King Air Integral Antenna Winglet

Radio communications are paramount for mission success in any scenario. Intelligence, Surveillance and Reconnaissance (ISR) aircraft are heavily loaded with a multitude of U/VHF/L antennas that may interfere with general communications. Sierra Nevada Corporation (SNC) has developed an Integral Antenna Winglet (IAW) for a King Air B300 (350) aircraft that solves this challenge by placing the antennas in the winglets of the aircraft, giving them maximum distance from antennas on the fuselage and optimizing the integrity of the signal.

King Air Integral Antenna Winglet

Meeting Critical ISR Needs

SNC's Integral Antenna Winglets replace common multi-band antenna by building into the King Air winglet, operating in the 108- 174 MHz, 225-400 MHz and 960-1220 MHz (VHF/UHF/L-Band) frequencies. Initial IAW application supports the PRC-117G Wideband Tactical Radio.

Technical Capabilities

Compliance & Certification

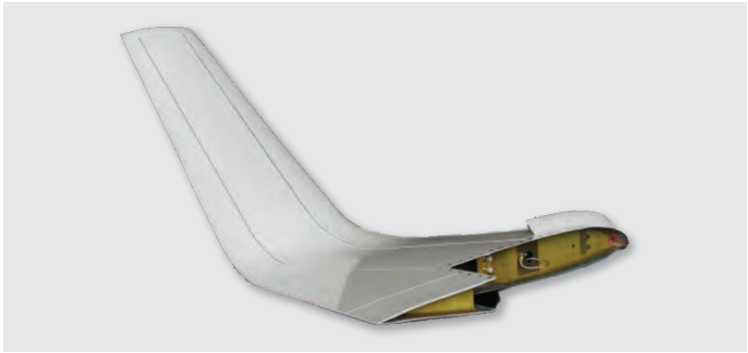
- 14 CFR Part 21 Certification Procedures for Products & Parts
- Part 23 Airworthiness Standards: Normal, Utility, Acrobatic & Commuter Category Airplanes
- FAA AC 43.13-1B Acceptable Methods, Techniques & Practices

Element Sizing

The antenna element is constructed of a PCB board, mounted within the winglet structure, fitting within a trapezoidal envelope with separate low-band and high-band cables.

Winglet Materials & Structure

The structural design consists of a fiberglass/epoxy composite winglet structure of a functionally identical aerodynamic shape, interchangeable attachment to the aircraft and similar structural arrangement to the carbon/epoxy Original Equipment Manufacturer (OEM) winglet baseline design and accommodates the existing light assembly.



Specifications:

• Frequency	108-174MHz 225-400MHz 960-1220MHz
• VSWR	≤ 2.6:1, ≤ 2.5:1, ≤ 2.0:1
• Pattern	Omni/Az, Cos/El
• Polarization	Vertical
• Impedance	50 ohms
• Power	10 watts/continuous, 20 watts/peak

Program Status

- Design, Fabrication & Testing Complete (Outperformed fuselage mounted antenna)
- 14 CFR Part 23 - 8110-3's Received for Static Structures, Flutter, Lightning Strike, Loads & Fatigue
- Installed on 3 Delivered Aircraft via FAA Form 337
- Patent Awarded - U.S. 9,457,886B2
- Future Design Improvement/Growth planned for Phase 2
- Low-VHF-Band (30-88 MHz); HF Band Antenna (3-30 MHz)

SIERRA NEVADA CORPORATION

18635 Jarkey Drive | Hagerstown, MD 21742 | Phone: (301) 665-1294 | Email: mst@sncorp.com | Website: sncorp.com

9/21/2022