Avionics

TCAS-201 TCAS Ramp Test Set

The TCAS-201 simulates the airborne environment necessary for verification/certification of TCAS installations

- Programmable intruder simulation parameters
- Surveillance monitor displays ATCRBS or Mode S interrogations
- 10 selectable programmable scenarios
- Measures interrogator power and frequency
- Built-in self test
- LCD display with automatic backlight
- 1.5 hour battery operation
- Two-year limited warranty

Operation

The TCAS-201 uses four basic test functions. Power and frequency, monitor, reply, scenario and one configuration function. Setup is for the gathering and verification of TCAS system data.

The Setup Menu is used to program parameters for Scenario Tests and additional control of test set functions.

The Power and Frequency screen displays interrogator Effective Radiated Power (ERP) and Frequency.

The Surveillance and Broadcast Monitor screen displays the contents of the major interrogation fields incorporated in UF0 and UF16 and verifies the TCAS Broadcast is transmitted in UF16 approximately every ten seconds.

In the ATCRBS Reply Test the TCAS-201 simulates a Mode C transponder with programmable percentage reply, altitude and range parameters.

Scenario Test

Running the Scenario Test enables the user to simulate an approaching intruder with constant closing rate and constant altitude change rate. Up to 10 user programmed scenarios can be stored and later recalled. Scenario test time and total elapsed test time enable the user to monitor times for TCAS Traffic and Resolution Advisories.
Mode S Reply Test

The Mode S Reply Test can be used to evaluate the ability of the TCAS interrogator to receive, decode and respond to Mode S replies. In this mode the TCAS-201 simulates a Mode S transponder replying with formats DF0, DF11 and DF16. The message fields allow the user to program capability information and various advisories into the replies.

Whisper-Shout Monitor

The Whisper-Shout Monitor screen provides information used to verify whisper-shout steps and Side Lobe Suppression (SLS). By conducting several tests from different points around the aircraft, the TCAS coverage (directional and/or omni-directional), whisper-shout sequence operation and interrogation timing may be evaluated.

SPECIFICATION

REPLY GENERATOR

Output
1090 MHz DCXO controlled (±10 kHz)

Level
Set for operation over an antenna to antenna distance of 5 to 500 feet (1.5 to 152.4 meters)

Test Antenna
Remote antenna
VSWR <1.5:1, 9.5 gain typical

OUTPUT TEST SIGNALS

Reply Modes
Mode C (with altitude reporting), Mode S (Formats 0, 11, 16)

Pulse Spacing
Accuracy ±50 ns

Pulse Widths
Accuracy ±50 ns

PULSE CHARACTERISTICS

All Pulses
±1 dB relative to $P_1$

Percent Reply
Range 0% to 100%
Resolution 10%
Accuracy ±1%

Range Delay
Range 0.3 to 30 nautical miles
Resolution 50 ns steps
Accuracy ±0.02 nautical miles

Altitude
Range -1000 to +126,000 feet
Resolution 100 feet

Mode S Address
Selectable

Reply Delay
ATCRBS 3.0 µs (±50 ns)
Mode S 128.0 µs (±50 ns)

Range Rate
Range -1200 to +1200 kts
Resolution 10 kts
Accuracy ±10%

Altitude Rate
Range -10,000 to +10,000 fpm
Resolution 100 fpm
Accuracy ±10%

Squitter
Control ON/OFF
Rate 1.0 seconds (±10 ms)

ULIT MEASUREMENTS

Effective Radiated Power (Mode S Interrogations)
Range +43 to +57 dBm (20 to 500 W)
Accuracy ±2 dBm

Frequency
Range 1029.9 to 1030.1 MHz
Accuracy ±10 kHz
Resolution 1 kHz

Detectable Modes
ATCRBS only All Call (Mode C)
Mode S Downlink (Formats 0, 11, 16)

GENERAL

Calibration Interval
1 Year
**Battery Operation**

- **Duration:** 1.5 hours before recharge at 25°C
- **Automatic shut off after 10 minutes of non-use**

**AC Supply**

103.5 to 129 VAC, 207 to 253 VAC, 47.5 to 420 Hz, 45 W (used to recharge battery)

**ENVIRONMENTAL**

**Temperature**

-20° to +55°C

**Relative Humidity**

≤80% for temperatures up to 31°C, decreasing linearly to 50% at 40°C (Non-condensing)

**Altitude**

≤4000 m (13,124 ft.)

**Dimensions**

284 mm wide; 361 mm deep; 279 mm high
11.2 in. wide; 14.2 in. deep; 11 in. high

**Weight**

13.7 kg (30 lbs.)

**Electromagnetic Compatibility**

Complies with the limits in the following standards:

- EN 55011 Class B
- EN 50082-1

**Safety**

Complies with EN 61010-1 for class 1 portable equipment and is for use in a pollution degree 2 environment. The instrument is designed to operate from an installation category 1 or 2 supply.
## VERSIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

### Ordering Numbers

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### Accessories (Supplied)
- Line Cord
- RF Coaxial Cable
- Antenna Shield
- Operation Manual
- Operator’s Guide
- Directional Antenna
- Tripod
- Omni-Directional Antenna

All Aeroflex Avionics products delivered with Factory Certificate Of Calibration