ANTENNA COVERAGE PROGRAM™

VIEW SATELLITE ANTENNA COVERAGE PATTERNS AND PRODUCE PRESENTATION QUALITY GRAPHICS

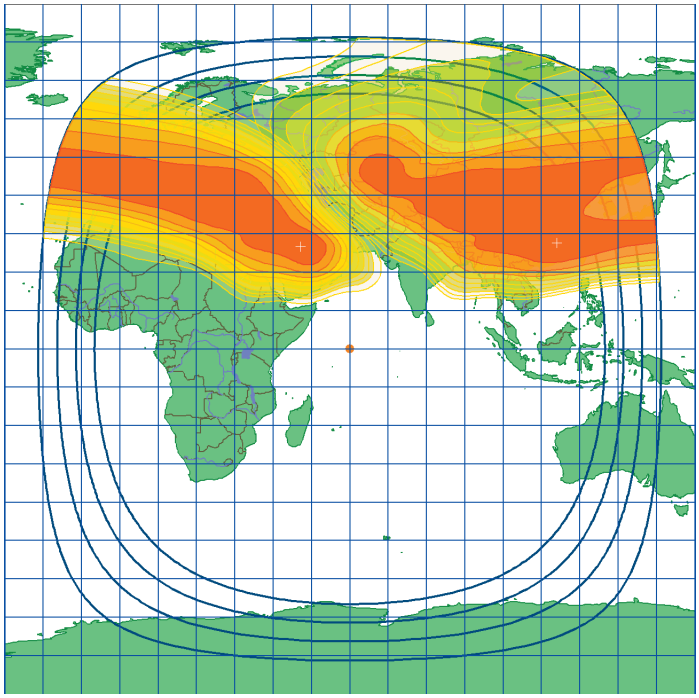
Optimal Satcom®

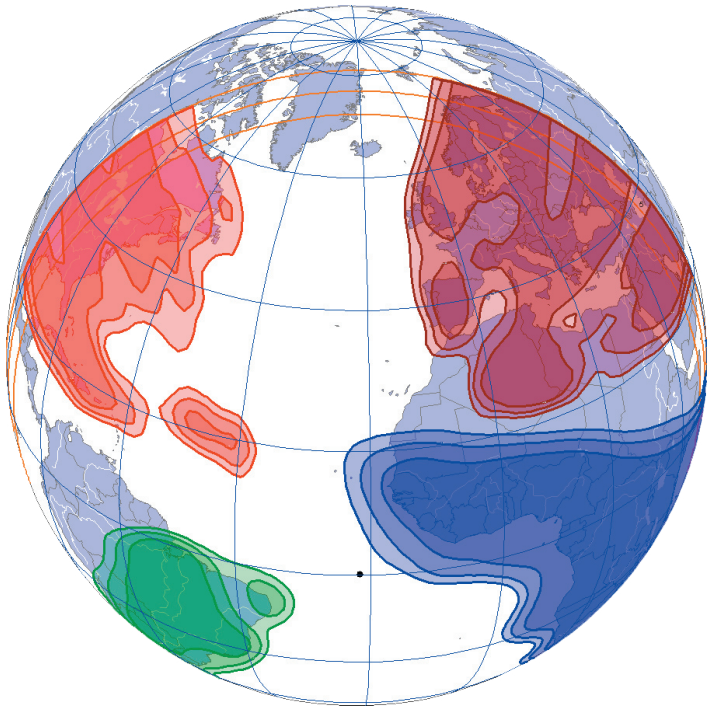
The Antenna Coverage Program (ACP) is a versatile software program for performing coverage analysis to support satellite systems planning, design, and marketing. Analytical antenna beam models are used to compute antenna beam patterns, perform analyses, and display the results on a world map. ACP can also read and plot measured or predicted antenna gain response patterns from gain grid files.

ACP is used by systems engineers, antenna designers, and marketing specialists to perform a variety of functions, such as comparing and assessing satellite coverage areas, examining the effects on coverage of a satellite in inclined orbit, performing coverage availability analysis using rain statistics, and planning the location of a new satellite.

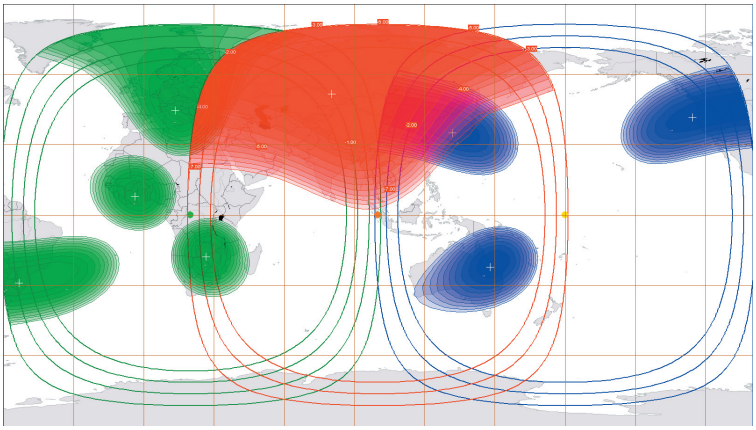
FEATURES

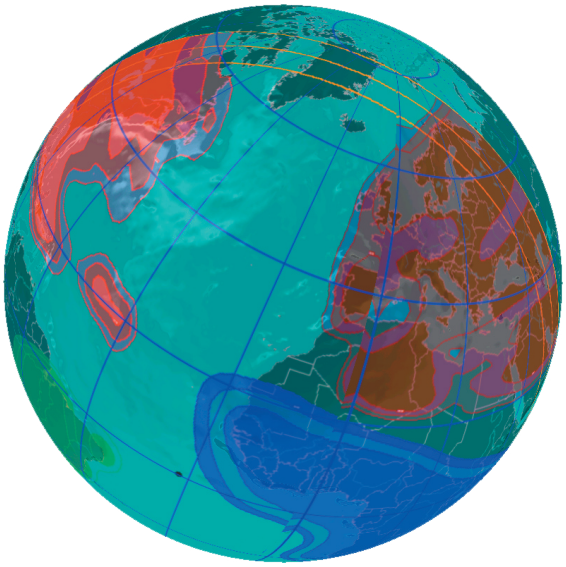
- Works with satellites at any altitude. Can plot multiple satellites with their antenna patterns.
- Models antennas with uniform, parabolic, or parabolic-squared taper on the aperture amplitude distribution.
- Generates and labels satellite antenna patterns as contours of constant gain, EIRP, G/T, etc.
- Uses circular, elliptical, measured, multifeed shaped, and contour beam models.
- Reads measured / predicted antenna patterns (global, hemi, zone, elliptical, circular, shaped, etc.) from gain grid file, and plots contours on world-map.
- Allows modification of satellite longitude, platform bias (roll, pitch, yaw), and antenna pointing (azimuth, elevation, yaw) and replotting of contours.
- Generates error boxes or worst-case antenna patterns to account for pointing errors.
- Accounts for path loss and displays power flux density contours.
- Supports analysis of satellites in inclined geosynchronous orbit by plotting and tabulating gain variations, and the satellite ground trace, and by displaying antennas patterns with or without a maneuver bias.
- Draws earth station track inclined-orbit ellipses.
- Allows zooming, beam repointing, etc. via drag-and-drop user interaction
- Tabulates gain, look angles, and pattern advantage for any earth station location.
- Draws contours of constant elevation or azimuth angle for any satellite position.
- Plots satellite locations, earth stations, and antenna patterns as viewed from an arbitrary location.
- Supports several map projections – orthographic, perspective, equirectangular, and Mercator.
- Map features includes up-to-date world-map with continents, countries, US states, lakes, rivers, seas and oceans.
- Plots cities and earth stations. Allows import of cities from spreadsheets and lists.
- Provides full control of drawing styles, titling, text labels, colors, features, etc. for presentations and artwork. Exports graphics in several formats.
- Can operate in two modes - either as a stand-alone application, or integrated as a component of the COMSAT STAR® software suite.

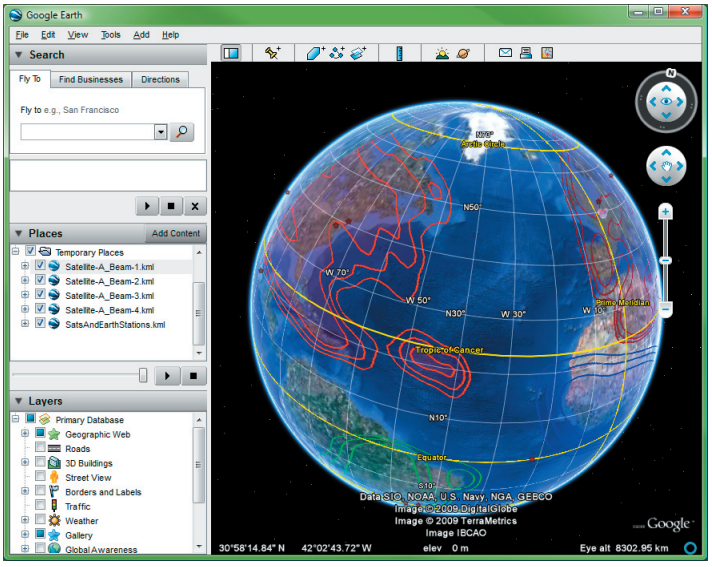




- When used as part of COMSAT STAR®, ACP can retrieve satellite and earth-station data directly from the Satellite System Database (SSDB) making it even easier to use. The SSDB is a part of COMSAT STAR® and supports both Oracle® and Sybase® databases.
- Supports export to ITU GXT format, and Google Earth.
- Supports 3D rendering with lighting, depth perception, and globe animation.
- When integrated with COMPLAN, supports display of map-based results from COMPLAN such as carrier performance, service area specification, required transmit E/S HPA rating, required receive E/S G/T, required E/S antenna size, carrier availability by transmit or receive site, adjacent satellite interference C/I, etc.

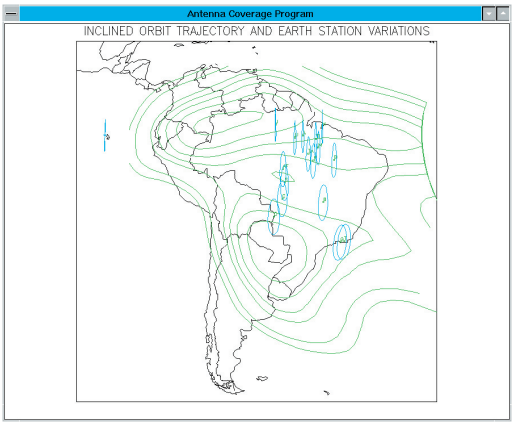






INCLINED ORBIT ANALYSIS

Earth Station Inclined Orbit Ellipses



Gain Variations at Earth Station

cuGAIN VARIATION FOR POINT BOSTON

ANGLE	GAIN	VARIATION
0.00	35.1880	-0.4392
22.50	34.9689	-0.6583
45.00	34.9032	-0.7240
67.50	34.9578	-0.6694
90.00	35.1675	-0.4597
112.50	35.3956	-0.2316
135.00	35.6031	-0.0241
157.50	35.8521	0.2249
180.00	36.1059	0.4787
202.50	36.2787	0.6515
225.00	36.3403	0.7131
247.50	36.3117	0.6845
270.00	36.1755	0.5483
292.50	35.9207	0.2935
315.00	35.6485	0.0213
337.50	35.4191	-0.2081

Satellite Ground Trace

GROUND TRACE FOR INCLINATION OF 3.40°:

STEP	ANGLE	LATITUDE	LONGITUDE
1	0.00	0.0000	268.0000
2	22.50	1.3005	267.9643
3	45.00	2.4035	267.9495
4	67.50	3.1409	267.9643
5	90.00	3.4000	268.0000
6	112.50	3.1409	268.0357
7	135.00	2.4035	268.0505
8	157.50	1.3005	268.0357
9	180.00	0.0000	268.0000
10	202.50	-1.3005	267.9643
11	225.00	-2.4035	267.9495
12	247.50	-3.1409	267.9643
13	270.00	-3.4000	268.0000
14	292.50	-3.1409	268.0357
15	315.00	-2.4035	268.0505
16	337.50	-1.3005	268.0357

Optimal Satcom, Inc.
600 Herndon Parkway
Suite 100
Herndon, VA 20170, USA
Tel: +1 703 657 8800
Fax: +1 703 547 0145
Email: products@optimalsatcom.com
www.optimalsatcom.com Qui in-

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