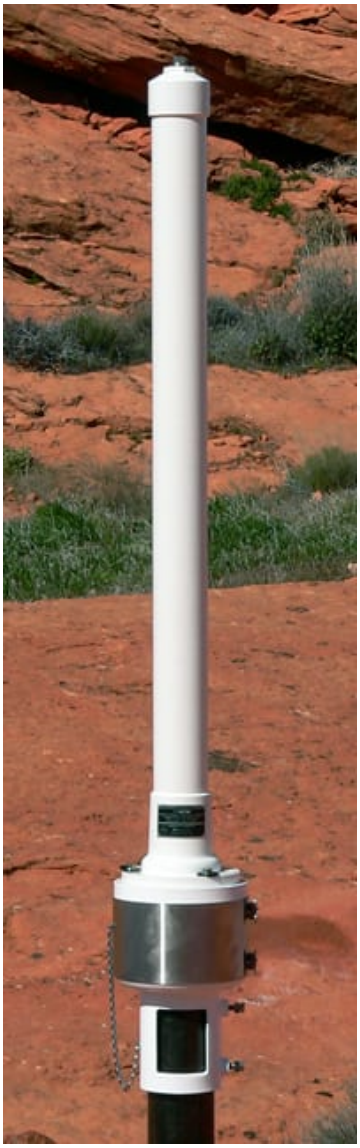
dB Systems Inc.

2501 S. Antenna Avenue
Hurricane, Utah 84737 USA

# SPECIFICATION SHEET

## ADS-B ANTENNA, OMNI-DIRECTIONAL
## MODEL dBs 680

**dBs PART NUMBER 680300-100**
**APPROVED FOR USE BY FAA UNDER FAR PART 171**



The dBs 680 Dual-Beam antenna is a 2 element (upper antenna) and 2 element (lower antenna), high performance, full service, omni-directional, Automatic Dependent Surveillance-Broadcast (ADS-B) antenna. Frequency range is 978, 1030, and 1090 MHz (no adjustments or tuning required).

This omni-directional Dual-Beam antenna has 2 active elements for each antenna and other components, which produce high main lobe and horizon gain with wide beam width. The main lobe of the vertical pattern is between 0 degrees and +30 degrees above the horizon.

This antenna provides vertically polarized, omni-directional coverage with the main beam of radiation up tilted to minimize the effects of ground reflections.

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 antenna is lightweight, small, and 100% metal tubular construction making it extremely rugged.

The main RF input connectors use Type N jacks: one for the upper antenna, and one for the lower antenna.

The model dBs 680 ADS-B dual-beam 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 680 Dual-Beam with Marine Option (P/N: 680300-120):** The dBs 680 Dual-Beam 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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# ADS-B ANTENNA, OMNI-DIRECTIONAL

**Model dBs 680**
**dBs PART NUMBER 680300-100**

## SPECIFICATIONS/CHARACTERISTICS

**TYPE:** Dual Beam Omni-Directional Antenna
Upper Antenna = Mode-S Extended Squitter
Lower Antenna = UAT Signal

**CIRCULARITY:** ± 1 dB max on the horizon

**FREQUENCY RANGE:** 978, 1030, & 1090 MHz (no adjustments or tuning required)

**ANTENNA ISOLATION:** >30 dBi

**ARRAY:** 2 radiator assemblies (upper antenna) 2 radiator assemblies (lower antenna) (49" tall)

**COAXIAL CABLE:** Semi-Rigid, Low Loss, Phase Stable

**POLARIZATION:** Vertically Polarized

**GAIN, UPPER BEAM AND LOWER BEAM:** >3 dB/iso, minimum

**GAIN, HORIZON, UPPER BEAM AND LOWER BEAM:** >0 dB/iso, minimum

**MAIN BEAM ELEVATION LOCATION:** Between 0° and 30° above horizon

**SLOPE (VICINITY OF HORIZON):** Approximately 0.05 dB/°

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

**IMPEDANCE:** 50 Ω nominal

**VSWR:** Not greater than 2.0:1 (978,1030, and 1090 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 15° wide at the half-power points. The power gain at angles between 30° and 90° 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° 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:** 49" tall x 3 1/4" O.D. radome, 2 each radiating dipole assemblies (driven elements) for each antenna plus a choke assembly at each end.

**WEIGHT:** 17 lbs. (excluding obstruction light, mounting fixtures, and other optional items)

**PHYSICAL DESIGN:** A metal tube, 1.5" O.D. x 1.42" 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:** 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

**CONNECTORS RF:** Type N Female, 2 each

**ENVIRONMENTAL:**
Meets FAA-G-2100c Environment III
Temperature, -50° C to +70° 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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Email: **sales@dbsant.com** | Phone: **(435) 635-3352** | **www.dbsant.com**

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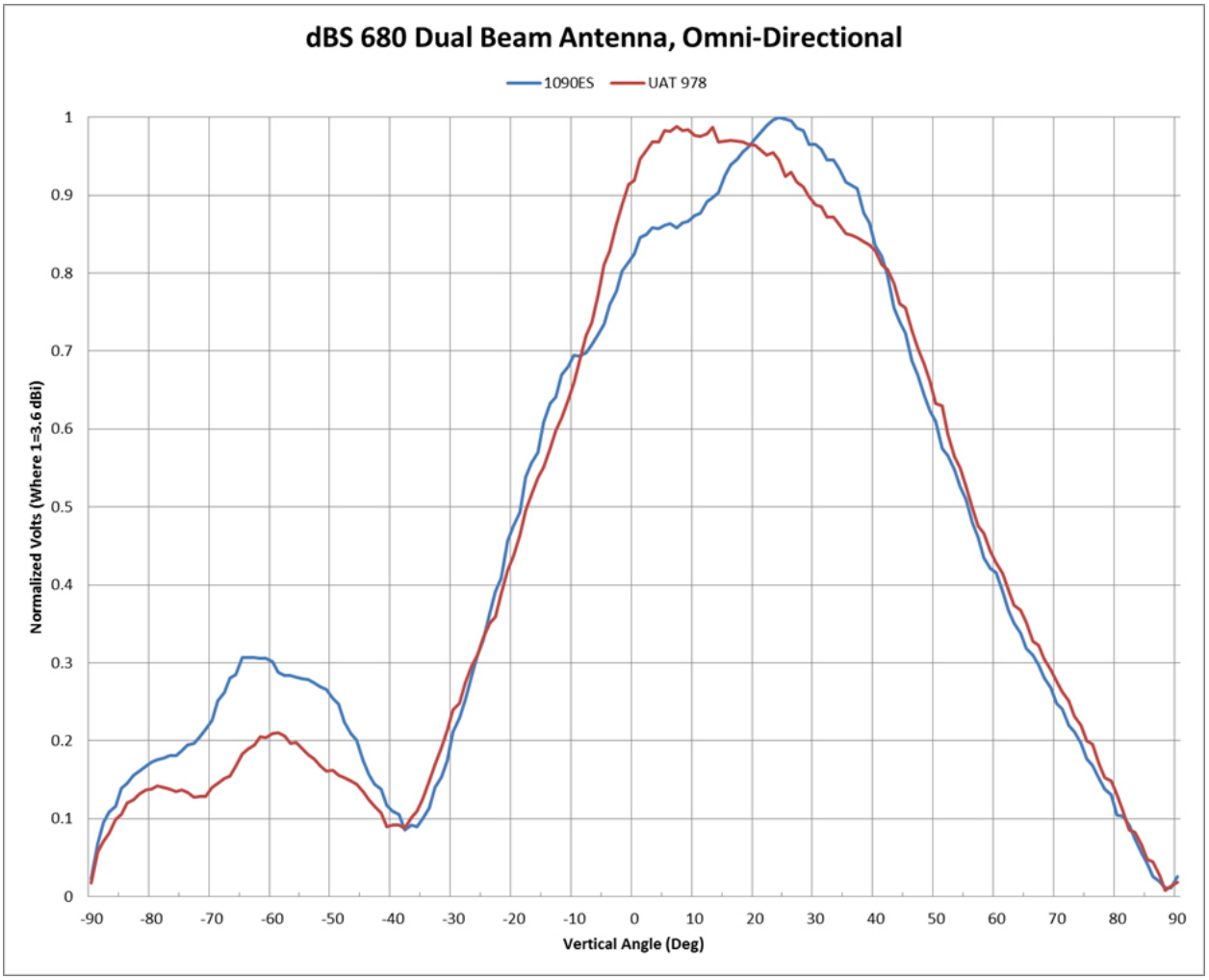
## dBs 680 Vertical Pattern

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