



Identify the potential.

SIGNAL™ is a comprehensive, general-purpose, wireless network engineering tool. It offers all of the study types you need to design a basic wireless network – area studies, link/point-to-point studies, and route studies. SIGNAL also incorporates the finest telecom-specific mapping features, meticulous equipment data storage capabilities, and convenient utility functions.

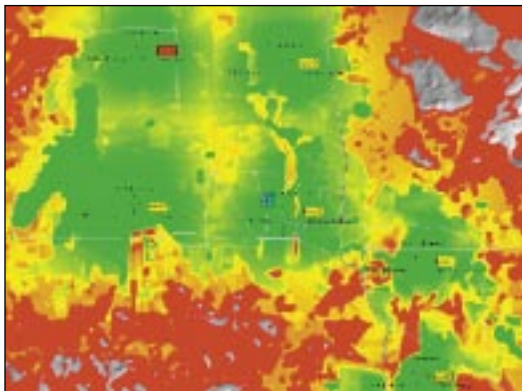
SIGNAL combines the capabilities of EDX's general-purpose, area-wide study tool, MSITE™, with EDX's general-purpose, link analysis-only tool, TPATH™, to give you a comprehensive, basic engineering tool. This building block approach gives you the ability to create the right tool for your specific needs – putting the Power of Planning to work for you.

Studies

Propagation Models

SIGNAL includes a complete set of the most accurate propagation prediction models, appropriate for systems from 30 MHz to 60 GHz. This extensive list includes over 20 published models, with adjustable environmental and reliability parameters. For refined accuracy, many models consider the attenuation and height values of underlying clutter databases in study calculations. The attenuation of clutter can be considered along the entire study path for each calculation point.

A wizard is available to automatically suggest propagation models based on your selected system type, frequency, and study type.



Metropolitan Area Wide Study

Area/Coverage Studies

A comprehensive selection of area study types are available for:

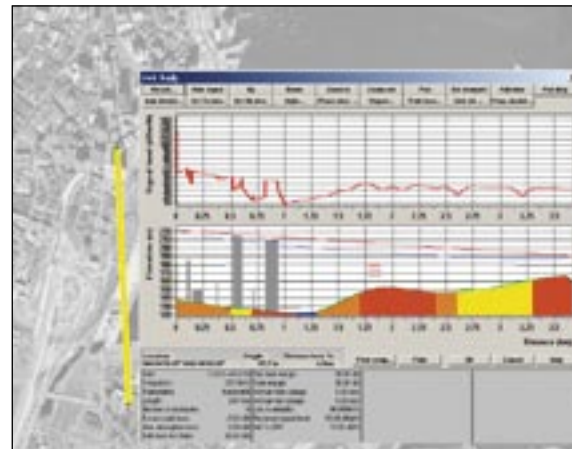
- Shadowing/Line of Site
- Path Loss
- Field Strength
- Received Power
- Downlink Signal Levels
- Uplink levels
- C/(I+N) & Aggregate C/(I+N)
- Group-to-Group Interference
- Bit Error Rate
- Percent Service Availability
- Number of Available Servers
- Simulcast Delay Spread

Unlimited Area Studies

An unlimited number of area studies can be simultaneously calculated, displayed, and stored for future use.

Full Point-to-Point Path Analysis

Calculate a full microwave path analysis including path profile, rain and fade outage, percent availability, dispersive fade margin, antenna diversity reception, and cross-link interference. All links are bi-directional, and you can edit your link studies by selectively adding trees, buildings, or terrain elevation modifications. Cross-link interference studies are also calculated.



Point-to-Point Link Study showing buildings and clutter types

Link enhancements

Edit your link studies by selectively adding trees, buildings, or terrain elevation modifications with your mouse.

Route Studies

Use a route study to calculate and store detailed propagation properties and most likely servers along your 2D or 3D route. Routes contain a series of specific points that can be easily created with the included EDX drawing tools.

Features

Project Management

The project management tree lets you see all the components of your project at a glance. Click on any component to quickly view relevant details.

Project Wizard

The Project Wizard helps you to rapidly set up a project from a selection of system-specific templates. SIGNAL will instantly display a map view with relevant GIS data for your chosen area, which can be selected by simply entering a city name.

Transmit & Receive Antennas

Easily add and manage your network equipment with SIGNAL. You will have the most detailed equipment definition parameters available. You can use a full definition of antenna patterns for omni, directional, or adaptive “smart” antenna types. Co-polarized and cross-polarized directional transmit and receive antennas are supported. For more accurate interference analysis, you can also describe the Power Spectral Density and receive filters for your equipment.

Equipment can be quickly accessed and grouped from your map view with convenient right-click menus. Straightforward dialog boxes provide for global equipment edits that can be made to your entire equipment set, or a selected group/subgroup.

Open Software Architecture

The Component Object Model (COM) and XML interfaces provide easy ways to import, export, and share transmitter, and link details with other applications. This valuable capability can assist you with matching engineering data to marketing data, and it provides a way to control the tool outside the included GUI. You can customize the tool to meet your specific needs.

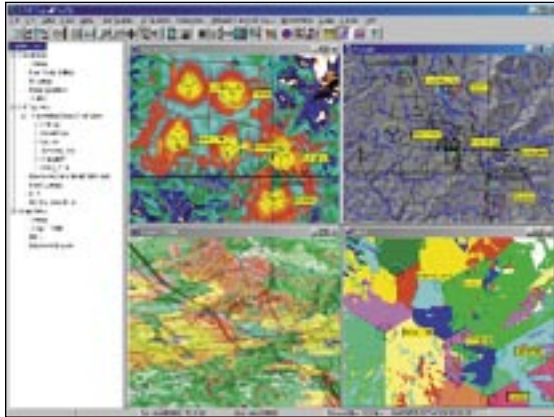
Link Rubber Band to Server

Link server lines show “rubber band” connections to 1st, 2nd, and 3rd most likely servers as you move the mouse around the map.

Comparisons of Measured and Predicted Signal Levels

Drive test data can be imported, displayed, and used for statistical comparison with predicted results.

Mapping



Multiple Map Display

Multiple map views show your project studies and GIS map data simultaneously. Multiple windows can be cascading or tiled. Views can also be saved as common image files such as KMZ, JPG, BMP, GIF, TIF and others.

Display Types

Whether you're displaying signal levels, terrain, demographic or traffic data you can select from several types of map views:

- composite grid with fixed color levels
- composite grid with color gradient
- composite contours
- composite grids draped over 3D terrain

3D Display

Impressive 3D displays include shaded terrain relief with illumination control, integrated 3D building and terrain displays, map images, and aerial/satellite photos draped onto terrain elevation. Also, Viewpoint Perspective is easy and quick.

Customizable Status Bar

A customizable status bar allows you to control the information you want to view interactively. It can include 1st, 2nd, and 3rd most likely servers, terrain elevation, building height, and land use (clutter) category.

Transmitter Map Icon Display

This useful display option shows cell range and directional antenna beam width for each transmitter sector.

Efficient Calculations

EDX tools support multithreading for multiprocessor PCs when using the physical propagation models, Anderson2D and TIREM. Multiprocessor gains are also utilized for creating area study grids. Further, you can easily recalculate and redisplay all project studies with a single mouse click. This feature is ideal for assessing the total impact of a changed system parameter on all aspects of the system analysis.

Utilities

Easy to Integrate with other Mapping Tools

If you use Google™Earth, MapInfo® or ArcView®, SIGNAL can automatically generate study results in a compatible format. Map views can also be exported as Geo-coded TAB/TIF files. Further, SIGNAL imports MIF/MID and ArcView® DBF/SHP files as map layers, as well as exports study results in KMZ, MID/MIF or SHP/DBF.

Worldwide GIS Database

A worldwide GIS database is included for your ease of use. With this data, you can create relevant map views for anywhere in the world. It includes seven layers of telecom-specific map data. Get a quick overview of your study area with seven different layers of data.

Query Capabilities

Extensive abilities to query your project include query libraries accessible by other applications as well as the ability to right-click on any point to view multiple layers of propagation analysis and GIS information. You can also select entire areas for query analysis.

Utility Functions

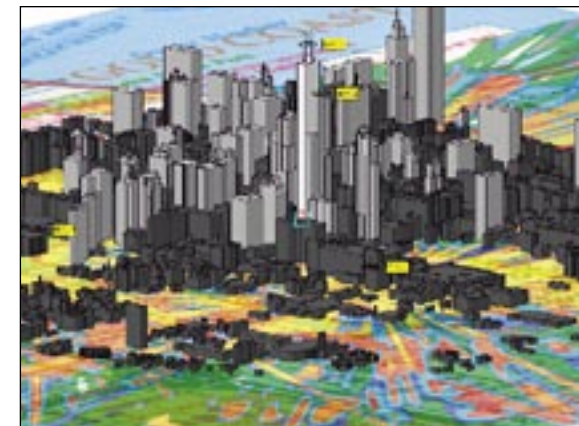
Utility functions are easily accessible for coordinate conversion, distance and bearing calculations, ERP calculations, inter-modulation calculations, and creating and plotting directional antenna patterns. Address matching to geographic coordinates is included (database required).

Modules

Make SIGNAL Even More Powerful

Enhance SIGNAL with specialized tools that add powerful functionality for design and optimization of your wireless network including:

- Microcell/Indoor Module which includes:
 - Ray-Tracing Propagation Models
 - Point Studies
 - RMS Delay Spread
 - Multi-Story Studies
 - Time and Spectrum Signature Displays
- EDX Building Editor – making it easy to manage building databases.



3D Area Wide Study in Urban Area

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