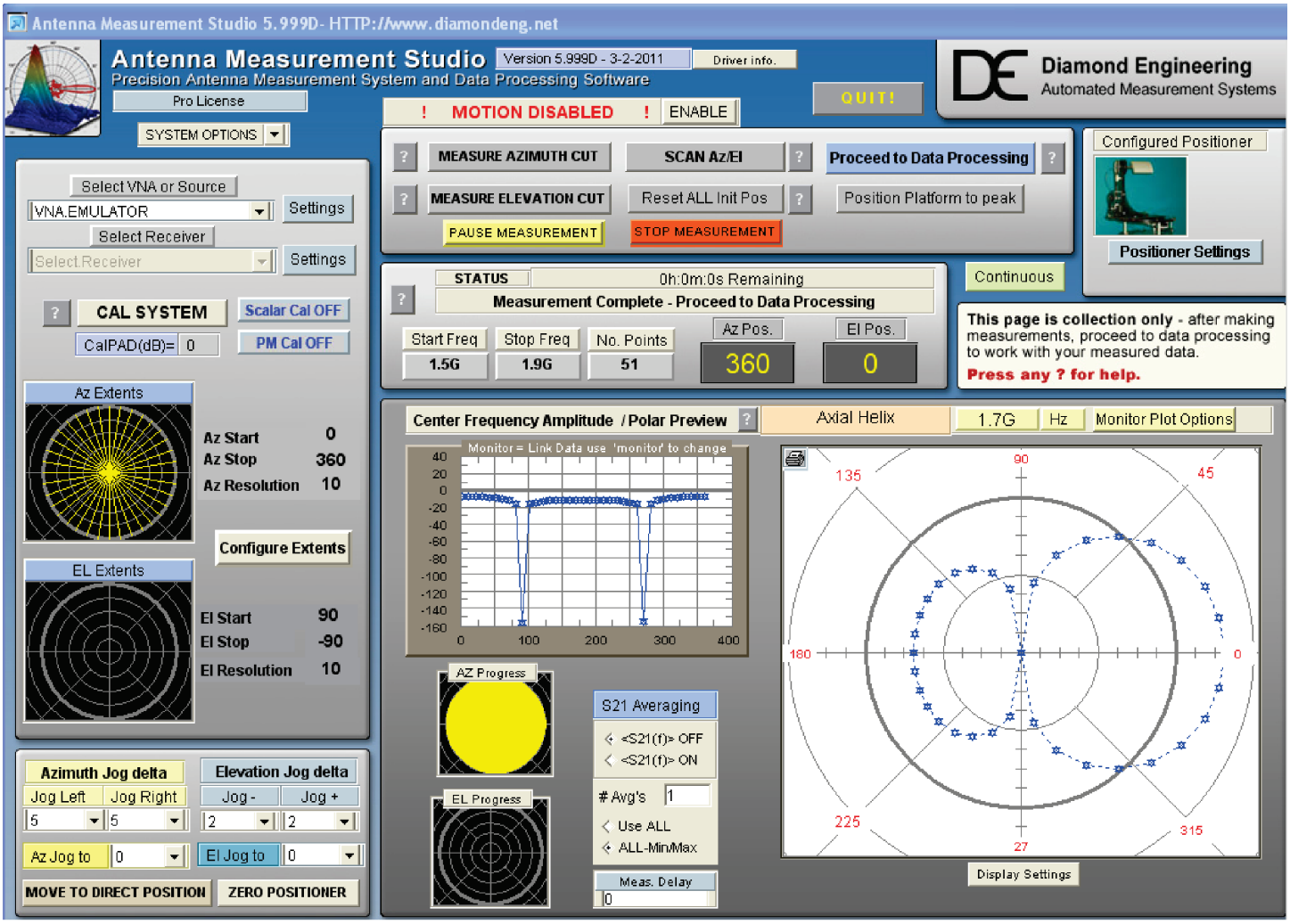
Diamond Engineering
Automated Measurement Systems

Antenna Measurement Software

Features and Specifications



DAMS Antenna Measurement Studio

Antenna emission measurement and characterization

http://www.DiamondEng.net · 484 Main Street, Suite 16 · Diamond Springs, CA 95619 · (530) 626-3857

Software Features

Test Equipment Support

Works with any Agilent or Anritsu VNA, SA, SG or PM, as well as most R&S and voltmeters and more.

Platform Control

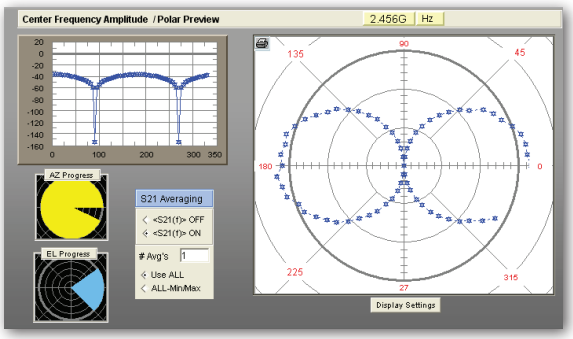
Manually or automatically control dual-axis movement, AZ over EL, with stepping or continuous sweeps, at up to 0.0625 degree resolution. Control platform type, speed, acceleration and more.

Data Storage Registers

Load, save or export data sets with measurement descriptions, number of measurements and more. Store up to four data sets or export to Excel or TXT.

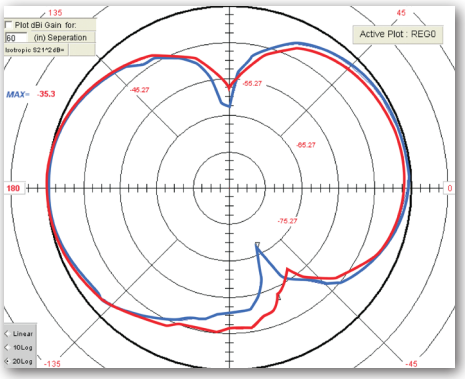
Basic Measurement Cuts

Perform AZ, EL, AZ over EL cuts and more.



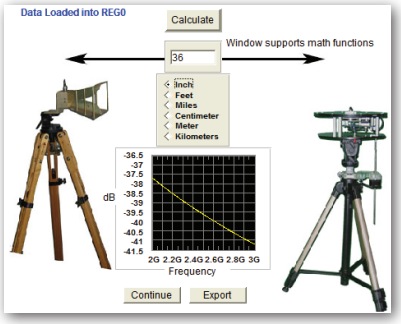
Dual Trace Plots

Exportable dual trace polar or amplitude plots feature dual marker function and selectable linear or 20Log formats for delta dB/angle marker readouts with selectable scaling.



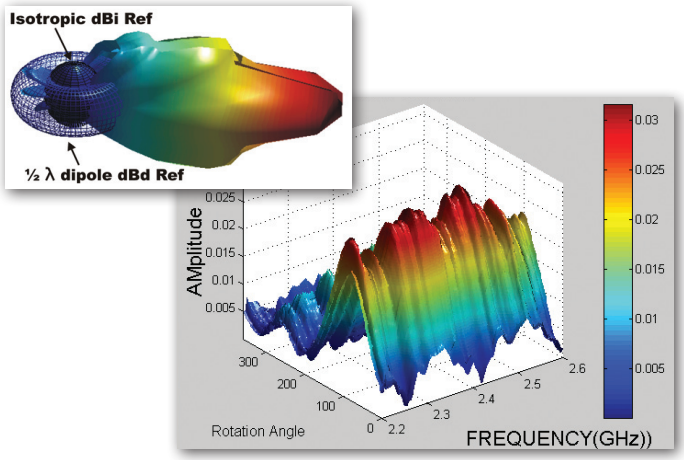
Path-Loss Calculators

Create a path-loss array for gain macros which include the fixed distance and path-loss over frequencies with loss illustrated in dB/unit. Also capable of determining delay/distance from phase data and more.



Full 3D and Spherical Plotting

Generate exportable three-dimensional spherical views of your data at any frequency, with multiple overlay and display features. Perform continuous rotation or swept measurements with up to 1600 frequency points and variable speed capabilities for vertical or horizontal scans. *(Pro version only)*



Measurement Monitor Plots

Log magnitude, polar azimuth or real-time gain. Includes monitor options such as frequency for tuning. Also produces configurable polar and magnitude (dB) graphs.

Software Features *(continued)*

Data Manipulation

Includes an array calculator, measurement correction functions, Gain macros, path generation, reference antenna files, Efficiency & AUT losses, and more.

Nyquist Sampling

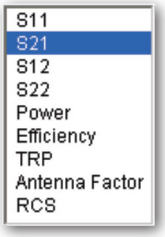
Synchronize random data, reduce errors and enable wireless measurements via continuous movement Nyquist sampling.

Import Reference Antennas

Import reference antenna data stored in TXT or S1P files with interpolation used for array generation.

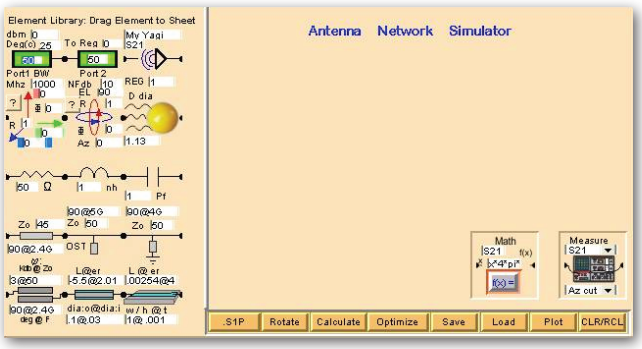
Source Measurement Features

Enables unique primary and a secondary measurement such as S22. Includes an emulator which enables the simulation of standard, well-defined reference antennas.



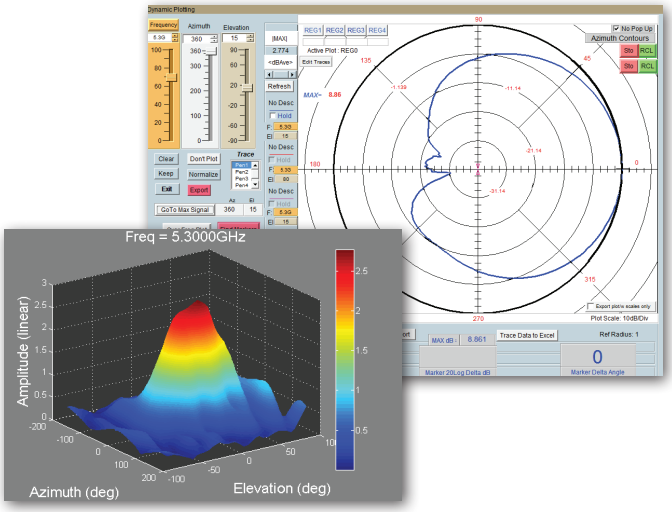
Antenna Network Simulator

A full feature two-port simulator with wave analysis. Fully customizable drag-and-drop elements enable users to create diversified simulations to analyze antenna network performance, including path-loss or phase. Create phased arrays or sector arrays, or create matching circuits for measured antennas. Includes an antenna emulation library of ideal networks.



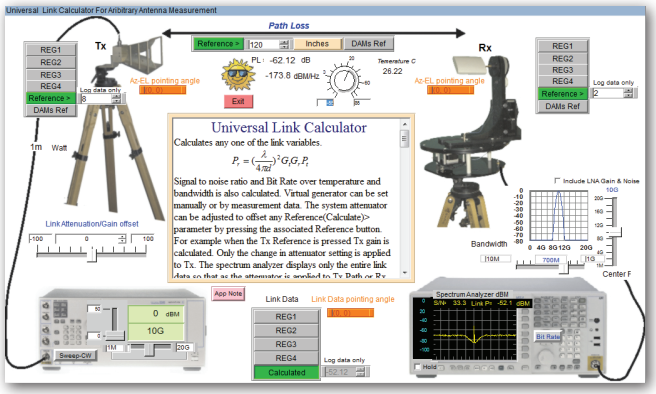
Gain Calculation

Our 3-point Gain Macro enables gain using three AUT's generating three unknowns which are used to create a measurement standard. Our Gain Transfer Macro calculates gain, linear, circular and total (theta and phi). Our Gain Substitution Macro enables a reference antenna with known gain to be used.



Link Commander

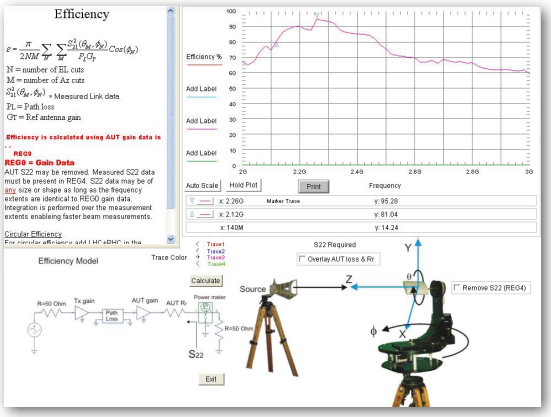
Enables link analysis with or without measured data, with range and bit error rate determination (per Shannon's limit). Simulates Tx, Rx and path loss calculation with the ability to control the power level while seeing the real-time effects on the virtual spectrum analyzer.



Virtual Signal Generator *Virtual Spectrum Analyzer*

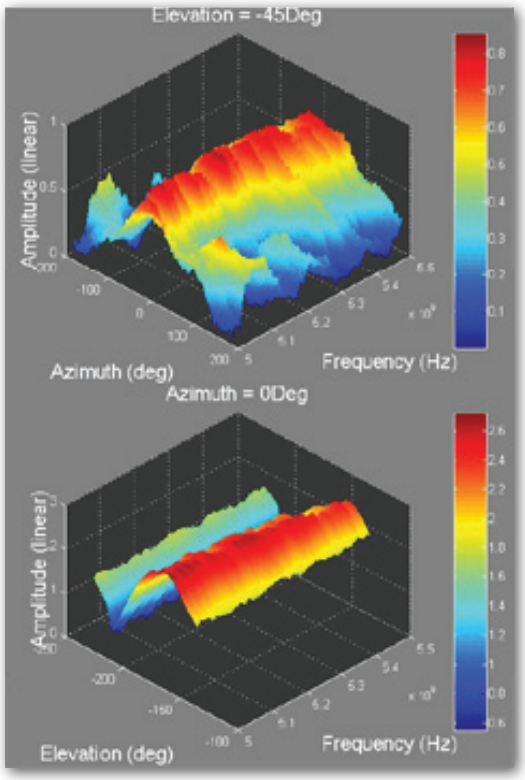
Antenna Efficiency

Measures the losses that occur throughout the antenna and/or the transmission at given frequencies, or can be averaged over its operation across various frequency bands. Can also be calculated with or without AUT-loss.



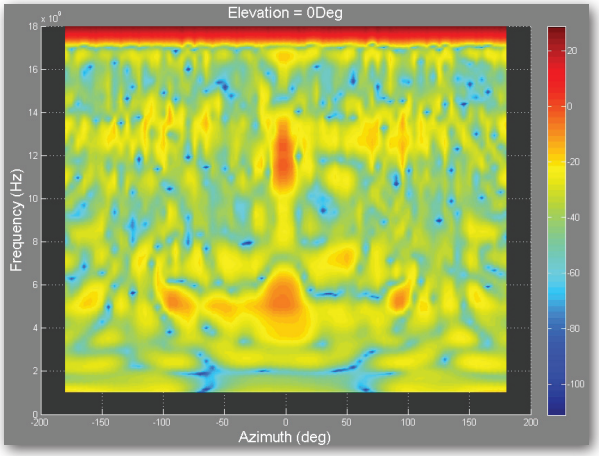
2D and 3D AZ-EL-F Plotting

Utilizes the 3D Cartesian coordinate system to produce two-dimensional color maps or three-dimensional plot graphs from measured data. *(Pro version only)*



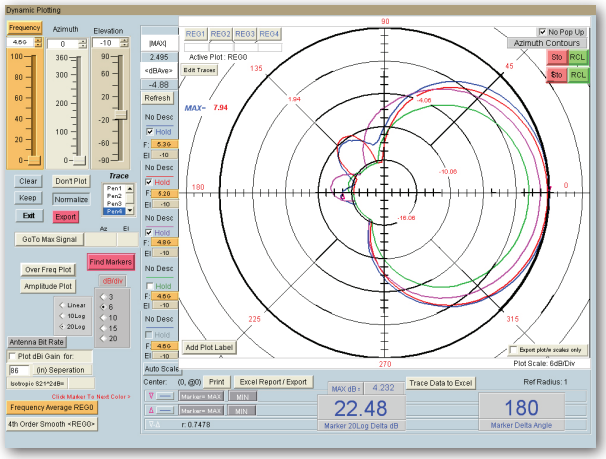
Radar Cross-Section Profiling

Determine the overall reflectivity characteristics of the AUT, a principle concern when designing for low reflection and/or stealth.



Polar Plotting Capabilities

Compile data from azimuth, elevation or full elevation cuts into polar plots. Features include polar amplitude plots, GNU plots, RCS plots, conversion to Smith charts, and more.



Beam Width vs. Frequency

Evaluate all or part of measurements to examine compliance of AUT against ideal isotropic, dipole or user-defined antennas. Data exportable to Excel.

Software Specifications

Platform Movement

Control Interface:	USB/serial via DAMS controller
Available Adjustments:	Platform type Speed Acceleration rate Communication settings

Data Collection

Methods:	Network analyzer Spectrum analyzer Power meter Voltmeter
Measurement Monitors:	Log Magnitude Polar Azimuth Real-time Gain

Data Calculation Modules

Gain Calculation:	Linear Gain Circular Gain Gain Transfer Gain Substitution 3-Point Gain
Efficiency Calculation:	Antenna Efficiency Antenna Efficiency w/ AUT Losses
Path-Loss Calculation:	General Path-Loss Calculation Gradient Path Distance Calculator S21group Delay / Distance Constant Gain or Loss
Reference Antenna Import:	Tab delimited ASCII format (TXT) S1P format

Data Visualization

Polar Plots:	Azimuth
	Elevation
	Full Elevation Cuts
	Beamwidth
	GNUplot Polar
	Smith Chart Overlay
	Contour Export Support
	Dynamic Polar Plot
2D (XY) Plots:	Amplitude Over Frequency(s)
	Az/El over Amplitude
	Group Delay
	Beamwidth vs. Frequency
	GNUplot Amplitude
3D Plots:	Azimuth
	Elevation
	Azimuth/Elevation
	Spherical
	Azimuth vs. Frequency vs. Amplitude
	Azimuth vs. Elevation vs. Amplitude

Data Manipulation Features

- Standard Register Calculator
- Array Calculator
- Link Commander
- Measurement Corrections

Import/Export Data

Supported Data Formats:	Excel, TXT (ASCII), S1P and DAMS formats