

## SPECIFICATION SHEET

### DME ANTENNA, OMNI-DIRECTIONAL MODEL dBs 5100A-L

**dBs PART NUMBER 500300-105**  
**APPROVED FOR USE BY FAA UNDER FAR PART 171**



The dBs 5100A-L is a lightweight omni-directional broadband, 10 element, higher performance, collinear dipole phased array designed specifically for use as a Distance Measuring Equipment (DME) antenna. It exhibits very low side lobe levels and negative angle radiation (minimizes multipath). The above-the-horizon null-filled pattern minimizes the radiated cone of silence. The antenna handles input power to 5,000 watts at standard DME pulse duty cycle and operates over its entire frequency range with an input VSWR at 50  $\Omega$  of less than 2.0:1.

This antenna provides vertically polarized, omni-directional coverage with the main beam of radiation tilted upward to minimize the effects of ground reflections.

The array is enclosed and effectively weatherproofed within a lightweight, small diameter, filament wound, and ground smooth fiberglass radome for prolonged trouble-free use under severe environmental conditions. The antenna is very lightweight (12.5 lbs.), small, and 100% metal tubular construction making it extremely rugged. The integral pipe adapter permits direct attachment of the antenna to a 2 7/8" O.D. pipe.

Monitor probes are not provided.

The model dBs 5100A-L Lightweight DME antenna has been designed for ruggedness, lightweight, minimum size, long life, and in accordance with FAA-E-2754 and FAA-E-2100. It also exceeds the requirements of the UK CAA specification.

**dBs 5100A-L with Marine Option (P/N: 500300-125):** The dBs 5100A-L Marine Version antenna is an optional upgrade as well. The RF transmission assembly is completely sealed and weatherproofed to protect in harsh environments such as salt water, extreme humidity, wind, sand, snow, and ice. Contact our factory for more details.

# DME ANTENNA, OMNI-DIRECTIONAL

Model dBs 5100A-L  
dBs PART NUMBER 500300-105

## SPECIFICATIONS/CHARACTERISTICS

**TYPE:** Omni-Directional

**CIRCULARITY:**  $\pm 1$  dB max on horizon

**FREQUENCY RANGE:** 960 through 1215 MHz (no adjustments or tuning required)

**ARRAY:** 10 radiator assemblies (75.25" tall)

**COAXIAL CABLE:** Semi-Rigid, Low Loss, Phase Stable

**POLARIZATION:** Vertically Polarized

**GAIN, MAIN BEAM:** 9 dB/iso, minimum

**GAIN, HORIZON:** 7 dB/iso, minimum

**MAIN BEAM ELEVATION LOCATION:**  $3^\circ \pm 1^\circ$  above horizon

**SLOPE (VICINITY OF HORIZON):** 1 dB/ $^\circ$  min

**POWER HANDLING CAPABILITY:** Up to at least 5 kW peak RF power at 3% duty cycle

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

**VSWR:** Not greater than 2:1 (960-1215 MHz) measured at end of low loss cable not exceeding 5 feet in length.

**VERTICAL FIELD PATTERN:** The radiation pattern of the antenna in the vertical plane has a lobe of energy not less than 6 degrees wide at the half-power points. The power gain at angles between 10 and 50 degrees below the horizon shall be lower than the power gain at the peak of the major lobe above the horizon by at least 12 dB. The power gain at angles between 6 and 40 degrees above the horizon shall not pass under a straight line joining the points of co-ordinates (+6 $^\circ$ , -15 dB) and (+40 $^\circ$ , -25 dB) with values referenced to the peak of the major lobe above the horizon.

**SIZE:** 75.25" long, 10 radiator assemblies (driven elements) plus a choke assembly at each end, 3 1/4" OD radome. Has top cap and base flange with integral pipe adapter included in the base of the antenna. Mounts to a 2 7/8" O.D. pipe.

**WEIGHT:** 12.5 lbs.

**PHYSICAL DESIGN:** A metal tube, 1.5" O.D. x 1.43" I.D. (0.040" wall thickness) runs through center of antenna for full length. RF transmission line assembly and obstruction light

power lines are located within this tube. Also used as lightning down conductor.

**WEATHER PROOFING:** Entire antenna, including all cable connectors, is weatherproofed such that removal/replacement of radome is possible without sealing compounds.

**ANTENNA MOUNTING:** The configuration of the antenna base is such that the antenna can be mounted directly to a 2 7/8" O.D. pipe.

**TEMPERATURE:** -50 $^\circ$  C to +70 $^\circ$  C

**WIND LOADING:** Withstands without damage 100 mph gusts

**MONITOR PORTS:** Not Provided

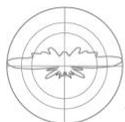
**OBSTRUCTION LIGHTING:** Interface Not Provided

**CONNECTORS RF:** Type N Female, 1 each

**ENVIRONMENTAL:**  
Meets FAA-G-2100c Environment III and FAA-E-2754  
Temperature, -50 $^\circ$  to +70 $^\circ$  C  
Humidity, 5% to 100%  
Altitude, 0 to 10,000 Feet ASL  
Ice Loading, 1/2" Radial Ice

### OPTIONAL ITEMS:

- **LIGHTNING ROD ASSEMBLY:** Optional, air terminal and bracket, powder coat painted white, aluminum (P/N 510625-100: Rod 18" L x 0.5" Dia @ 6 oz. Bracket 4.5" L x 2.5" W x 0.75" H @ 1 lb.)
- **PIPE ADAPTER:** Optional, solid cast aluminum (A356-T6) Powder coat painted white. Adapts 4" O.D. pipe to antenna base (P/N 510500-100: 12" H x 8" Dia. @ 8.3 lbs.)
- **COVER FOR PIPE ADAPTER:** Optional, Stainless Steel, protects connector area from environment (P/N 510490-100: 25.5" L x 5" H @ 1.5 lbs.)
- **PLATE ADAPTER:** Optional, interfaces with pipe adapter for mounting antenna to building side, steel weldment, powder coat painted white (P/N 510460-100: 12" x 12" with 18" L, 4" O.D. pipe @ 37.5 lbs.)

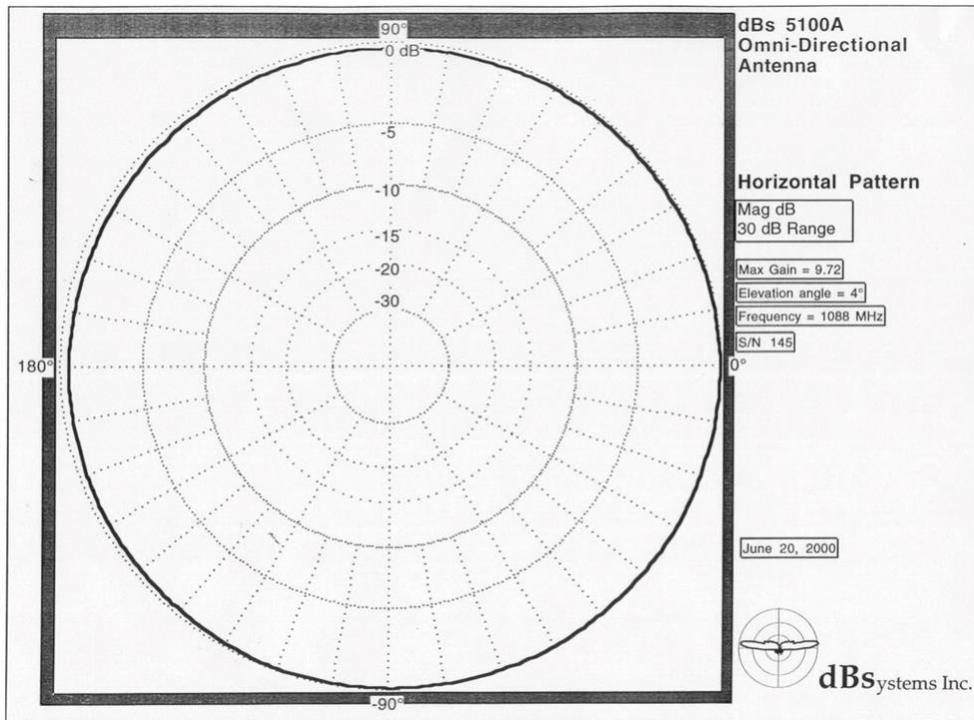
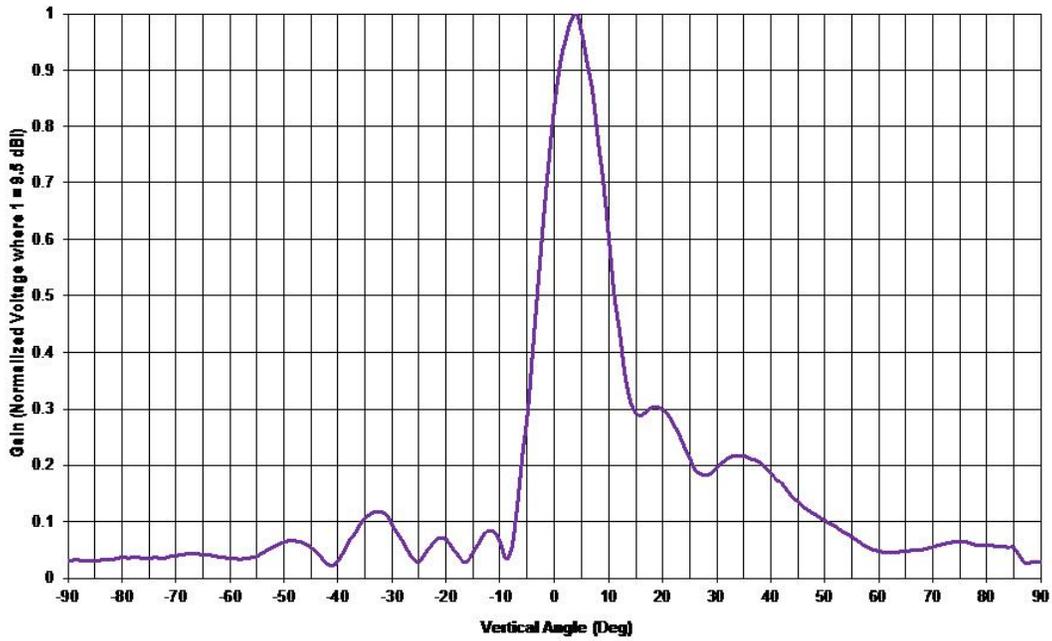


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# dBs 5100A-L Vertical & Horizontal Patterns

**dBs 5100A-L Vertical Pattern, 1088 MHz**



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