

C-Band Beam Switching Stub Antenna (BSSA)



Applications

- Fixed & rotary wing aircraft, UAVs, and drones
- Telemetry link improvement
- Commercial aviation

Features

- C-Band (4.4 – 5.25 GHz) operation
- “Active” beam switching antenna array provides high EIRP and G/T
- Directional beams span 360° in azimuth, and horizon-to zenith in elevation; Provides hemispherical coverage
- Separate radiating and control electronics assemblies provide flexible mounting options
- Solid state design includes C-Band power amplifier (PA) and low-noise-amplifier (LNA)
- Autonomous sensing of optimal beam direction
- Network or Pilot assisted control for beam transitions
- Meets RCC 106-09 and iNET RAN Standard v 0.7.9 transmit, receive characteristics
- RS-232, RS-422/485 Serial Communications

Description

Teletronics Technology Corporation’s (TTC’s) C-Band “active” beam-switching stub antenna (BSSA-4453 series), when integrated into a Test Article (TA) as part of a Telemetry (TM) system, provides robust TM links to the Range Telemetry, Tracking, and Control (TT&C) Ground Station (GS) and other TAs.

The BSSA-4453 is comprised of radiating antenna and control electronics assemblies. The radiating antenna is mounted at any convenient location on the aircraft skin with integrated environmental and electro-magnetic interference (EMI) gasket. The control electronics assembly is mounted at any convenient location within the aircraft. Interface between the radiating antenna and control electronics assemblies is through the RF cables, which are part of the antenna assembly.

The BSSA-4453 includes transmit PA and receive LNA to support half-duplex operation. The PA and LNA compensate for the TA RF cable losses, and provide the TA with a high Effective Isotropic Radiated Power (EIRP) and antenna Gain over Noise Temperature (G/T). The BSSA-4453 meets the Range Commanders Council (RCC) and “integrated Network Enhanced Telemetry, iNET” requirements for transmit and receive system bandwidth, spectral re-growth, harmonics and spurious, and phase noise.

The BSSA-4453 autonomously senses the GS direction, and selects the optimal beam direction to maintain a robust communication link between the TA and GS. The GS direction is continually sensed throughout the mission, to provide a continually optimal link that adapts to the TA’s changing flight path and profile. In a networked TM system, e.g., iNET, the BSSA-4453 operates under network timing control. In non-networked TM system, a pilot may select the optimal beam direction. The BSSA-4453 provides RS-232, RS-422/485 serial communications and discrete signal control to support both concepts-of-operation (CONOPS).

The BSSA-4453 operates using aircraft’s 28VDC (MIL-STD-704F), and is designed to meet the MIL-STD-461F Electro-Magnetic Interference (EMI) and the MIL-STD-810G environmental requirements.

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BSSA-4453-1 Datasheet

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Teletronics - A Curtiss-Wright Company
15 Terry Drive, Newtown, PA 18940
phone: 267.352.2020 fax: 267.352.2021 Sales@ttcdas.com

www.ttcdas.com



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