

## SPECIFICATION SHEET

### DME ANTENNA, OMNI-DIRECTIONAL, DE-ICING MODEL dBs 5100A-HS

**dBs PART NUMBER 500300-111**

**APPROVED FOR USE BY FAA UNDER FAR PART 171**



The dBs 5100A-HS de-icing antenna is an omni-directional broadband, 10 element, higher performance, collinear dipole phased array designed specifically for use as a Distance Measuring Equipment (DME) antenna.

The antenna comes with a built-in automatic de-icing system to prevent the buildup of ice in harsh weather conditions. The automatic detection system accomplishes this by turning the heated radome option on and off for intervals of one hour as long as icing conditions exist. When icing conditions do not exist, the heated radome option is automatically turned off. The heater input is 240VAC using an MS3114E8-4P circular mil connector interface.

The antenna includes a ruggedized high strength radome and base capable of surviving 180 mph wind loads.

This antenna 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 has two integral monitor probes which constantly sample the RF signal delivered to the antenna.

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. Mounting is made by means of an integral base flange with 6 each mounting bolt holes. All RF input/output ports are Type N receptacles.

Obstruction light power is fed through the array and a provision is made for mounting an obstruction light and/or arrestor at the top of the array. Lightning rod kit, obstruction light, and plate adapter are available option items.

This antenna comes standard with an included dBs Pipe Adapter that allows the antenna to mount to a 4" O.D. pipe. The antenna also comes standard with a dBs Marine Option Stainless Steel Cover for the Pipe Adapter.

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

# DME ANTENNA, OMNI-DIRECTIONAL, DE-ICING

Model dBs 5100A-HS  
dBs PART NUMBER 500300-111

## 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 (77.8" 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:** 77.8" long, 10 radiator assemblies (driven elements) plus a choke assembly at each end, 3 1/4" OD radome. Has top cap and base flange.

**WEIGHT:** 24 lbs. (excluding obstruction light, mounting fixtures, and other optional items)

**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:** Includes pipe adapter that mounts to 4" O.D. Pipe.

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

**WIND LOADING:** Withstands without damage 180 mph gusts. Radome and base are ruggedized for high wind applications.

**MONITOR PORTS:** Two coupling ports for monitoring the signal radiated by the antenna. They are located within the radome. 50  $\Omega$  nominal impedance. Probe output level is 25 dB  $\pm$  1 dB (for J2 and J3) below power level applied to main RF input connector.

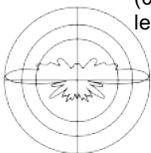
**CONNECTORS RF:** Type N Female, 3 each.

### ENVIRONMENTAL:

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

### OPTIONAL ITEMS:

- **OBSTRUCTION LIGHT:** Optional, red dual lamp obstruction light fixture with two red globe covers. Connector is MS-3112E8-3P (P/N 510600-101: 9" H x 12" W x 5.5" D @ 6 lbs.)
- **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.)



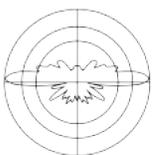
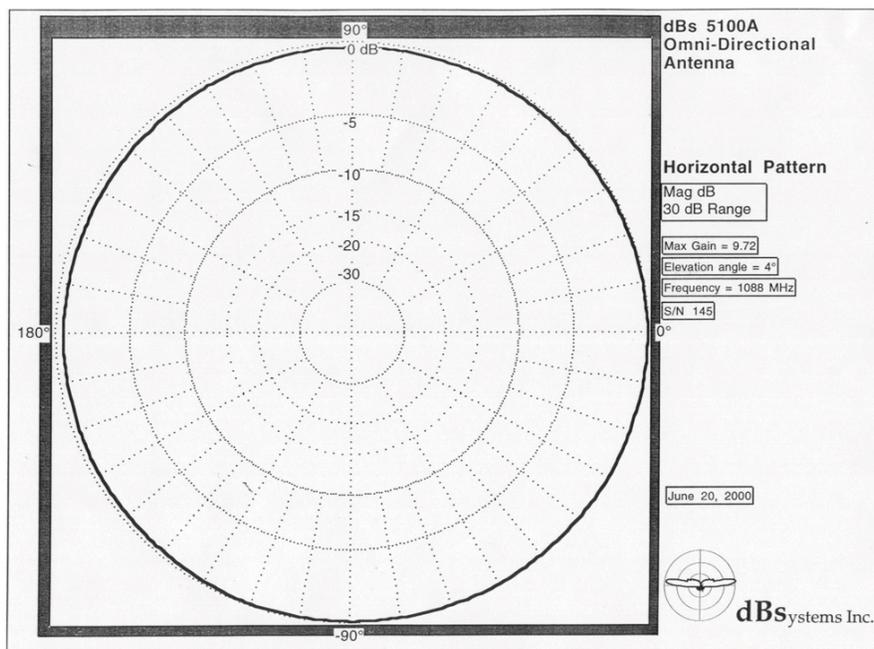
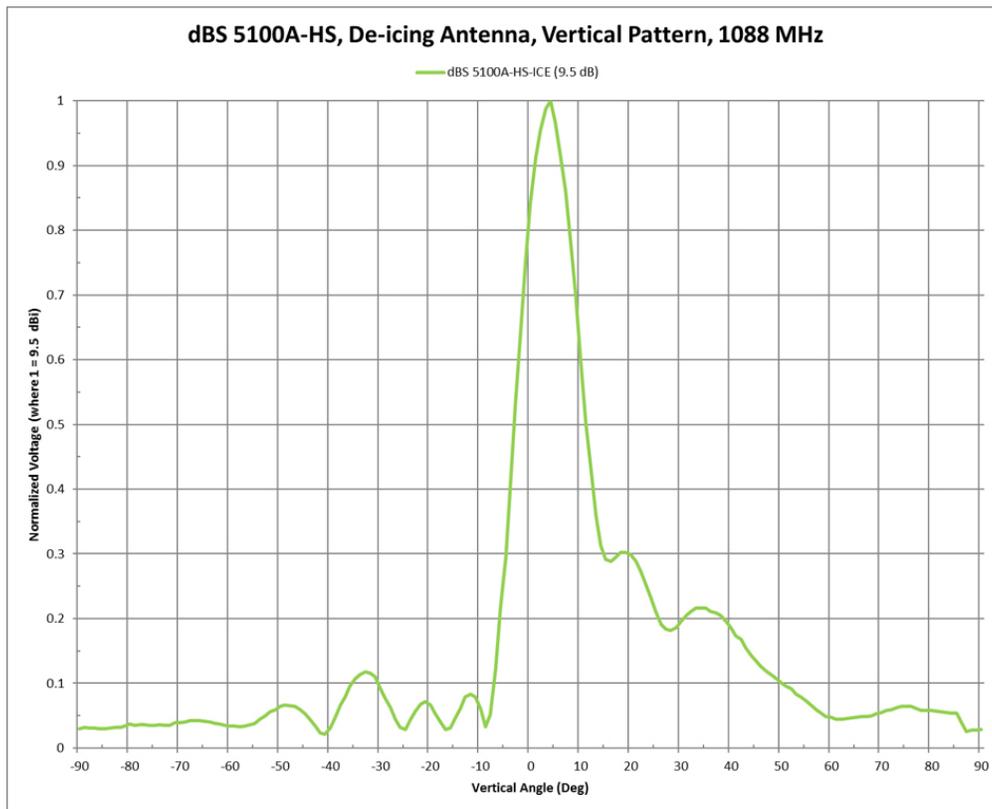
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# dBs 5100A-HS, De-icing Vertical & Horizontal Patterns



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