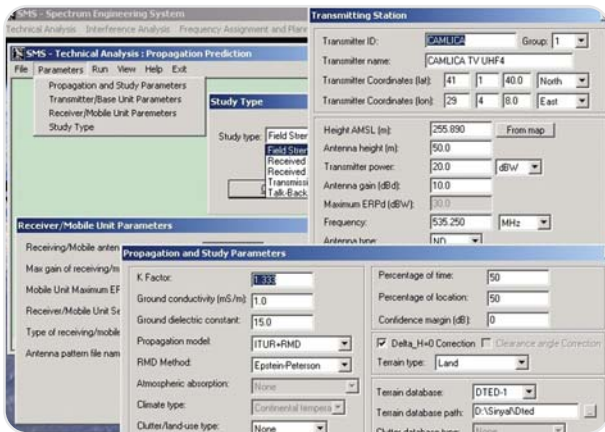


## basic module

SES - Basic Module for Windows® 98/NT/2000/XP is an advanced, comprehensive and general-purpose software offering a set of engineering analysis tools for wireless networks from 10 kHz to 40 GHz. The tool takes advantage of Windows' graphical user interface, with multiple map displays, support for Windows printer/plotter device drivers and the convenience of toolbars.



► Technical parameters required for propagation prediction

SES-Basic Module is an advanced and flexible wireless communication system-planning tool for your needs. It can perform point-to-area, point-to-point and odd azimuth analyses. The module can query the population residing inside the predicted coverage area. It can also compute the intermodulation frequency products. It includes a comprehensive set of propagation models, full mapping capabilities and full access to terrain elevation, ground cover (clutter), demographic and other databases. Database registration, querying and modification of transmitters can

be done. Study results can be exported to ASCII format.

SES Basic Module has the following technical functions:

- Propagation Prediction
- Database registration, query and reporting
- Intermodulation frequency products
- Utility Functions

### Propagation Models

SES - Basic Module includes a complete set of the most accurate propagation prediction models appropriate for systems from 10 kHz to 40 GHz. For ultimate flexibility, you can select from the extensive set of published propagation models, RMD methods or generate a customized propagation model. All models have completely adjustable environmental and reliability parameters.

### Available Propagation Models

- Free-space (ITU-R P.525)
- ITU-R P.529
- ITU-R P.1146
- ITU-R P.370
- GRWAVE
- FCC
- ITU-R P.1546
- Okumura-Hata
- Custom Model

Reflection and multiple diffraction (RMD) corrections can also be added to Free-space, ITU and FCC models. Available RMD methods are:

- Epstein-Peterson
- Deygout
- Vogler
- Bullington

#### Available Study Types

Supported area/coverage study types are focused on:

- Shadow Plot
- Line of Sight (LOS)
- Path Loss
- Field strength
- Received power
- Received voltage
- Best server
- Talk back region

#### Unbounded Area Studies

It allows you to define and study a large number of stations in a single project depending on your workstation capacity.

#### Study Area Definition

User can either define an area, a single path or a single point to perform the propagation prediction.

- Point-to-area
- Odd azimuth
- Point-to-point

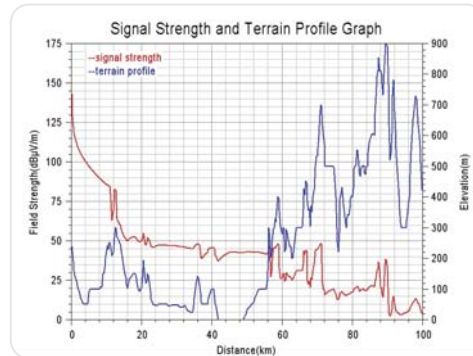
#### Transmitter and Receiver Antennas

SES Basic Module provides an extensive set of antenna patterns for transmitter and receiver antennas. You can use either directional or omnidirectional antennas. User can define and use custom antenna patterns.

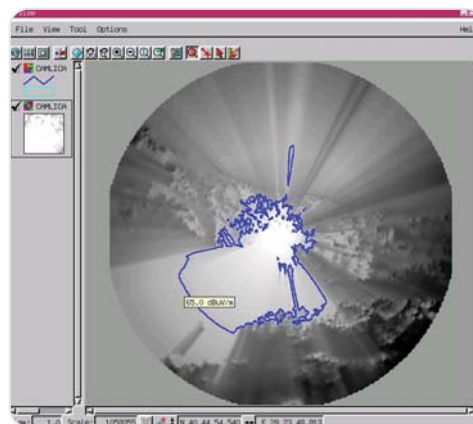
#### Utility Functions

The following utility functions can be used for a comfortable spectrum engineering study:

- Plot horizontal and vertical antenna patterns
- Calculate distance, bearing angle, effective



► Odd azimuth study results



► Grayscale plot of point-to-area study results

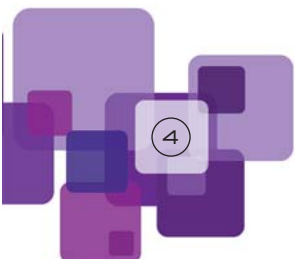


► Talk back region displayed on the map

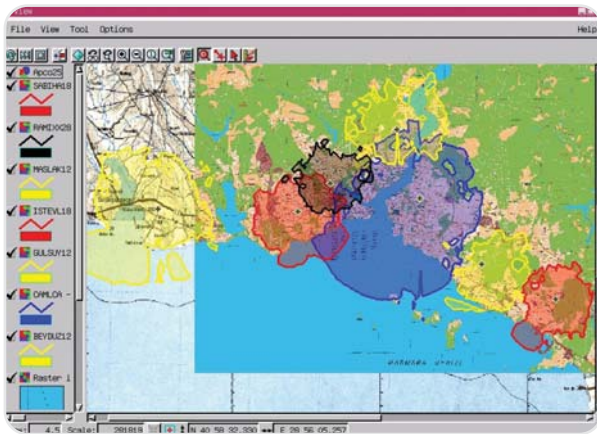
- antenna height and delta-H value
- Coordinate conversion
- Satellite look angle
- Health safety distance
- Plot ITU-R P.1546 propagation curves.

#### Multiple Map Display

You can view your study results and spatial data



simultaneously on a layered GIS architecture. Views can also be exported to common image formats. Study results can be displayed as color-coded plots on a map. User can create contour plots on a selected layer. Integrated GIS facility allows you to access the information on several layers such as terrain elevation, 1st and 2nd best servers, and clutter categories.



► Color-coded multiple contour display

Map types (terrain, clutter, building, and demographic) with numerous GIS data formats such as MapInfo TAB, MIF, GeoTiff etc. can be imported, into viewed and exported from the layered GIS architecture of SES.

### 3D Display (geographical map display)

3D displays provide:

- Shaded terrain relief with illumination control
- Map images and aerial/satellite photos draped on 3D terrain elevation

### Query Capabilities

User can query transmitters in the database and create new projects using them.

Transmitter database can be queried based on the study area, frequency band, power criteria and class of station. The results are displayed on a map background and can be imported to an existing project.

### Client/Server

Multiple users can share a centralized network database resident on a local or remote server.

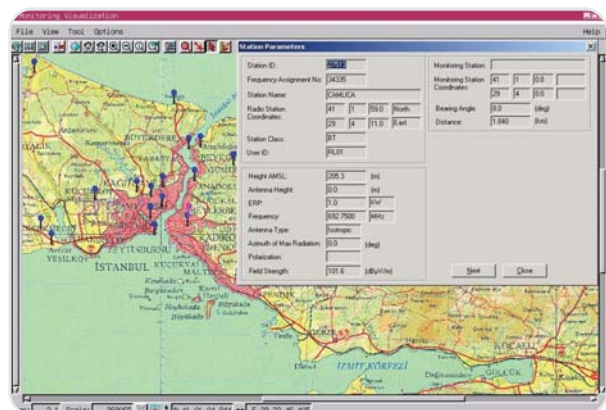
Depending on assigned permissions to users, roles can be customized (print, query, creating new record, etc.)

### Open Software Architecture

Basic module uses XML interfaces to import, export and share information with other modules transparent to the user. Its database structure is open. The user can transfer existing data into the SES Database.

### Administrative and Technical Relational Database

- Oracle Relational Database Management System (RDBMS)
- Unique database for administrative and technical data shared by the users.
- Simultaneously accessed by different operators.
- Operators work temporarily on their own working project databases.
- Only authorized users can update reference database.



► Query results displayed on the map

- Data centralization and high-level security and integrity.
- Prevents conflicts for multi-access.
- Scalable and expandable.

### Outputs

- Statistics on important database elements such as users, geographical areas, equipment, services, licenses, etc.
- Dynamic report generation.
- Customized queries for faster reporting.

