

SPECIFICATION SHEET

ADS-B ANTENNA, UNI-DIRECTIONAL MODEL dBs 5100A-D/180° HPBW

dBs PART NUMBER 500300-110
APPROVED FOR USE BY FAA UNDER FAR PART 171



The dBs 5100A-D/180° is a uni-directional broadband, 10 element, higher performance, collinear dipole phased array designed specifically for use as an Automatic Dependent Surveillance-Broadcast (ADS-B) 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 the standard ADS-B pulse duty cycle and operates over its entire frequency range with an input VSWR at 50 Ω of less than 2.5:1.

This antenna provides vertically polarized, uni-directional coverage with the main beam of radiation tilted upward to minimize the effects of ground reflections. The horizontal HPBW is a nominal 180°. 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 6.25" O.D. filament wound, ground smooth fiberglass radome for prolonged trouble-free use under severe environmental conditions. The uni-directional radiation pattern is produced by a full-length pattern shaping element within the radome. 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 lightning arrestor at the top of the array.

Lightning rod kit, obstruction light, pipe adapter (with or without cover), and plate adapter are available option items.

The model dBs 5100A-D ADS-B antenna has been designed for ruggedness, lightweight, minimum size, long life, and in accordance with FAA-E-2754 and FAA-E-2100. Exceeds the requirements of the UK CAA specification.

dBs 5100A-D/180° with Marine Option (P/N: 500300-130): The dBs 5100A-D/180° 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.

ADS-B ANTENNA, UNI-DIRECTIONAL

Model dBs 5100A-D/180° HPBW
dBs PART NUMBER 500300-110

SPECIFICATIONS/CHARACTERISTICS

TYPE: Uni-directional

CIRCULARITY: 180° Nominal HPBW – Reflecting element located within radome unit. Nominal Front-to-Back Ratio > 10 dB.

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

ARRAY: 10 active radiator assemblies (77.8" tall)

POLARIZATION: Vertically Polarized

GAIN, MAIN BEAM: >12 dB/iso, minimum

GAIN, HORIZON: >9 dB/iso, minimum

MAIN BEAM ELEVATION LOCATION: Between 3° ± 1° above horizon

SLOPE (VICINITY OF HORIZON): 1.5 dB/° minimum

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

IMPEDANCE: 50 Ω nominal

VSWR: Not greater than 2.5:1 (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 is 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 does not pass below a straight line joining the points of co-ordinates (+6°, -15 dB) and (+40°, -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 an RF choke assembly at each end, 6 1/4" O.D. radome. Has top cap and base flange.

WEIGHT: 38 lbs. (excluding obstruction light, lightning rod assembly, and mounting fixtures)

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 lines are located within this tube. Tube also used as lightning down conductor.

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

ENVIRONMENTAL: Meets FAA-G-2100c environment III and FAA-E-2754.

ANTENNA MOUNTING: The configuration of the antenna base is such that the antenna can be mounted directly or indirectly through use of optional adapter(s).

WIND LOADING: Withstands without damage 100 mph gusts.

TEMPERATURE: -50° C to +70° C

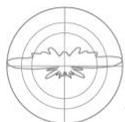
HUMIDITY: Up to 100%

MONITOR PORTS: Two coupling ports for monitoring the signal radiated by the antenna. Located within the radome. 50 Ω nominal impedance. Probe output level is 25 dB ± 1 dB (for J2 and J3) below power level applied to main RF input connector.

CONNECTORS RF: Type N Female Jack, 3 each

OPTIONAL ITEMS:

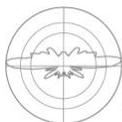
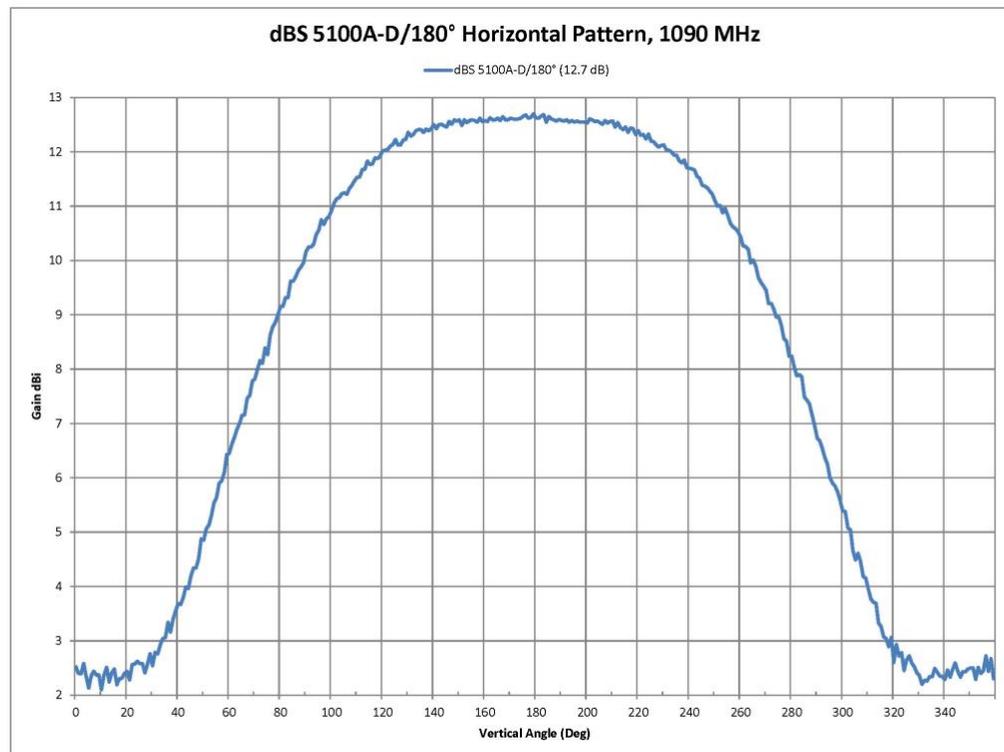
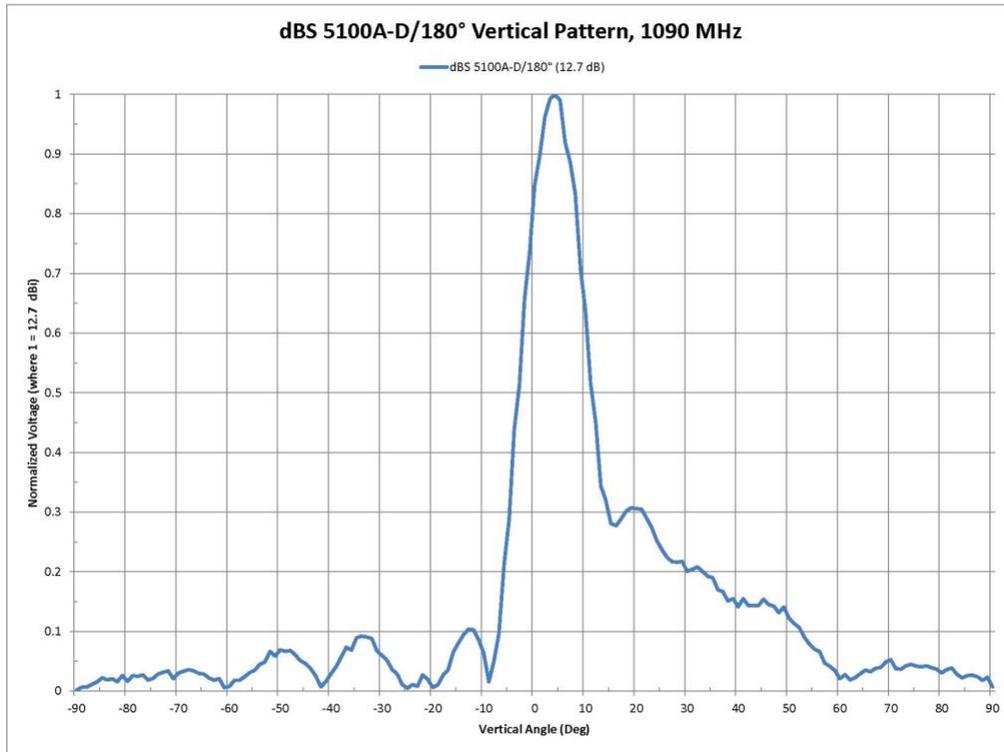
- **OBSTRUCTION LIGHT:** Optional, red dual lamp obstruction light fixture with two red globe covers. Connector is MS-3112E8-3P (P/N 510600-101: 9"H x 12"W x 5.5" D @ 6 lbs.)
- **LIGHTNING ROD ASSEMBLY:** Optional, air terminal and bracket, powder coat painted white, aluminum (P/N 510625-100: Rod 18"L 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-D/180° HPBW Vertical & Horizontal Patterns



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