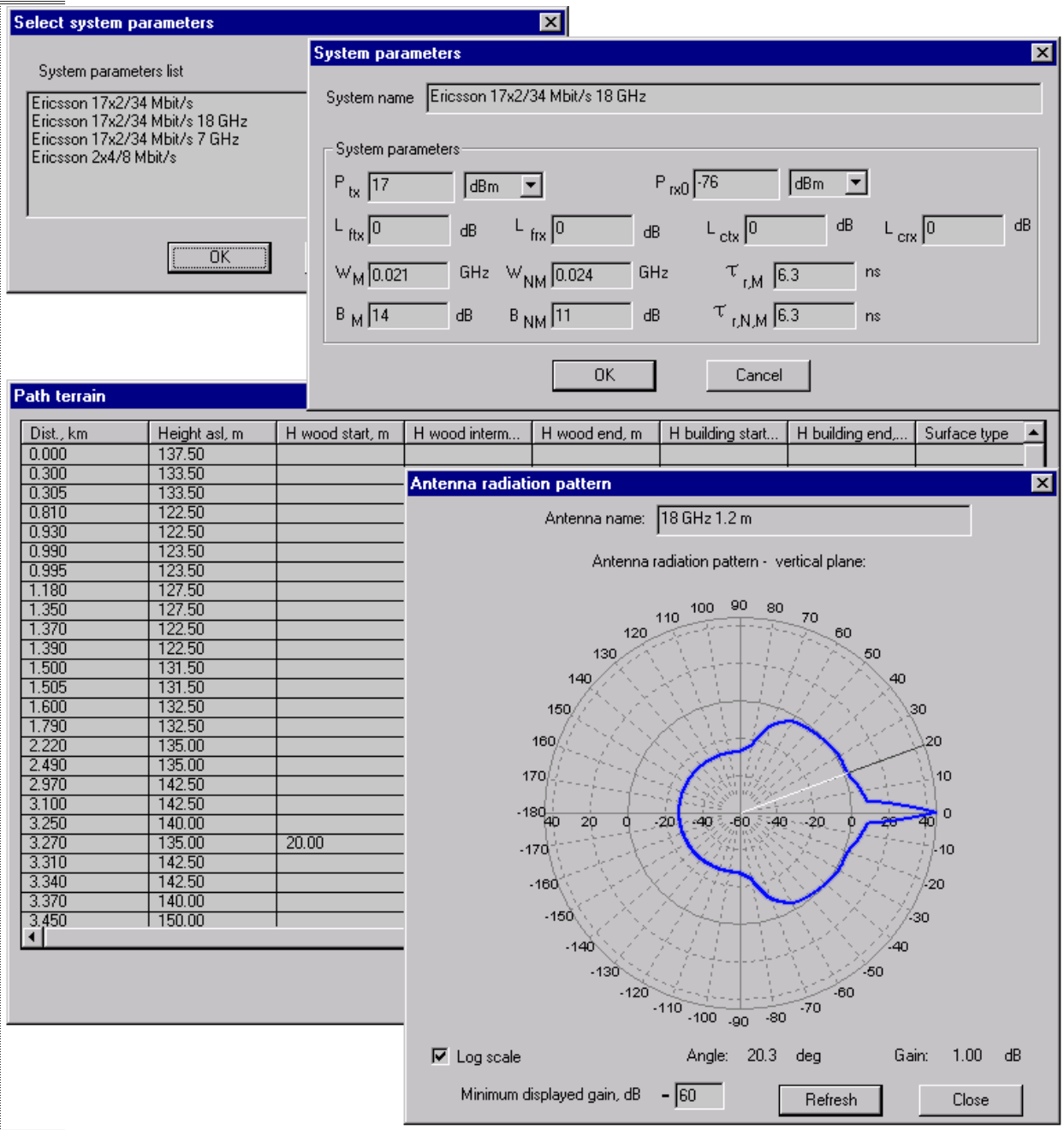


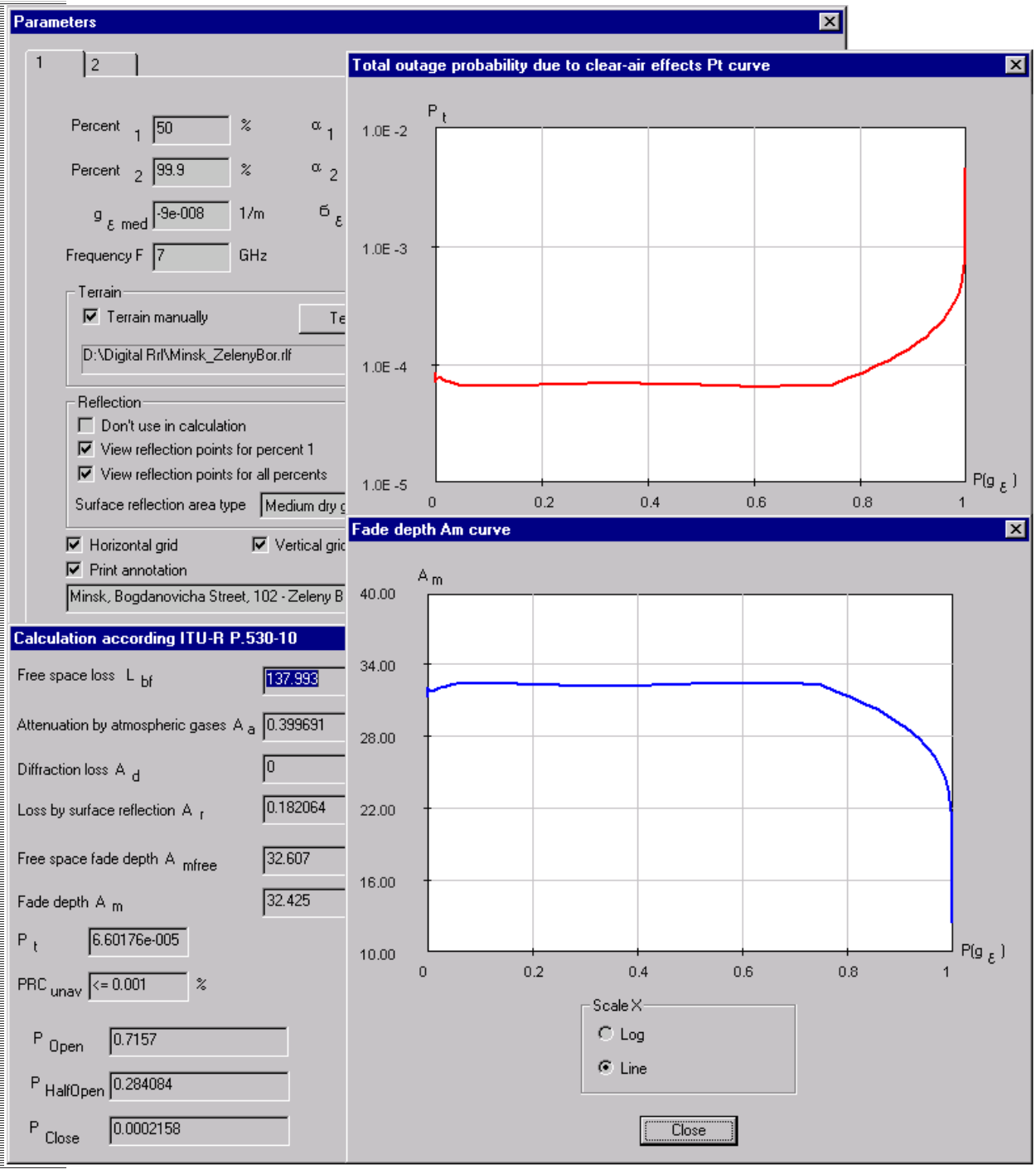
Methodology:

Hop Designer for line-of-sight digital radio-relay links is implemented on the basis of the following ITU-R Recommendations:

- P.530-11 Propagation data and prediction methods required for the design of terrestrial line-of-sight systems
- P.676-6 Attenuation by atmospheric gases

- P.834-4 Effects of tropospheric refraction on radiowave propagation
- P.836-3 Water vapour: surface density and total columnar content
- P.837-4 Characteristics of precipitation for propagation modelling
- P.838-3 Specific attenuation model for rain for use in prediction methods
- F.1093-1 Effects of multipath propagation on the design and operation of line-of-sight digital radio-relay systems
- F.1101 Characteristics of digital radio-relay systems below about 17 GHz
- F.1102 Characteristics of radio-relay systems operating in frequency bands above about 17 GHz
- P.453-9 The radio refractive index: its formula and refractivity data
- P.526-8 Propagation by diffraction





Functionality:

- Generation of the radio-relay link path profile with the use of digital maps on the basis of assigned radio-relay station deployment coordinates or manual input of the profile obtained from topographic maps and surface charts. Radio-relay link path profile provides separate display of Earth surface, forests, hydrographic objects, buildings and constructions.
- Radio-relay link path profile provides display of the first Fresnel zone boundary (with an arbitrary multiplier) for effective Earth radius exceeded for arbitrary percentage of time.
- Functionality for quick selection of antenna heights and sites for deployment of radio-relay link facilities in order to fulfill the line-of-sight criteria for the radio-relay link path.

- Prediction of quality parameters for line-of-sight radio-relay links (outage probability due to clear-air effects and outage probability due to rain) with the use of the ITU-R Recommendation P 530-10.
- Capability for more detailed calculation of radio-relay links which takes account of diffraction losses and surface reflection losses for the radio-relay link path. Detailed calculation makes it possible to design digital radio-relay links with partially or fully closed paths as well as to optimize antenna heights in order to minimize losses due to surface reflection.
- Visualization and printing of results, management of databases for technical specifications, deployment and ownership parameters of radio-relay link equipment.

System requirements

- **Hop Designer** requires IBM-compatible PCs running Windows 98/NT/2000/XP. Minimal RAM requirement: 64Mb. Optimal PC configuration: Pentium-III or higher CPU, ?128 Mb of RAM, SVGA video subsystem supporting at least 800*600 resolution, color printer.

Hop Designer: application background

- **Hop Designer** is used since 2002 by a number of Belarusian and Russian organizations in order to design various nationally deployed line-of-sight digital radio-relay links for 7, 10, 14, 17, 23 and 27 GHz frequency ranges, including line-of-sight digital radio-relay links for NMT/CDMA and GSM-900/1800 cellular communication systems.
- **Hop Designer** was used in 2002 in the process of computations and frequency planning for nationally deployed 1550-2000 MHz radio relay links (P-404 and P-414 stations).

Hop Designer: supply terms

- **Hop Designer** can be supplied to any individual or organization without transfer of the rights for its commercial distribution.
- **Hop Designer** supply package includes software support, personnel training, supply of advanced technical documentation, assistance in system design and frequency planning of communication networks and systems.
- **Hop Designer** is protected from unauthorized copying and access.
- **Hop Designer** can be supplied with interface and documentation in English or Russian.

For further information on Hop Designer please contact us at:

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