

SPECIFICATION SHEET

ADS-B ANTENNA, UNI-DIRECTIONAL MODEL dBs 610-D/10°

dBs PART NUMBER 610300-101
APPROVED FOR USE BY FAA UNDER FAR PART 171



The dBs 610-D/10° is a 4 element, extended aperture, high performance, full service, all band, uni-directional, Automatic Dependent Surveillance-Broadcast (ADS-B) antenna.

This uni-directional antenna has 4 active elements and other components, which produce high main lobe and horizon gain with wide beam width. The main lobe of the vertical pattern has been squinted to 10° above the horizon for improved multipath performance.

This antenna provides vertically polarized, uni-directional coverage with the 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 antenna is lightweight, small, and 100% metal tubular construction making it extremely rugged and lightning rod compatible. Optional pipe adapter permits attachment of the antenna to a 4" O.D. pipe and optional plate adapter.

The main RF input connector uses a Type N jack.

It is interoperable with lightning rod assembly and/or dual obstruction lights.

The model dBs 610-D/10° ADS-B 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.

dBs 610-D/10° with Marine Option: The dBs 610-D/10° 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

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SPECIFICATIONS/CHARACTERISTICS

TYPE: Uni-directional

CIRCULARITY (AZIMUTH PATTERN): 90° Nominal HPBW, Nominal Front-to-Back Ratio > 10 dB, With less than 1 dB of pattern ripple

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

ARRAY: 4 radiator assemblies (35" 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: 10° nominal above horizon

SLOPE (VICINITY OF HORIZON): 0.35 dB/° nominal

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 20 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 8 dB. The power gain at angles between 6 and 30 degrees above the horizon shall not pass under a straight line joining the points of co-ordinates (+6°, -15 dB) and (+30°, -25 dB) with values referenced to the peak of the major lobe above the horizon.

SIZE: 36" long, 4 radiator assemblies (driven elements), 6 1/4" OD radome. Has top cap and base flange.

WEIGHT: 21 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.

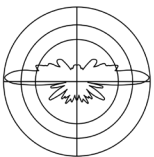
WEATHER PROOFING: Entire antenna, including all cable connectors, is weather proofed such that removal/replacement of radome is possible without sealing compounds. Antenna has a guarantee of water resistance IP5, so long as antenna is mounted vertically with Pipe Adapter and Stainless Steel Cover.

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.

MONITOR PORTS: Optional coupling ports for monitoring the signal radiated by the antenna. Located within the radome can be provided as optional items. 50 Ω nominal impedance. Probe output level is 25 dB ± 1.5 dB (for J2 and J3) below power level applied to main RF input connector.

CONNECTORS RF: Type N Female. 2 each for optional monitor ports.



dB Systems Inc.

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Hurricane, Utah 84737 USA

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

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SPECIFICATIONS/CHARACTERISTICS

ENVIRONMENTAL NON-OPERATING SPECIFICATIONS:

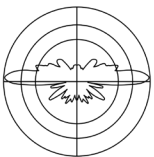
- **TEMPERATURE:** Withstands a temperature range of -50°C to +71°C.
- **ALTITUDE:** Withstands atmospheric pressure of 575 to 1025 mbar (equivalent to approximately 15,000 feet above sea level in a standard atmosphere down to approximately 300 feet below sea level).
- **VIBRATION:** Will not be damaged when subjected to the vibrations listed in Table 514.8C-I, Method 514.8 Annex C of MIL-STD-810, and the exposure durations provided in Annex C paragraph 2.1.4.
- **SHOCK:** Will not be damaged when subjected to the mechanically induced shock as specified in Method 516.8, Procedure II of MIL-STD-810.

ENVIRONMENTAL OPERATING CONDITIONS:

- **OUTDOOR TEMPERATURE:** Operates in the temperature range of -50°C to +71°C.
- **RAIN:** Operates while exposed to wind-blown rain, at a rate of 1.7 mm/minute (4 inches/hour), and up to 18 m/s (40 mph) blowing wind.
- **ALTITUDE:** Operates over the atmospheric pressure range of 700 to 1025 mbar (equivalent to approximately 10,000 feet above sea level in a standard atmosphere down to approximately 300 feet below sea level).
- **ICE LOADING:** In operation, withstands without damage 100 mile per hour gusts and ice loading of up to 1/2" radial ice. In survival, withstands without damage wind bursts up to 140 mph, without frost or ice, and up to 120 mph with 1/2" radial ice or frost.
- **HUMIDITY:** Operates within a relative humidity range from 5% to 100% when the temperature is 40°C or less. Above 40°C, operates with a relative humidity based upon a dew point of 40°C.
- **FINE SAND (DUST):** Impervious to sand and dust intrusion. In operation, withstands sand/dust concentrations up to 1 g/m³, particle size up to 20 micrometers, max speed 20m/s.

OPTIONAL ITEMS:

- **OBSTRUCTION LIGHT:** Optional, red dual lamp obstruction light fixture with two red globe covers. Connector is MS-3112E8-3P (P/N 510600-102: 9.38" H x 14.75" W x 4.62" D @ 4.6 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.)



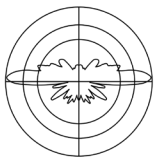
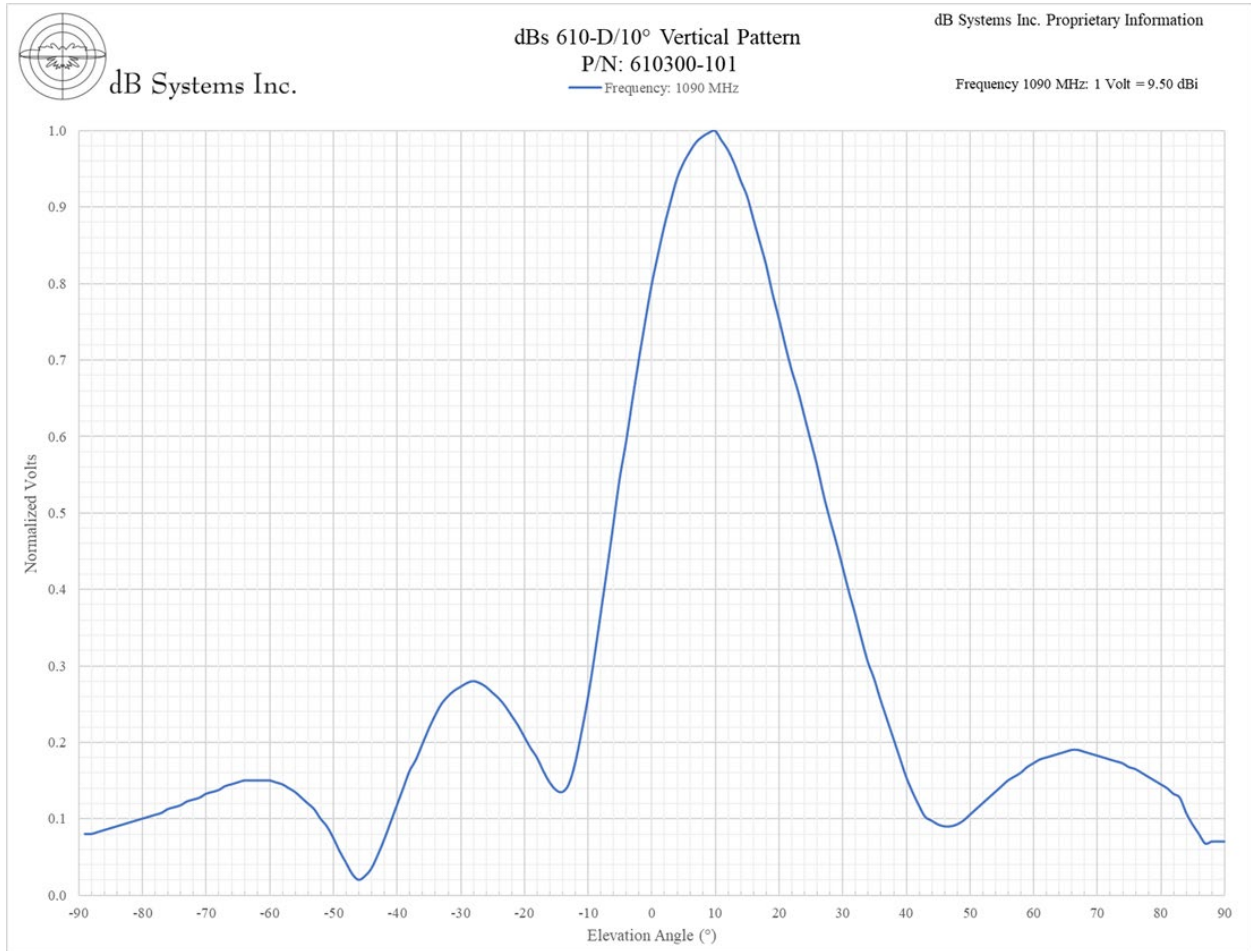
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dBs 610-D/10° Vertical Pattern



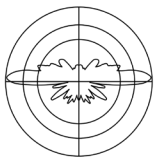
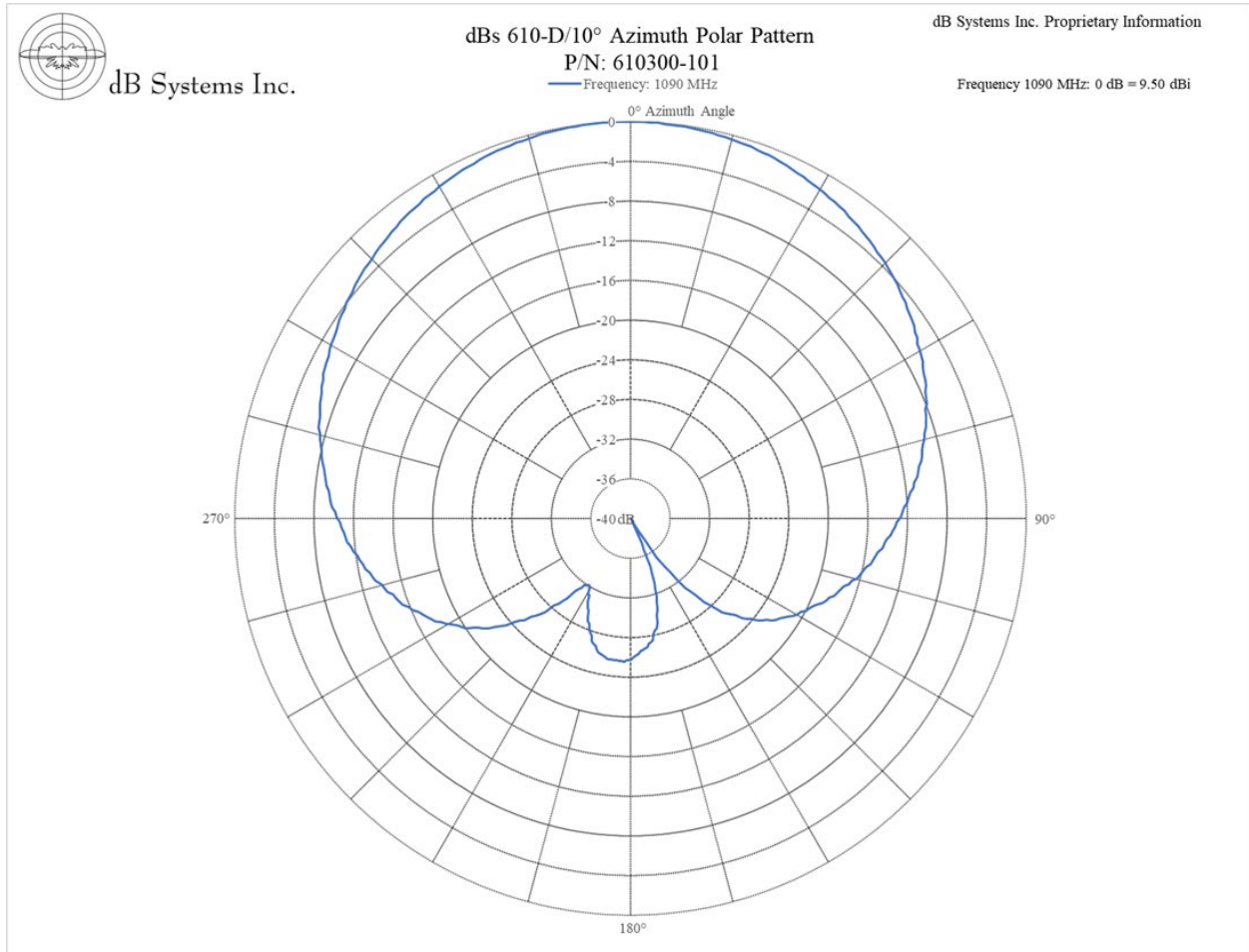
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dBs 610-D/10° Horizontal Pattern



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