



Diamond Engineering  
Automated Measurement Systems



## DAMS Antenna Measurement Systems Guide

Supports most popular hardware



Agilent Technologies



ROHDE & SCHWARZ

ADVANTEST





## DAMS x000 Standard Measurement System



### Positioner Features:

- Up to .125 degree azimuth resolution (DAMS 5000)
- Up to .0625 degree azimuth resolution (DAMS 6000/7000)
- 360 degree continuous azimuth range
- +/- 45 degree elevation range @ .10 degree per step
- DC -6 GHz measurement range (DAMS 5000)
- DC-18 GHz measurement range (DAMS 6000)
- DC-40 GHz measurement range (DAMS 7000)
- Low-noise rotary SMA joint
- 85% Acrylic / Delrin® construction for minimal reflections
- Quick and efficient technical support
- Up to 3-year warranty on parts and labor

### Optional\* Accessories:

- Acrylic or aluminum thrust plate\*\* for heavy loads
- Laser tool for long range alignment
- Digital level for precise setup
- +/-90 degree pivot for spherical measurements
- Advanced processing module

\* Included with DAMS 6x00/7x00 systems

\*\* Additional costs may apply

20 Pound  
Capacity!



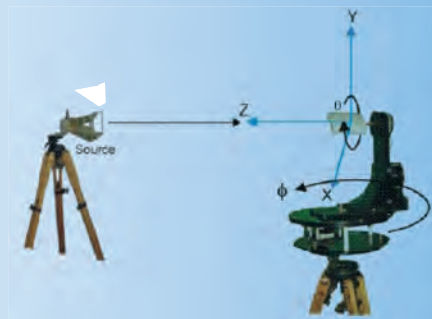
## FSM-5 Full Spherical Mount



The Full Spherical Mount is a new option which can be added to any DAMS platform. The mount and ball bearing are constructed of Delrin® for low reflectivity. The mount is ideal for unobstructed gain data and efficiency. The FSM-5 enables full spherical measurements to resolutions as low as 0.1 degrees. The belt driven system is a plug and play substitution to the DAMS elevation motor.

### Features include:

- Low reflection - 90% Delrin® construction
- DC - 18 GHz
- 6-inch azimuth adjustment for centering
- 12-inch elevation height
- 0.1 degree movement resolution
- 5-pound load capacity (option 5)
- 10-pound load capacity (option 10)
- CTIA and general efficiency software
- Runs from existing platform elevation plug



**Supports most GPIB-enabled instruments**

## DAMS x100 Heavy Duty Measurement System



### Positioner Features:

- .25 degree azimuth resolution (DAMS 5100)
- .10 degree azimuth resolution (DAMS 6100/7100)
- 360 degree rotation
- +/- 90 degree elevation range @ 0.1 degree per step
- DC-6 GHz measurement range (DAMS 5100)
- DC-18 GHz measurement range (DAMS 6100)
- DC-40 GHz measurement range (DAMS 7100)
- Low-noise rotary SMA joint
- Aluminum construction with steel gears and precision bearings for long life and reliability
- Quick and efficient technical support
- Includes all accessories
- 24" aluminum thrust plate for larger antennas
- Ultra heavy-duty tripod for maximum stability
- Up to 3 years warranty on parts and labor

150 Pound Capacity!



## DAMS x250 Ultra-Heavy-Duty Measurement System



### Positioner Features:

- 250 ft-lb. elevation torque
- .01 degree azimuth / elevation resolution
- 360 degree azimuth rotation
- +/- 90 degree elevation range
- Ultra-high torque stepper drive system
- Encoded position feedback
- DC-6 GHz measurement range (DAMS 5250)
- DC-18 GHz measurement range (DAMS 6250)
- DC-40 GHz measurement range (DAMS 7250)
- Low-noise rotary SMA joint
- Aluminum construction with steel gears and precision bearings for long life and reliability
- Includes all accessories
- 30" aluminum or acrylic AUT mounting plate
- Ultra-heavy-duty tripod for maximum stability
- 3 years warranty on parts and labor

250 Pound Capacity!



Visit us on the web: <http://www.DiamondEng.net>

# Powerful Measurement Software

Antenna Measurement Studio is our powerful software that can thoroughly characterize any antenna using a wide variety of processing and display features.

## Standard Features:

- Path loss calculator
- Simple 3D plots
- RCS Calculation
- Easy USB connectivity
- One-touch antenna profiling
- Reference antenna import feature
- Data export function
- Measure over frequency
- Calibration features
- Fully configurable positioner settings
- Extensive plotting features
- Dataset manipulation

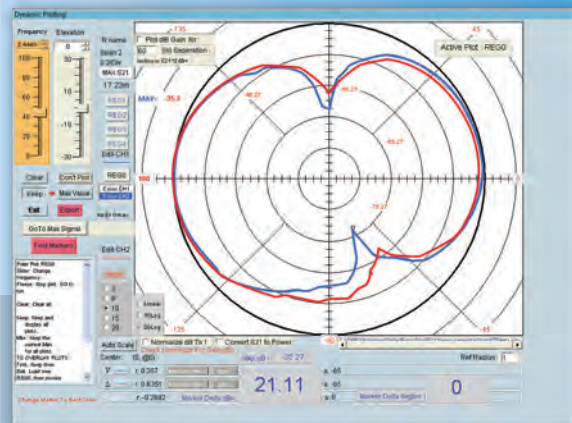
## Advanced Processing Modules:

- Advanced spherical 3D plots
- Exclusive dataset calculator

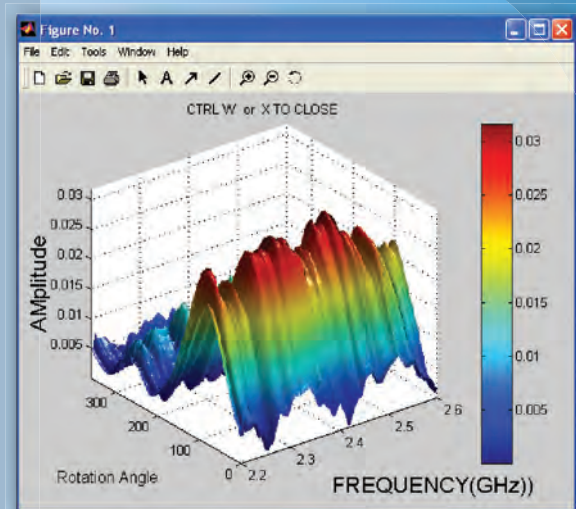
## Supported Instrument Configurations:

- Single VNA
- Receive\* only for self generating sources
- Separate source and receive\* instruments

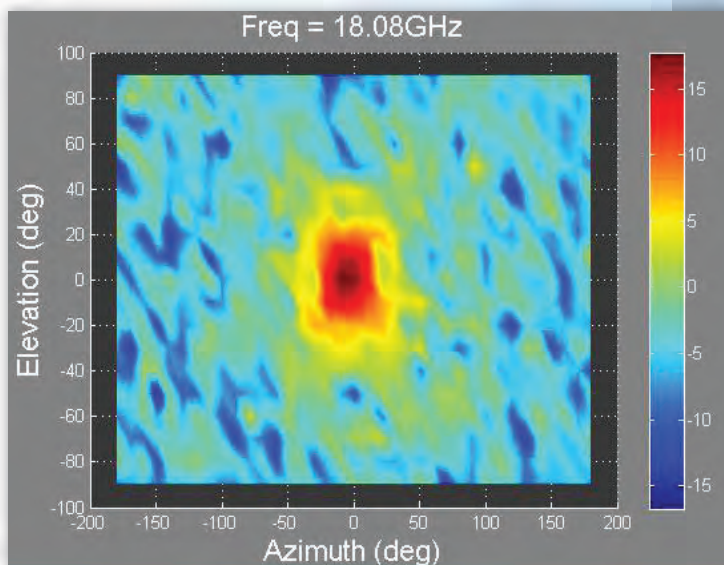
\* Supported receivers: spectrum analyzer, power meter, or voltmeter with detector diode.



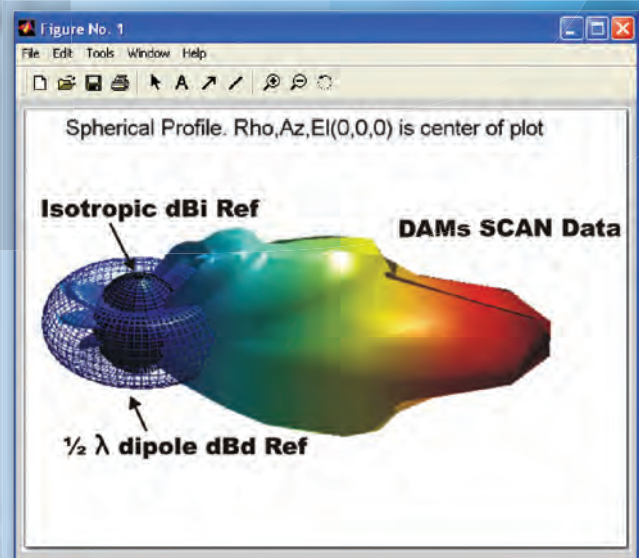
Dual Trace Polar Radiation Plot



3D Amplitude Plot



Colormap Plot

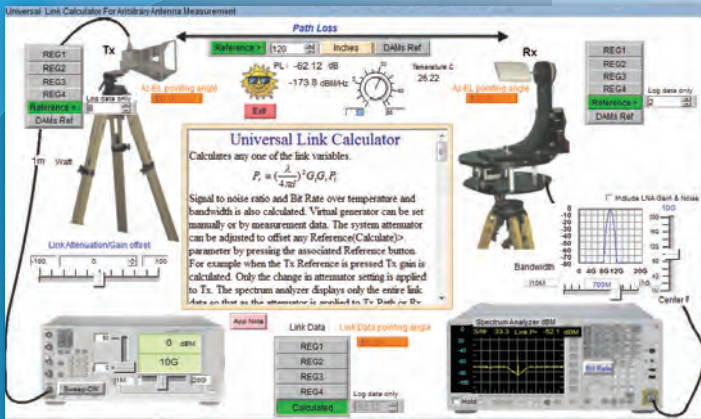


Spherical Plot

# Advanced Software Features

## 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

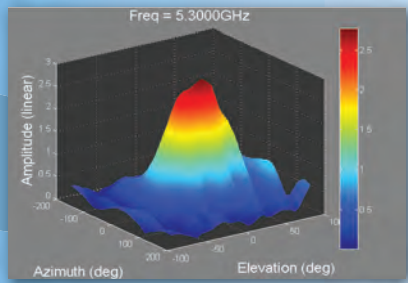
Virtual Spectrum Analyzer

## GAIN CALCULATION FEATURES

A number of gain correction features are provided from linear gain transfer to remove path loss and reference antenna gain to the 3-point method using the FRIIS transmission formula.

### Other Features:

- Linear gain transfer
- Circular gain via linear H-V
- Gain Substitution
- Total power factor
- 3 point method



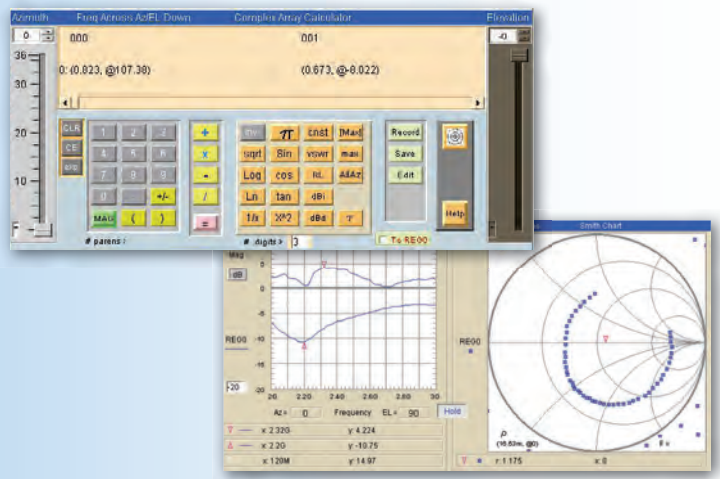
## ANTENNA NETWORK SIMULATOR

A full feature two-port simulator with wave analysis. Fully customizable drag-and-drop elements enable users to create diversified simulations. Three main objects include schematic, amplitude (or Smith chart) and an array calculator.



### Other Features:

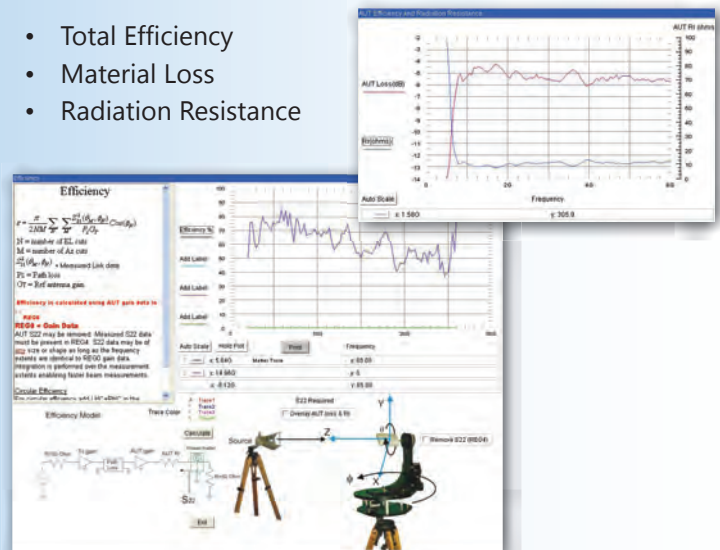
- Analyze networks, including path-loss or phase
- Create phased arrays or sector arrays
- Create matching circuits for measured antennas
- Use the antenna emulation library for ideal networks



## ANTENNA EFFICIENCY FUNCTIONS

Complete antenna efficiency module includes:

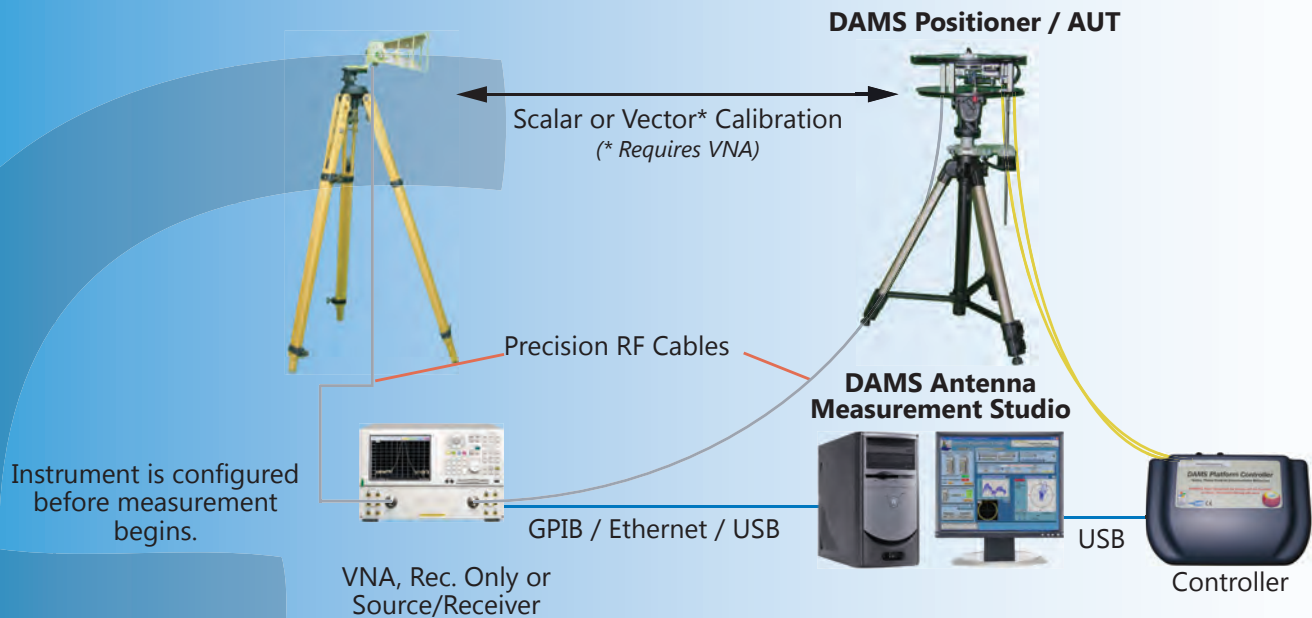
- Total Efficiency
- Material Loss
- Radiation Resistance



## Typical Measurement Layout

Below is a typical measurement setup using a Vector Network Analyzer (VNA) and a stationary calibrated horn with the basic DAMS System.

The Measurement PC instructs the positioner to move, which triggers a sweep from the VNA and then reads the data into the DAMS software. This process is repeated until the measurement has been completed.



## Supported Instruments

All DAMS Systems support a wide-array of VNAs, PNAs, signal generators, power meters and spectrum analyzers. If your instrument has a GPIB port, it will most likely work. Popular instruments compatible with DAMS:

### VECTOR NETWORK ANALYZERS

HP / Agilent 8510x Series  
HP / Agilent 8714 Series  
HP / Agilent 8720 Series  
HP / Agilent 8753 Series  
Agilent 507x Series  
Agilent N5320A Series PNA's  
Agilent 836x Series PNA's  
Anritsu 46xx Series Analyzers (Scorpion)  
Anritsu 37xx Series Analyzers (Lightning)  
Rohde & Schwarz ZVx Series

### SIGNAL GENERATORS

Most HP hardware  
SMP Series

### POWER METERS

Elva DPM-10  
HP436A  
HP437B  
Anritsu ML2438A

### SPECTRUM ANALYZERS

HP8565 Series  
Rohde & Schwarz FSL Series  
Anritsu MS27xx Series  
Anritsu MT82xx Series



Scan me for a complete list of supported instruments.

Anritsu

ADVANTEST



Agilent Technologies



ROHDE & SCHWARZ

Boonton

# Product List

## Standard x000 Series - Up to 20 lb. capacity (9 kg.)



### Product Code

D5000  
D6000  
D7000

### Frequency

DC-6 GHz  
DC-18 GHz  
DC-40 GHz

## Heavy Duty x100 Series - Up to 150 lb. capacity (90 kg.)



### Product Code

D5100  
D6100  
D7100

### Frequency

DC-6 GHz  
DC-18 GHz  
DC-40 GHz

## Heavy Duty x250 Series - Up to 250 lb. capacity (113 kg.)



### Product Code

D5250  
D6250  
D7250

### Frequency

DC-6 GHz  
DC-18 GHz  
DC-40 GHz

## Full Spherical Mount - Up to 10 lb. capacity (4.5 kg.)

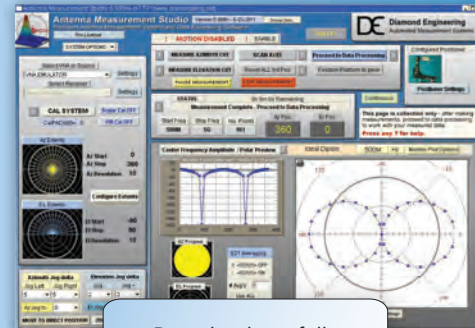


### Product Code

DFSM5  
DFSM10

### Frequency

DC-18 GHz  
DC-18 GHz



Download our fully functional demo software at [www.DiamondEng.net](http://www.DiamondEng.net)



Visit us on your Smart Phone!

## Optional Accessories

Advanced Processing Module (incl. with 6x00/7x00)  
Pre-Configured Desktop or Laptop PC w/ GPIB

### Product Code

DEAPM  
DEPC-D or DEPC-L

## Customer List

Used internationally by universities and corporations such as:

Lockheed Martin  
Motorola  
L3 Communications  
Apple Computer  
3M  
Motion Computing  
Ball Aerospace  
Broadcom  
University of Wisconsin



TDK (Ireland)  
King Saud University  
Government of Israel  
Manchester University  
ATC Egypt  
Samsung  
LG  
University of Natal  
Elektrobit A.G.

## Company Headquarters

**Diamond Engineering**  
P.O. Box 2037  
484 Main Street, Suite 16  
Diamond Springs, CA 95619

Telephone: 530-626-3857  
Fax: 530-626-0495

<http://www.DiamondEng.net>  
Sales@DiamondEng.net  
Support@DiamondEng.net

## Channel Partner



**Panashield Inc.** provides complete RF chamber solutions for antenna and EMI/EMC applications.

Telephone: 203-866-5888  
<http://www.Panashield.com>

Your representative:



All trademarks are copyright of their respective owners. Diamond Engineering assumes no responsibility for errors or omissions in this catalog. Diamond Engineering reserves the right to change information or specifications without notice.