

# Types 18-50A and 18-50B

V/UHF IFF Antennas  
30 MHz 512 MHz / 1000 MHz - 1100 MHz

18-50-DS Issue 1

The most important thing we build is trust

**COBHAM**

Cobham Antenna Systems are experts in the embedding of antennas into structures for aerodynamic, stealth and low RCS (Radar Cross Section) applications. One element of this capability is, in cooperation with Cobham Composite Technologies, to supply aircraft structural assemblies that incorporate antennas.

The **18-50 V/UHF IFF Antennas** are handed, end plate antenna systems for installation on the port (**18-50A**) and starboard (**18-50B**) aircraft tail fin assemblies. The antennas are designed to provide communications over the frequency bands 30 MHz to 512 MHz and 1000 MHz to 1100 MHz.

The **18-50** antennas are configured as two separate radiating elements, one for V/UHF and the other for IFF (Identification Friend or Foe). The end plate is part metallised to ease the inclusion of lightning protection.

The V/UHF element is configured as a broadband top-loaded monopole. The lower portion of the end plate is metallised to act as a counterpoise for the element and to provide a source of grounding in order to optimize the RF performance commensurate with meeting the lightning specification. The element is fed via a susceptance compensation network to maximize VHF gain. Frequency dependent resistive loading ensures compliance with the return loss limits.

The IFF function is fulfilled by a folded monopole based structure. The element is reactively matched and, being earthed, provides optimum capability to function after direct lightning attachment to the end plate.

The antenna structure comprises a honeycomb filled end plate manufactured with E-glass skins. The radiating elements are located on one face, with the feed and matching networks enclosed within the fin. The two RF connectors are mounted on the inner face in line with the horizontal interface.



- **18-50A V/UHF IFF Antenna (Port)**
- **18-50B V/UHF IFF Antenna (Starboard)**



# Types 18-50A and 18-50B

V/UHF IFF Antennas



## Electrical Specification

Frequency Ranges	30 MHz - 88 MHz 118 MHz - 136 MHz 156 MHz - 174 MHz 225 MHz - 512 MHz 1000 MHz - 1100 MHz
VSWR	< 2.5:1 30 MHz - 88 MHz < 2.5:1 118 MHz - 136 MHz < 2.5:1 156 MHz - 174 MHz < 2.5:1 225 MHz - 512 MHz < 1.8:1 1000 MHz - 1100 MHz
Gain	> -23 dBi 30 MHz > -10 dBi 88 MHz > -7 dBi 118 MHz > -3 dBi 174 MHz > 0 dBi * 225 MHz - 512 MHz > 0 dBi 1000 MHz - 1100 MHz * average
Polarisation	Predominantly vertical when mounted on the aircraft
Radiation Pattern	Essentially omni-directional in azimuth
Power Rating	25 W CW maximum 30 MHz - 512 MHz 1.5 kW peak 0.04% duty cycle 1000 MHz - 1100 MHz
Impedance	50 ohm (nominal)
Connectors	TNC Type Female V/UHF N Type Female IFF

## Environmental Specification

Altitude	MIL-STD-810F, Method 500.4, Procedures I and II Operational: 4,572 metres (15,000 feet) Storage: 15,220 metres (50,000 feet)
High Temperature	MIL-STD-810F, Method 501.4, Procedure II Operational: +70°C Storage: +90°C
Low Temperature	MIL-STD-810F, Method 502.4, Procedures I and II Operational: -40°C Storage: -55°C
Acceleration	MIL-STD-810E, Method 513.4, Procedure I 13.5 g all axes
Tropical Exposure	MIL-STD-810F, Method 507.4
Lightning	DEF-STAN 59-113 Zone 1B
Shock	DEF-STAN 00-35, Part 3, Chapter 2-03, Test M3

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