

OPERATING INSTRUCTIONS

FC3 SCREENED BOX

1. General

The screened box model FC3 is designed to allow testing of distress transmitters without causing false alerts. It consists of a seam welded aluminium enclosure, with a hinged lid fitted with finger strips to ensure continuity of shielding when the lid is closed.

An internal antenna (nominally $\frac{1}{4}$ wave at 121.5MHz) is connected to a BNC socket to allow external equipment to monitor the transmitter under test.

A built-in facility is provided to allow GPS-equipped beacons to be fully tested.

2. Installation and set-up of GPS test facility

Mount the GPS antenna provided in an outside position with a clear view of the sky. Route the coax cable back to the FC3 box and attach to the connector on the side of the box. If necessary the cable may be extended by up to 100m, but this must be implanted in low loss RG213 cable or equivalent with appropriate rf connectors.

Connect the power supply to a convenient mains supply and plug the DC output lead into the socket on the side of the FC3 box. Check that the red LED illuminates when the lid of the box is closed.

GPS re-radiation within the box can be checked using a portable GPS navigator (e.g. Garmin Etrex). Switch on the navigator and place it inside the box. Close the lid and ensure that the red LED is illuminated. Wait a couple of minutes then open the box and remove the navigator. Verify that it has acquired a valid location.

2. Test method

Place the unit to be tested into the box. Switch the transmitter on, and immediately close and fasten the lid of the box. Most SARSAT beacons do not transmit for the first minute. Some may not transmit for several minutes, to allow internal oscillators to stabilise.

Connect test equipment to BNC socket provided.

For SARSAT beacons, do not open the box until just after a burst transmission (406.0 – 406.1MHz) is detected. This will reduce the risk of a transmission taking place during the time that the box is opened, and before the transmitter is switched off. SARSAT transmissions occur approximately every 50 seconds.

Note that most GPS equipped beacons will transmit a default location for the first few minutes until a valid location has been acquired.

3. Reception problems

Although the box is lined with microwave absorbing foam, internal reflections will still occur, which can sometimes lead to corruption of phase modulated signals at 406MHz. If this occurs, try moving the beacon to a different place inside the box. If no place within the box can be found where good data is received, the beacon will need to be retested in a full sized screened room.

External test equipment may also receive too strong a signal, particularly on 121.5MHz. In this case, connect attenuators in series (12dB suggested) and/or try moving the beacon further from the pick-up antenna.