dB Systems Inc.

2005 Turf Sod Rd.
Hurricane, Utah 84737 U.S.A.

SPECIFICATION SHEET

ADS-B ANTENNA, OMNI-DIRECTIONAL
MODEL dBs 510A

dBs PART NUMBER 510300-100
APPROVED FOR USE BY FAA UNDER FAR PART 171

The dBs 510A is an 8 element, high performance, full service, all band, omni-directional, Automatic Dependent Surveillance-Broadcast (ADS-B) antenna.

This omni-directional antenna has 8 active elements and other components, which produce high main lobe and horizon gain with wide beam width. 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 2:1.

This antenna provides vertically polarized, omni-directional coverage with main beam of radiation up tilted 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 weather proofed 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 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 510A ADS-B 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 510A with Marine Version (P/N: 510300-120): The dBs 510A Marine Option is an optional upgrade as well. The RF transmission assembly is completely sealed and weather proofed to protect in harsh environments such as salt water, extreme humidity, wind, sand, snow, and ice. Contact our factory for more details.

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ADS-B ANTENNA, OMNI-DIRECTIONAL

Model dBs 510A
dBs PART NUMBER 510300-100

SPECIFICATIONS/CHARACTERISTICS

TYPE: Omni-directional

CIRCULARITY: ± 1 dB max on horizon

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

ARRAY: 8 active radiator assemblies (77.8" tall)

POLARIZATION: Vertically Polarized

GAIN, MAIN BEAM: 8 dB/iso, minimum

GAIN, HORIZON: 6 dB/iso, minimum

MAIN BEAM ELEVATION LOCATION: Between 2º and 5º above horizon

SLOPE (VICINITY OF HORIZON): 0.44 dB/º (0.5v/v/º) minimum

POWER HANDLING CAPABILITY: Up to at least 10 kW peak RF power at 3% duty cycle

IMPEDANCE: 50 Ω 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 10 degrees wide at the half-power points. The power gain at angles between 6 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 8 dB. The power gain at angles between 6 and 15 degrees above the horizon shall be greater than a level which is 20 dB below the power gain at the peak of the major lobe above the horizon. The power gain at angles between 15 and 45 degrees above the horizon shall be greater than a level which is 30 dB below the power gain at the peak of the major lobe above the horizon.

SIZE: 77.8" long, 8 radiator assemblies (driven elements) plus an RF choke assembly at each end, 3 1/4" O.D. radome. Has top cap and base flange.

WEIGHT: 21 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: FAA-E-2100 environment III

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. The model dBs 510A-HS is a high strength version which withstands winds of 180 mph.

TEMPERATURE: -55º C to +70º 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. Optional probe output level is 23 dB ± 5 dB for J2 and 30 dB ± 5 dB for J3 below power level applied to main RF input connector.

CONNECTORS RF: Type N 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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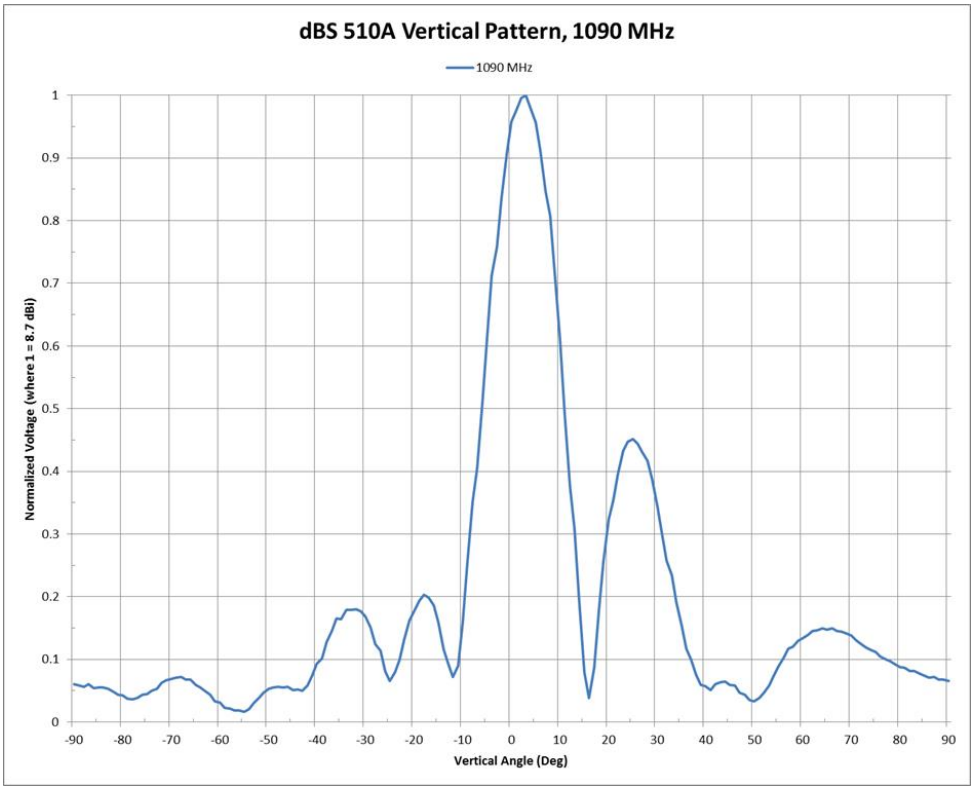
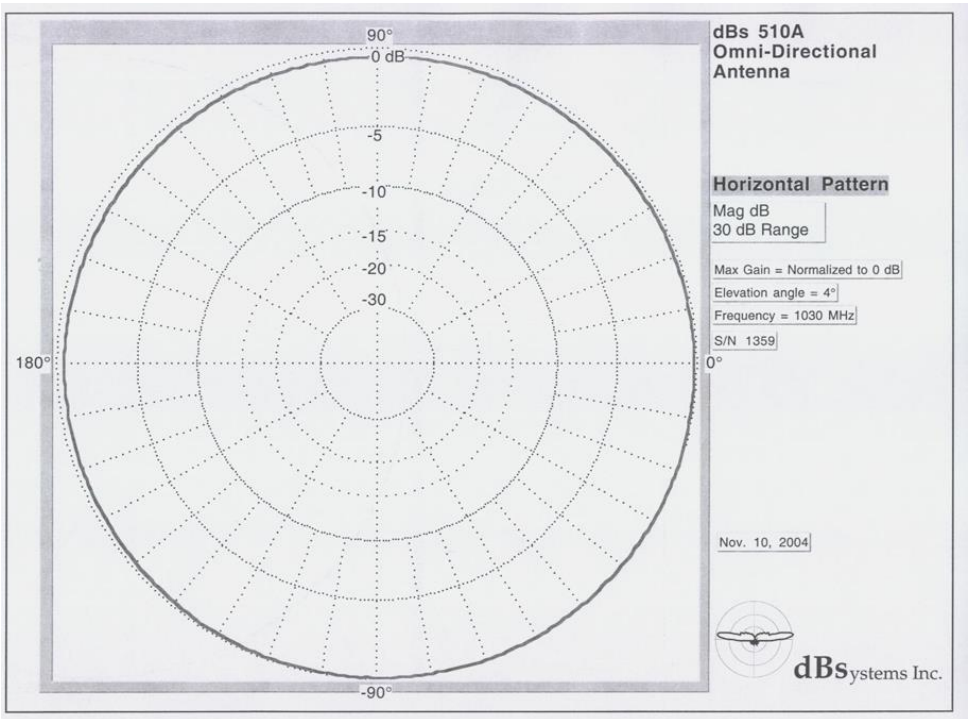
dBs 510A Vertical & Horizontal Patterns





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