Type 7-450-14
TETRA Airborne Transceiver
380 MHz - 430 MHz
7-450-14-DS Issue 1

The most important thing we build is trust

Cobham Antenna Systems 7-450-14 TETRA Airborne Transceiver provides airborne users with access to TETRA (TErrestrial Trunk RA dio) communications networks.

The 7-450-14 uses the feature-rich Sepura® SRG core radio, and operates in one of the standard TETRA frequency bands, from 380 MHz to 430 MHz.

The transceiver interfaces directly to standard aircraft audio systems and is compatible with Cobham Antenna Systems CH150 and CH250 Control and Display Units (CDU) and the optional RH150 remote CDU.

Operational Features
- Designed specifically for airborne use
  - Compatible with common aircraft audio distribution system signal levels and impedances
  - In-circuit RF bandpass filter provides immunity from on board transmitters in the VHF and IFF bands and protection to existing aircraft systems, particularly the VHF communications and navigation receivers
  - Differential transmission of CDU-transceiver control signals ensures noise immunity
  - Transient suppression and regulation of aircraft 28 V power supply provides a stabilised supply to the core radio module even during momentary supply interruptions
  - Provides 5 V on the RF coax to power a GPS antenna

The transceiver operates with a UHF antenna; recommended types are Cobham Antenna Systems 21-68 or 21-174.

All 7-450-14 transceivers feature integrated Global Positioning System (GPS) receivers, which provide own-platform position information onto the TETRA network and to the CDU. Recommended GPS antennas are the Cobham Antenna Systems type 20-41 or Cobham SatCOM’s CI 408-20.

The unit is housed in a ¼ ATR size black aluminium alloy enclosure with a hold down point and a carrying handle on the front face. The connector interfaces are also accessible from the front faceplate of the unit. The unit is designed to be rack mounted in a short tray.

TETRA Features Supported
- Air Interface Encryption
  - TETRA Encryption Algorithms (TEA) 1, 2, 3 and 4
  - TETRA Security Class 1, 2 and 3
  - Trunked and Direct Modes of Operation (TMO and DMO)
- End to End encryption
- Highly Preferred Subscriber Class (HPSC) operation for airborne use
- DMO Repeater (enabled by feature licence code)
- DMO Gateway (enabled by feature licence code)
- Voice services - point to point, multi-point and telephone calls
- Emergency and Priority calls
- Data Services - Status and Short Data Service (SDS) messaging, SDS Store and Forward, multi-slot packet data
- Stun and Kill
- Integrated GPS Receiver
- Configurable to specific national TETRA networks using the Sepura® software management suite
- Serial data port (PEI) facilitates data transfer
**Type 7-450-14**

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**Electrical Specification**

- **Power Consumption**
  - Receive: 6 W typical
  - Transmit: 20 W typical (70 W absolute max. for max. Tx power)
  - Standby (OFF): 0.5 W typical

- **Receive Characteristics**
  - Frequency Range: 380 MHz to 430 MHz
  - Channel Spacing: 25 kHz
  - Sensitivity: Typical Dynamic - 103 dBm, Static - 112 dBm
  - Frequency Accuracy: EN 303 035-1 (TMO) and EN 303 035-2 (DMO)
  - Audio Output Level: 6.0 Vrms nom. into 600 Ohm (adjustable)
  - Sidetone Level: +2 dB with respect to nom. Audio Output Level, (adjustable)
  - Control Interface to CDU: Split Rx/Tx RS422 serial, proprietary

- **Transmitter Characteristics**
  - Frequency Range: 380 MHz to 430 MHz
  - Channel Spacing: 25 kHz
  - Modulation: Pi/4 DQPSK
  - RF Power Output: Pre-settable to a maximum of 39 dBm Peak max. adjustable in steps of 5 dB. Adaptive power control. (DMO max power settable independently to TMO max power)
  - Adjacent Channel Power: In accordance with: ETSI EN 303 035-1 (TMO) and EN 303 035-2 (DMO)
  - Microphone AF Input Level: 800 mV rms input should not cause limiting

- **Connectors**
  - RF (Main Tx/Rx RF): TNC Female
  - RF (GPS): SMA Female
  - Multipin: MS3112E20-39P

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**Environmental Specification**

- **Temperature and Altitude**
  - Operational: -30°C to +70°C
  - Short Time (Powered up): +85°C
  - Ground Survival (Powered down): -40°C to +85°C, 25,000 feet

- **Temperature Variation**
  - EUROCARE ED-14C / RTCA DO-160C, Section 4, Cat B1 modified

- **Humidity**
  - EUROCARE ED-14C / RTCA DO-160C, Section 5, Cat B

- **Vibration**
  - EUROCARE ED-14C / RTCA DO-160C, Section 8
  - Cat B Fixed Wing
  - Cat M Fixed Wing
  - Cat N Helicopter

- **Shock**
  - EUROCARE ED-14C / RTCA DO-160C, Section 7
  - Operational shock: 6 g, 11 ms
  - Crash Safety (Impulse): 15 g, 11 ms
  - Crash Safety (Sustained): 12 g, 3 secs

- **Explosion Proofness**
  - EUROCARE ED-14C / RTCA DO-160C, Section 9, Cat X

- **Waterproofness**
  - EUROCARE ED-14C / RTCA DO-160C, Section 10, Cat W

- **Sand and Dust**
  - EUROCARE ED-14C / RTCA DO-160C, Section 12, Cat D

- **Fungus**
  - EUROCARE ED-14C / RTCA DO-160C, Section 13, Cat F

- **Salt Spray**
  - EUROCARE ED-14C / RTCA DO-160C, Section 14, Cat S

- **Magnetic Effect**
  - EUROCARE ED-14C / RTCA DO-160C, Section 15, Cat Z

- **Power Input**
  - EUROCARE ED-14C / RTCA DO-160C, Section 16, Cat B

- **Humidity**
  - EUROCARE ED-14C / RTCA DO-160C, Section 17, Cat B

- **Voltage Spike**
  - EUROCARE ED-14C / RTCA DO-160C, Section 18, Cat Z

- **Emission Of Radio Frequency Energy**
  - EUROCARE ED-14C / RTCA DO-160C, Section 21, Cat B

- **Noise Radiation**
  - Transceiver will not radiate noises in excess of 60 dB(A)

- **Magnetic Effect**
  - Transceiver contains flame retardant components

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