

SPECIFICATION SHEET

DME ANTENNA, OMNI-DIRECTIONAL MODEL dBs 580

dBs PART NUMBER 580300-100
APPROVED FOR USE BY FAA UNDER FAR PART 171



The dBs 580 Dual-Beam antenna is an omni-directional broadband, 10 element (upper) and 10 element (lower), higher performance, collinear dipole phased array designed specifically for use as an Automatic Dependent Surveillance-Broadcast (ADS-B) antenna. The upper antenna is designed for use as a Mode-S Extended Squitter (1090 ES). The lower antenna is designed for use as a Universal Access Transceiver (978 UAT). The isolation between the two antennas is >30 dBi.

Both antennas exhibit 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 dual-beam 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 2.0:1.

This dual-beam antenna provides vertically polarized, omni-directional coverage with both main beams 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 tapered 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 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 stainless steel cover), and plate adapter are available option items.

The model dBs 580 Dual-Beam 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 580 with Marine Option (P/N: 580300-120): The dBs 580 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

DME ANTENNA, OMNI-DIRECTIONAL

Model dBs 580
dBs PART NUMBER 580300-100

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: 10 radiator assemblies (upper antenna) 10 radiator assemblies (lower antenna) (133.9" tall)

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

POLARIZATION: Vertically Polarized

GAIN, UPPER BEAM AND LOWER BEAM: >9 dB/iso, minimum

GAIN, HORIZON, UPPER BEAM AND LOWER BEAM: >7 dB/iso, minimum

MAIN BEAM ELEVATION LOCATION: $3^\circ \pm 1^\circ$ above horizon

SLOPE (VICINITY OF HORIZON): 1 dB/ $^\circ$ 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 2.0:1 (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 ($+6^\circ$, -15 dB) and ($+40^\circ$, -25 dB) with values referenced to the peak of the major lobe above the horizon.

SIZE: 137.3" tall x 3 1/4" O.D. radome. 10 each radiating dipole assemblies for each beam (driven elements), plus choke assemblies at each antenna end, plus two RF chokes which separate and isolate the two antennas.

WEIGHT: 43 lbs. (excluding obstruction light, mounting fixtures, and other optional items). 265 lbs. in ruggedized wood shipping crate. Crate dimensions are 144" L x 14" W x 19" H.

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 weather proofed 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 $+70^\circ$ 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 $+70^\circ$ C
Humidity, 5% to 100%
Altitude, 0 to 10,000 Feet ASL
Ice Loading, 1/2" Radial Ice

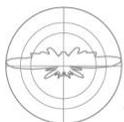
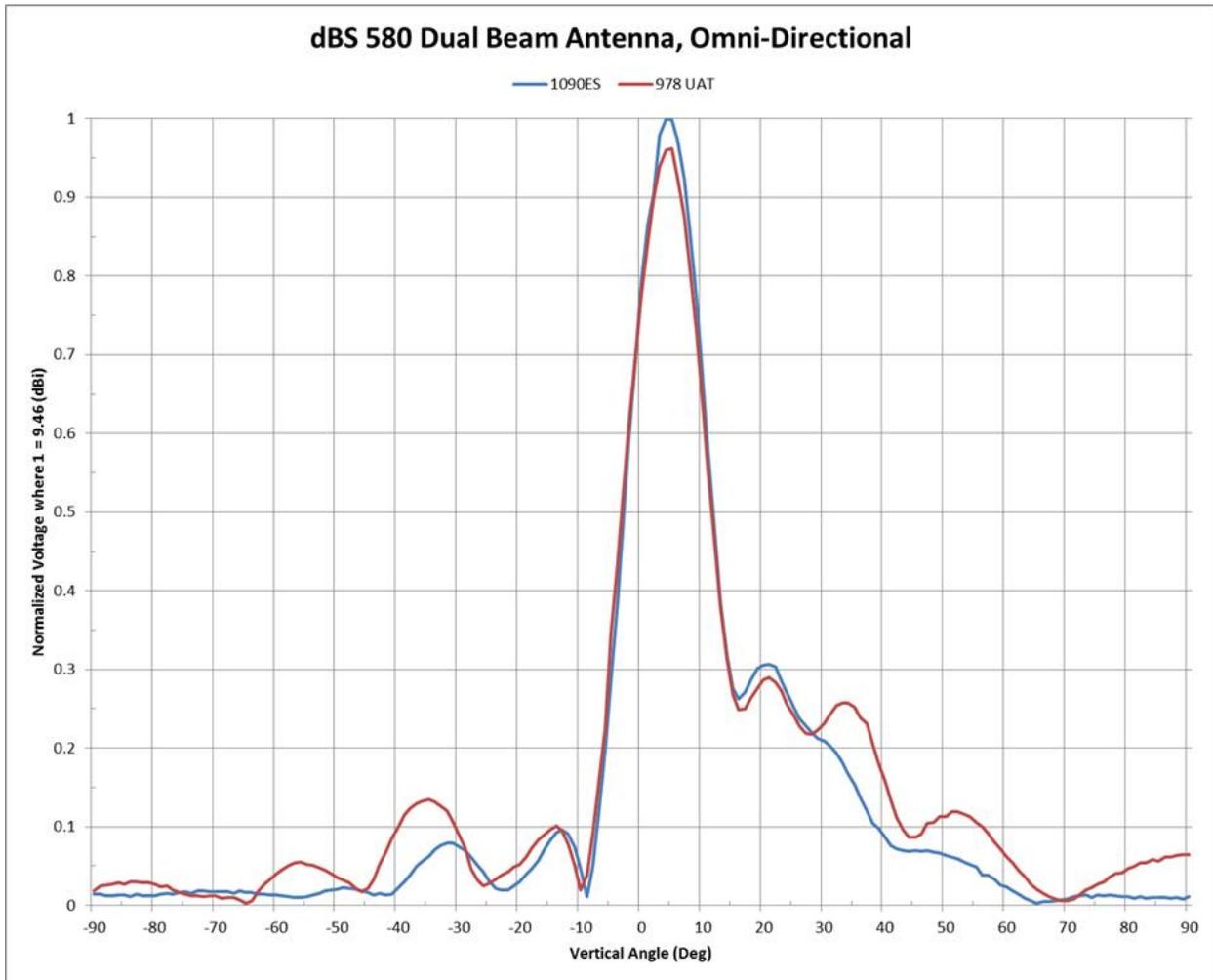
OPTIONAL ITEMS:

- **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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dBs 580 Vertical Pattern



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