

## SPECIFICATION SHEET

### TACAN ANTENNA, TALL APERTURE OE-900E TACAN ANTENNA GROUP (MODEL dBs 900E)

**dBs PART NUMBER 901300-101 (NSN 5985-01-639-8148)**



- State-of-the-art TACAN Antenna enables excellent coverage performance
- Vertical gain pattern optimized for distant aircraft with high gain on the horizon
- Unique modulation technique provides unusually high efficiency
- Innovative mechanical design supports easy field maintenance
- COTS FAA flight-tested product
- The 900E Electronically Scanned TACAN Antenna is a state-of-the-art design that features high efficiency (low internal RF power loss), high gain at low elevation angles, and very low gain below the horizon, resulting in exceptional coverage performance at sites with long cable runs or difficult terrain.
- The 900E Antenna is a COTS product that has been sold to several overseas customers and has been successfully flight tested by the FAA.

The dBs 900E ESTA is a Low Power TACAN (Tactical Air Navigation) Antenna intended for use with the FA-9996 and other TACAN beacon equipment located at VORTAC sites. It is designed to replace existing TACAN Antennas which have reached the end of their economical service life, and in the process, provide a TACAN Antenna which has greater reliability, ease of maintenance, and requires substantially less power to operate than previous TACAN Antennas. In addition, the dBs 900E is an all-frequency antenna which operates on all DME and TACAN channels without tuning or adjustment.

Built in Test (BIT) assures the user that all antenna electronics are fully functional (which by itself is an excellent indicator of the overall RF pattern health of the antenna). The 900E also includes a cantilevered lightning arrester assembly, which provides a 45° cone of protection over the antenna.

The dBs 900E TACAN is the FAA flight-tested TACAN Antenna chosen by the United States Air Force to replace all existing 120+ USAF TACAN installations worldwide.

# TACAN ANTENNA, TALL APERTURE

OE-900E TACAN ANTENNA GROUP (MODEL dBs 900E)  
dBs PART NUMBER 901300-101 (NSN 5985-01-639-8148)

## SPECIFICATIONS/CHARACTERISTICS

**TYPE:** TACAN, High Vertical Aperture

**FREQUENCY RANGE:** 1X through 126X; 1Y through 126Y;  
962 MHz - 1213 MHz (no adjustments or tuning required)

**ARRAY, CENTRAL, RF:** 14 Element, Co-linear, Cylindrical  
Dipole Array

**MODES OF OPERATION:** TACAN or DME Only

**SCANNING:** Electronically Scanned using Ultra High  
Efficiency Modulation Technique

**SCANNING SPEED:** 900 RPM  $\pm$  0.015%, Crystal Controlled

**ROTATION DIRECTION:** Clockwise, looking down on the  
Antenna

**POLARIZATION:** Vertically Polarized

**GAIN, MAIN BEAM:**  $\geq$  9 dB/iso Peak Gain

**GAIN, HORIZON:**  $\geq$  3 dB/iso Peak Gain

**MAIN BEAM ELEVATION LOCATION:** 5° to 7° above  
horizon, typically 7°.

**SLOPE (VICINITY OF HORIZON):**  $\geq$  0.2 V/V/° (Normalized to  
Value at Horizon)

**POWER HANDLING CAPABILITY:** Up to at least 5 kW peak  
RF power at 4% duty cycle (200 Watts Average)

**VSWR:**  $\leq$  1.8:1 (960-1215 MHz) measured at end of low loss  
cable not exceeding 5 feet in length.

**GAIN BELOW THE HORIZON:** The gain at angles between 6  
and 50 degrees below the horizon shall be lower than the gain  
at the peak of the major lobe above the horizon by at least 16  
dB. The energy radiated below the horizon shall not exceed  
10% of the total energy radiated.

**GAIN ABOVE THE HORIZON:** The power gain at angles  
between 6 and 20 degrees above the horizon shall be greater  
than a level which is 15 dB below the power gain at the peak  
of the major lobe above the horizon. The power gain at angles  
between 20 and 50 degrees above the horizon shall be  
greater than a level which is 25 dB below the power gain at  
the peak of the major lobe above the horizon.

### HARMONIC CONTENT:

- RSS of 30 & 45 Hz  $\leq$  25% of 15 Hz
- RSS of 270 & 405 Hz  $\leq$  25% of 135 Hz
- RSS of 105, 120, 150 & 165 Hz  $\leq$  25% of 15 Hz

**IMPEDANCE:** 50  $\Omega$  nominal

**15 HZ MODULATION:** From -2° to +45° vertical angle the 15  
Hz Percent Modulation is 21%  $\pm$  9%.

**135 HZ MODULATION:** From -2° to +20° vertical angle the  
135 Hz Percent Modulation is 21%  $\pm$  9%. From +20° to +45°  
the modulation performance specification varies depending on  
channel of operation.

**HORIZONTALLY POLARIZED COMPONENT:** The  
Horizontally Polarized Component  $\geq$  26 dB below the  
Vertically Polarized Component.

**CROSS POLARIZATION ERROR FOR 45° HORN TILT:** 15  
Hz RMS Error  $\leq$   $\pm$ 3°; 135 Hz RMS Error  $\leq$   $\pm$ 1°

### AZIMUTH ACCURACY:

- 15 Hz RMS Error  $\leq$   $\pm$ 3°
- 15 Hz Peak Error  $\leq$   $\pm$ 6°
- 135 Hz RMS Error  $\leq$   $\pm$ 0.8°
- 135 Hz Peak Error  $\leq$   $\pm$ 1.5°

**WARM-UP TIME:**  $\leq$  5 Seconds

**AC POWER:** 95 to 260 VAC, 1 Phase, 47 to 63 Hz

**DC POWER:** +22 to +58 VDC

**POWER CONSUMPTION:** AC  $\leq$  125 Watts; DC  $\leq$  125 Watts

**SIZE:** Antenna: 118" Tall x 36" Dia.; ACU: 12.25" Tall x 19"  
Wide x 16.5" Deep

**WEIGHT:** Antenna with Lightning Protection: 600 lbs.  
ACU: 25 lbs.

**TEMPERATURE:** Antenna: -50° C to +70° C; ACU: -10° C to  
+50° C

**RELATIVE HUMIDITY:** 0% to 100%

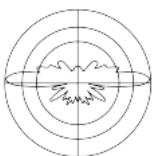
**ALTITUDE:** 10,000 feet above sea level, maximum

**ICING:** 7.5 lbs/ft<sup>2</sup> on exposed antenna surface, maximum

**WIND LOADING:** 100 mph, maximum

**LIGHTNING PROTECTION:** Integral Lightning Protection  
provided via RF Transparent Lightning Down Conductor.  
Located 24" to 30" from Radome O.D.

**INTEGRAL MONITOR:** Provides BIT to LRU Level. Monitors  
Azimuth Accuracy, RF Power Level and Percent Modulation.  
Issues Antenna Shutdown or Maintenance Alert Depending  
on Failure Mode.



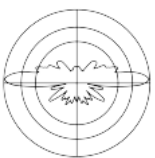
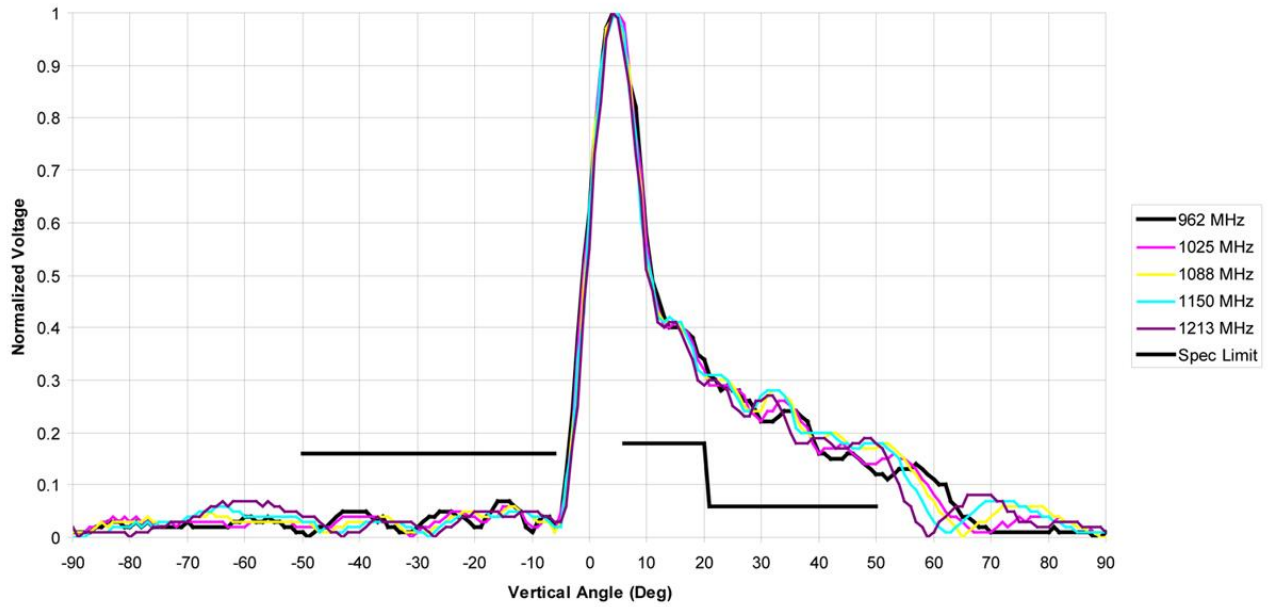
dB Systems Inc.

2501 S. Antenna Avenue  
Hurricane, Utah 84737 USA

Email: [sales@dbsant.com](mailto:sales@dbsant.com) | Phone: (435) 635-3352 | [www.dbsant.com](http://www.dbsant.com)

© March 2018. All information subject to minor changes without notice.

# dBs 900E Vertical Pattern



dB Systems Inc.

2501 S. Antenna Avenue  
Hurricane, Utah 84737 USA

Email: [sales@dbsant.com](mailto:sales@dbsant.com) | Phone: (435) 635-3352 | [www.dbsant.com](http://www.dbsant.com)

© March 2018. All information subject to minor changes without notice.