dB Systems Inc.

2501 S. Antenna Avenue
Hurricane, Utah 84737 USA

SPECIFICATION SHEET

TACAN ANTENNA, MAN-PORTABLE E-SCAN
MODEL dBs 710E

dBs PART NUMBER 711001-10X

- The dBs 710E Man-portable E-Scan Antenna works with the TACAN Navigation Set AN/TRN-41 to allow instantaneous operation on any of the 252 X and Y mode TACAN channels.
- Compatible with the MM-7000MP and other Man-Portable TACAN Beacons.
- The 710E is the world's smallest, lightest, most versatile, full-service TACAN antenna in use today. It is man-portable and air-droppable for immediate deployment.
- The 710E is a state-of-the-art E-Scan TACAN replacement antenna for the mechanically rotating AS-4502/T.
- Weighing only 23 lbs., decreasing MTTR, increasing MTBR, and using substantially less power, the 710E is the optimal choice for today's man-portable TACAN Systems.
- The dBs 710E is an all-frequency antenna, operating on all DME/TACAN channels without tuning or adjustment.

The dBs 710E Man-portable E-Scan Antenna is a TACAN (Tactical Air Navigation) antenna intended for use with a TACAN beacon. It is designed to replace existing TACAN antennas which have reached the end of their economical service life and, in the process, provide a TACAN antenna which has greater reliability, ease of maintenance, and requires substantially less power to operate than previous TACAN antennas.

The all-band antenna acts as both a receiving and transmitting antenna, radiating bearing, distance, and station identification signals to TACAN transponder-equipped aircraft. As a receiving antenna, the 710E receives TACAN interrogation signals from aircraft and sends them to the ground beacon receiver-transmitter for processing.

The dBs 710E Man-portable E-Scan Antenna is the antenna chosen by the United States Air Force to replace the existing AS-4502/T TACAN Antenna applications worldwide.

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SPECIFICATIONS/CHARACTERISTICS

TYPE: TACAN, Man-portable E-scan

FREQUENCY RANGE: 1X through 126X; 1Y through 126Y;
Transmitting: 962 MHz - 1213 MHz (no adjustments or tuning required)
Receiving: 1025 MHz through 1150 MHz

RADIATOR, CENTRAL, RF: Single Monopole Over a Ground Plane

MODES OF OPERATION: TACAN or DME Only

SCANNING: Electronically Scanned using Ultra High Efficiency Modulation Technique

SCAN RATE (ELECTRONIC): 900 RPM ± 0.015%, Crystal Controlled

ELECTRICAL ROTATION: Clockwise, looking down on the antenna

POLARIZATION: Vertically Polarized

GAIN, PEAK: ≥ 3 dB/iso Peak Gain

GAIN, HORIZON: ≥ -1 dB/iso Horizon Directive Gain

MAIN BEAM ELEVATION LOCATION: 10° to 35° above horizon

SLOPE (VICINITY OF HORIZON): ≥ 0.2 V/V/° (Normalized to Value at Horizon)

POWER HANDLING CAPABILITY: Up to at least 1.5 kW peak RF power at 4% duty cycle (200 Watts Average)

VSWR: ≤ 2.0:1 (962-1213 MHz) measured at end of low loss cable not exceeding 5 feet in length.

GAIN PATTERN: The gain is a smooth function with incremental variations ≤ ±0.5 dB from 0° to +30°.

15 Hz HARMONIC CONTENT:
- RSS of 2^{nd} – 6^{th} ≤ 30%
- RSS of 7^{th} – 11^{th} harmonics (except 9^{th}): ≤ 30%
- Individual Amplitude of 7^{th} – 11^{th} harmonics (except 9^{th}): < 30%

135 Hz HARMONIC CONTENT:
- RSS of 2^{nd} – 6^{th} ≤ 35%

AZIMUTH ACCURACY:
- 15 Hz RMS Error ≤ ±4°
- 15 Hz Peak Error ≤ ±6°
- 135 Hz RMS Error ≤ ±0.7°
- 135 Hz Peak Error ≤ ±1.5°

IMPEDANCE: 50 Ω nominal

15 HZ MODULATION: From -2° to +10° vertical angle the 15 Hz Percent Modulation is 21% ± 9%. From +10° to +30° the 15 Hz Percent Modulation is > 5%.

135 HZ MODULATION: From -2° to +10° vertical angle the 135 Hz Percent Modulation is between 12% and 36%. From +10° to +25° the modulation is greater than 5%.

Exception: 962 MHz to 980 MHz
between 12% and 36% from -2° to +2°
>8% from +2° to +10°
>5% from +10° to +20°

HORIZONTAL PATTERN: Average radiated carrier pattern is circular within ±5% over an elevation angle of -2° through +45°.

WARM-UP TIME: ≤ 5 Seconds

AC POWER: 100 to 250 VAC, 1 Phase, 48 to 62 Hz

DC POWER: +18 VDC to +30 VDC (+24 VDC nominal)

POWER CONSUMPTION: DC ≤ 10 Watts

ORIENTATION (MAGNETIC): Better than ± 2°

SIZE: Antenna: 11 in Tall x 30 in Dia.

ANTENNA HEIGHT (TRIPOD ADJUSTMENT): From 3.0 to 5.0 feet (0.9 to 1.5 meters)

WEIGHT:
- Antenna only: 26.0 lbs.
- Antenna in backpack: 31.5 lbs.
- Antenna with Transport case: 92.5 lbs.

TEMPERATURE:
- Operating: -40° C to +71°C
- Non-operating/Storage/Transport: -40° C to +71° C

RELATIVE HUMIDITY: 5% to 100%

ALTITUDE:
- Operating: Sea level to 13,100 feet
- Storage/Transport: Sea level to 45,900 feet

ICING: 0.5 inch glaze ice

WIND LOADING: 50 mph, steady state and 71mph gusts

INTEGRAL MONITOR: Provides Built-In Test (BIT) to Shop-Replaceable Unit (SRU) Level self-check. Faults in Parasitic Element switching, Trigger timing issues or physical movement of the antenna will result in an Antenna Shutdown Alarm. Items that are out of tolerance but do not affect azimuth stability will result in a Maintenance Alert. Internal monitoring of antenna operational systems negates the requirement for a separate external monitor antenna.

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