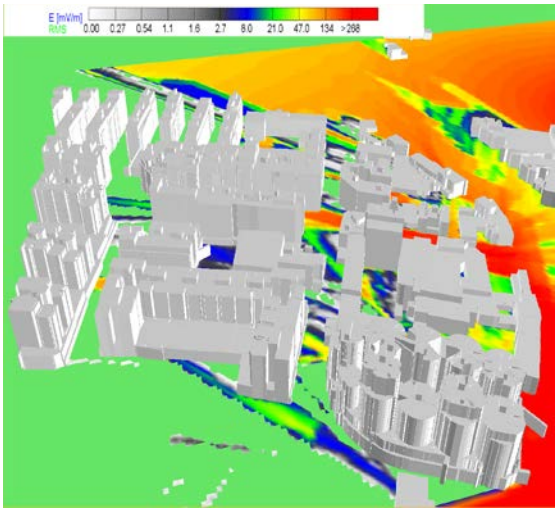
EFC-400® – Telecommunications – Computation of electromagnetic fields

Computation according to:
- EN 50413, 26. BImSchV,
- IEC 62232, ICNIRP & EU standards

- **The industry standard since 1995.**
- **Worldwide client references.**
- **Maximum strength performance from calculation speed, ease of use, and the practically unlimited number of building and antenna elements.**
- **Users: Network operators, local government environmental departments, engineering consultants, and regulatory authorities.**
- **Maximum cost-effectiveness in use, as users can create and import the necessary network elements themselves.**
- **Measurement data import and interpolation.**
- **All network elements are visibly displayed. Users can see the simulation results clearly just as they are computed.**



Technical description

"EFC-400 Telecommunication" is the solution designed for computing the radiation exposure due to transmitting and telecommunications equipment emitting at high frequencies.

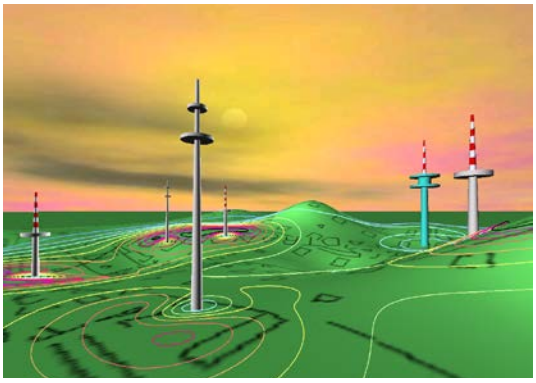
The main performance features are:

- **E and H field, power flux density**
- **Radiation pattern based on antenna specifications**
- **Import of radiated beam diagrams (Kathrein, PowerWave)**
- **Attenuation due to buildings**
- **Plot as a percentage of the limit value**
- **Development of HF field registers**

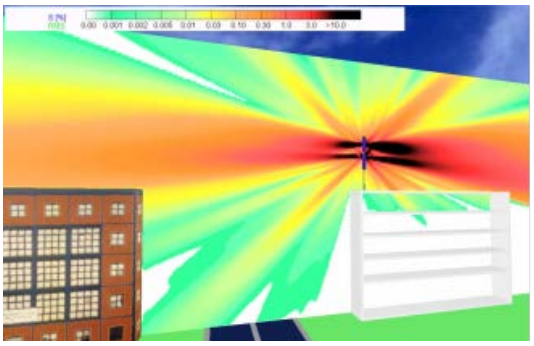
"EFC-400 Telecommunications" computes field strengths and power flux densities according to EN 50413, taking the directional characteristic into account by means of the normalized spherical harmonic.

The form of the spherical functions is determined numerically from the specifications such as the aperture angle, or is read in as a radiated beam diagram. "EFC-400 Telecommunication" normalizes the spherical harmonic by integrating it over the surface area as a function of the radial component. The radiation flux through every surface above the terrain from the near-field to the far-field is therefore constant assuming that the ground is conductive. Since energy conservation is presumed, the method is superior to other procedures for computing undistorted fields with respect to its speed and accuracy, and the influence of buildings can be taken into account by specifying an attenuation factor.

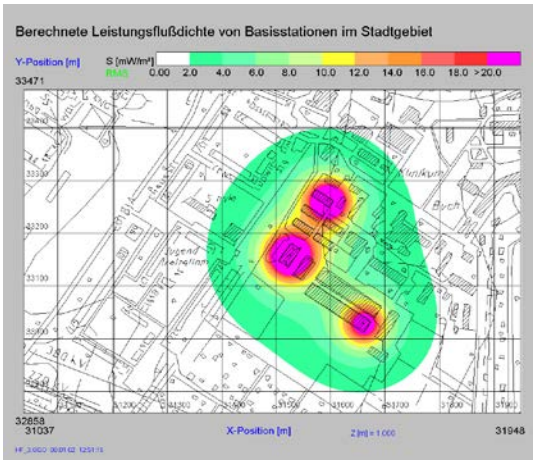
You only need to know the location of the antenna and the manufacturer's specifications for it. Since the locations are determined on the topographical map, it is possible to develop a field register straight away.



Power flux density of base stations



Mobile telecoms antenna on a building



Power flux density in an urban area

Computation of electric and magnetic fields

High frequency transmitters and telecommunications: EN 50413, IEC 62232, 26. BImSchV, ICNIRP and EU standards

Specifications
Magnetic field computation
3D computation of power flux density and field strength
Calculation of RMS and peak values
Harmonic angle data
Normalization by application of energy conservation set
Geometric segmentation
Frequency range 1 KHz to 300 GHz
Data display
X, Y, Z plot
2D contour line display
3D surface display
3D virtual reality interface
Radio transmitters taken into account
Statistics and histogram functions
Average value, L05, L50, L95 values
Zoom functions
Proportionality display
Object editing
Facilities for checking and entering geometric data
Move, rotate, and insert functions for geometric data
Grouping functions
Polygonal envelopes, circles, etc.
Radiation characteristics can be uploaded from manufacturers' libraries
Computation
Maximum 32,000 x 32,000 data points
Computation along a straight 3D line
Computation within the confined free space
Z axis field strength profile
Dynamic interpolation of data points
Geometric objects
Maximum 2,000,000 transmitter objects
Maximum 200,000 buildings
Maximum 2,000,000 geometric blocks
Integrated tools
Editor, Calculator
Project manager
Paint tool
Video wizard and Help function
DXF object filter
Data interface
Upload of terrain profiles
Import of experimentally determined data
Import of maps in DXF, PCX, JPEG, BMP and TIFF formats
DXF export of contour lines, shadings and geometric bodies
ASCII export and import / Excel text format
Creation of database reports and logs
Bitmap, WMF, JPG, HTML and CD export

Special computing features
Use of antenna directional characteristic diagrams from data sheets
Import of antenna directional characteristic diagrams (*.msi, *.txt)
Interpolation of antenna directional characteristic diagrams
Smoothing of of antenna directional characteristic diagrams via the side lobes
Ground profile and vegetation taken into account
Screening and reflections due to buildings taken into account
Performance features
Maximum 3,000,000 points/second (with 3 GHz CPU)
Data compression built-in
User interface configuration
User-defined settings for colors and contour lines
Support for 256 colors and True Color graphics
Hardware requirements
500 MB RAM, HD 20 GB free space
WINDOWS XP™ / WINDOWS VISTA™ / WINDOWS 7™

ORDERING INFORMATION

EFC-400 Simulation Software	
Model and article names	
	Order number P/N
EFC-400EP ENTERPRISE – includes all low frequency and high frequency modules (see separate data sheet)	**2900/101/***
EFC-400LF LOW FREQUENCY – computes transformer station and high tension lines	**2900/102/***
EFC-400ST STATION – LOW FREQUENCY – Limited to transformer station computation	**2900/103/***
EFC-400PS PLUS SOUND – Version LF additionally with “corona” noise simulation	**2900/104/***
EFC-400TC TELECOM – High frequency module	**2900/105/***
(*) Add suffix for language version: /E Spanish, /F French, /GE German, /I Italian, /UK English	**/***
Annual update and upgrade on request	**2900/201/ 202 /203 /204/205**

Narda Safety Test Solutions GmbH
Sandwiesenstrasse 7
72793 Pfullingen, Germany
Phone: +49 7121 97 32 777
Fax: +49 7121 97 32 790
E-mail: support@narda-sts.de
www.narda-sts.de

Narda Safety Test Solutions
435 Moreland Road
Hauppauge, NY 11788, USA
Phone: +1 631 231 1700
Fax: +1 631 231 1711
E-mail: NardaSTS@L-3COM.com
www.narda-sts.us

Narda Safety Test Solutions Srl
Via Leonardo da Vinci, 21/23
20090 Segrate (Milano) - Italy
Phone: +39 02 269987 1
Fax: +39 02 269987 00
E-mail: support@narda-sts.it
www.narda-sts.it