dB Systems Inc.

2501 S. Antenna Avenue
Hurricane, Utah 84737 USA

SPECIFICATION SHEET

ADS-B ANTENNA, UNI-DIRECTIONAL
MODEL dBs 5100A-D/7° Main Beam, 90° HPBW

dBs PART NUMBER 500300-104
APPROVED FOR USE BY FAA UNDER FAR PART 171

The dBs 5100A-D/7° 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. The main beam of radiation peaks at 7° above the horizon for improved multipath performance. 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 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, 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. Mounting is made by means of an integral base flange with 6 each mounting bolt holes. The RF input port is a Type N receptacle.

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, pipe adapter (with or without cover), and plate adapter are available.

The model dBs 5100A-D/7° ADS-B antenna has been designed for ruggedness, lightweight, minimum size, long life, and in accordance with FAA-E-2754 and FAA-G-2100. Exceeds the requirements of the UK CAA specification.

dBs 5100A-D/7° with Marine Option (P/N: 500300-124): The dBs 5100A-D/7° Marine Version antenna is an optional upgrade. 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.

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

ADS-B ANTENNA, UNI-DIRECTIONAL

Model dBs 5100A-D/7° Main Beam, 90° HPBW
dBs PART NUMBER 500300-104

SPECIFICATIONS/CHARACTERISTICS

TYPE: Uni-directional

CIRCULARITY: 90° Nominal HPBW

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

ARRAY: 10 radiator assemblies (77.8" tall)

POLARIZATION: Vertically Polarized

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

GAIN, HORIZON: >6 dB/iso, minimum

MAIN BEAM ELEVATION LOCATION: 7° ± 1° above horizon above horizon

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

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 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°, -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 a choke assembly at each end, 3 1/4" OD radome. Has top cap and base flange.

WEIGHT: 38 lbs. (excluding obstruction light and mounting fixtures and other optional items).

PHYSICAL DESIGN: A metal tube, 1.5" OD x 1.43" ID (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 weather proofed such that removal or 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 or indirectly through use of optional adapter(s).

TEMPERATURE: -50° C to +70° C

WIND LOADING: Withstands without damage 100 mph gusts

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 1 each, 2 each for optional monitor ports.

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.)

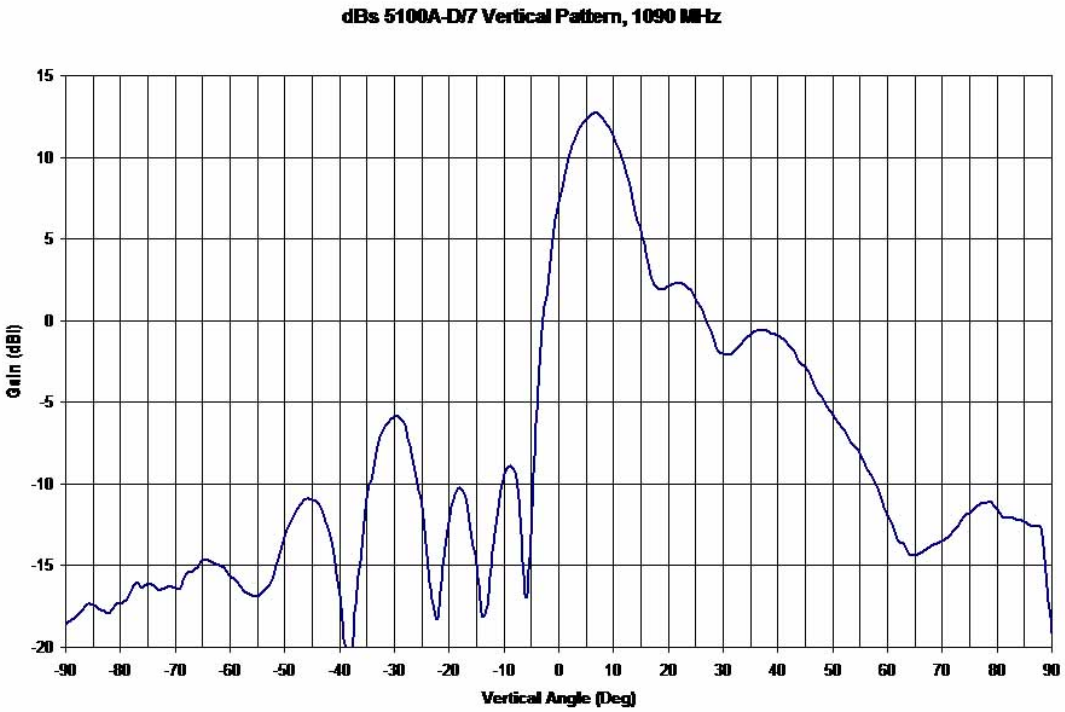
dB Systems Inc.

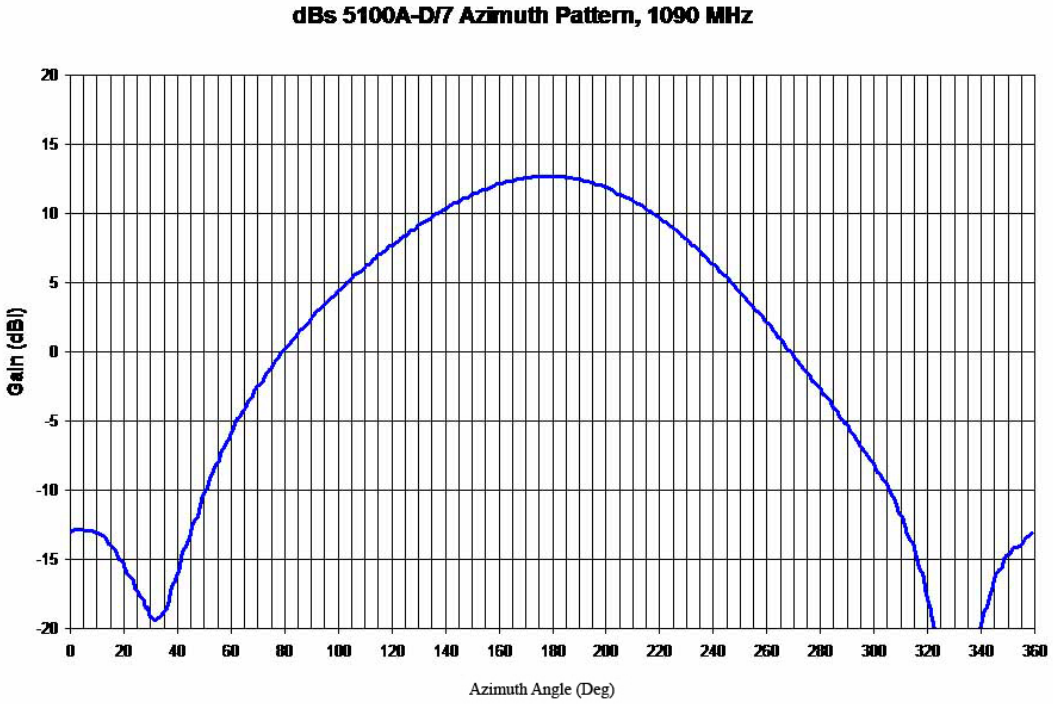
2501 S. Antenna Avenue
Hurricane, Utah 84737 USA

Email: **sales@dbsant.com** | Phone: **(435) 635-3352** | **www.dbsant.com**

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

dBs 5100A-D/7° Main Beam, 90° HPBW Vertical & Azimuth Pattern





dB Systems Inc.

2501 S. Antenna Avenue
Hurricane, Utah 84737 USA

Email: **sales@dbsant.com** | Phone: **(435) 635-3352** | **www.dbsant.com**

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