



Description

The TR-211 provides test capability for Distance Measuring Equipment (DME) and Transponders (Modes A, C, and S).

- Receives ADS-B (1090 MHz squitter)
- Transmits Traffic Information System (TIS) intruder flight data for four intruders
- Performs testing for European Mode S Elementary and Enhanced Surveillance
- Features large, four-line display for easy-to-read test results
- Large display allows expansion to meet future testing requirements
- User-friendly operation using knobs and switches, no searching through multiple menus
- Performs test requirements per FAR Part 43, Appendix F
- Compliant with European CE requirements
- 2 year limited warranty



Transponder

- Test Set automatically determines capability of transponder being tested (ATCRBS or Mode S) and selects appropriate tests
- Testing can be done over-the-air, using directional antenna, directly connected to transponder, or using the optional TAP-200 Anti-Radiation Coupler
- Provides test capability for European Mode S Elementary and Enhanced Surveillance
- Testing can be done using automatic or manual mode

DME

- Allows testing on all channels (108.00 to 117.95 MHz)
- Measures DME power, frequency, and PRF
- Transmits DME Morse Code I.D.
- User selection of DME distance and velocity

TIS and ADS-B

- Tests the newest generation in transponder technology
- Transmit four Intruder aircraft types to verify TIS operation
- Receives and decodes 1090 MHz ADS-B data, including squitter type (airborne position, surface position, aircraft Ident/category, and airborne velocity), latitude/longitude, N/S velocity, E/W velocity, Flight I.D., Mode S address, altitude (GNSS or barometric), and airspeed

Additional Features

- RS-232 connection to download results to a PC
- Automatic shut-off to preserve battery
- Large back-lighted, liquid crystal display (LCD)
- Diagnostic self-test

Transponder Specifications*

The TR-211 performs the following tests, based on the capabilities of the transponder:

- Mode A - 4096 code, IDENT, percent reply, pulse spacing, pulse width
- Mode C - Altitude (feet and grey code), percent reply, pulse spacing, pulse width
- Side-lobe suppression (SLS)
- Mode A/S and C/S All Call - Mode S address, percent reply
- Mode A Only and Mode C Only
- Mode S Surveillance I.D. (DF5) – Mode S address, percent reply, flight status (Air, Ground, Alert, SPI), Mode S/Mode A 4096 code compare (Automatic mode)
- Mode S Surveillance Altitude (DF4) – Mode S altitude, percent reply, Mode S/Mode C altitude compare (Automatic mode)
- Mode S Surveillance Short (DF0) – Mode S address, vertical status (Air, ground), percent reply, decoded country code, decoded tail number (if applicable)
- Mode S Comm. I.D. (UF5/DF21) – Mode S ID code, percent reply
- Mode S Comm. Altitude (UF4DF20) – Mode S altitude, percent reply
- Undesired replies (UF11) – Checks for reply to incorrect Mode S interrogation
- Acquisition squitter – Pass/Fail indication of squitter duration, decoded Mode S address, interrogator code
- Extended squitter – Pass/Fail indication of squitter duration, decoded Mode S address
- Max Airspeed – Decodes and displays maximum airspeed
- Diversity – Displays Pass/Fail indication and measured value of RF leakage through Mode S transponder antenna ports
- Sensitivity (MTL) – Measures and displays MTL for Modes A, C, and S
- Measures and displays transponder power (dBm or watts), frequency, and receiver sensitivity (dBm)
- Decodes and displays Flight I.D.
- Decodes and displays Mode S address in Octal and Hex
- Mode S Enhanced Surveillance parameters, including Selected Altitude (BDS4); Roll Angle, True Track Angle, Ground Speed, Track Angle Rate, and True Airspeed (BDS5); Magnetic Heading, Indicated Airspeed, Mach #, Barometric Altitude Rate, and Inertial Vertical Velocity (BDS6)
- Receives and decodes 1090 MHz ADS-B data, including squitter type (airborne position, surface position, aircraft identification/category, and airborne velocity), latitude/longitude, N/S velocity, E/W velocity, Flight I.D., Mode S address, altitude (GNSS or barometric), and airspeed
- Transmits 1090 MHz ADS-B data for four intruder aircraft (airborne or surface position)
- Transmits TIS data for four intruder aircraft

| | | |
|-------------|-----------|--------------------|
| Transmitter | Frequency | 1030 MHz ± 100 KHz |
| | Power | > 4 dBm |
| | Modes | A, C, S |

| | | | |
|----------|---------------|----------|-------------------------|
| Receiver | Frequency | Range | 1086.5 to 1093.5 MHz |
| | | Accuracy | + 200 KHz |
| | Power | Range | 47 to 64 dBm |
| | | Accuracy | + 2 dB (direct connect) |
| | | | + 3 dB (radiated) |
| | Sensitivity | Range | -50 to -87 dBm |
| | | Accuracy | + 2 dB (direct connect) |
| | | | + 3 dB (radiated) |
| | Reply Percent | Range | 0 to 100% |
| | | Accuracy | + 1% |

DME Test Specifications*

The TR-211 provides test capability for DME by allowing operator to select test parameters, including Channel (108.00 to 117.95 MHz) and Velocity (120 to 1200 KTS.).

The TR-211 measures and displays DME PRF (scan rate), power, and frequency. Also, the TR-211 transmits a Morse Code I.D.

| | | |
|-------------|-----------|---------------------------|
| Transmitter | Frequency | 962 to 1213 MHz ± 100 KHz |
| | Power | > 4 dBm |

| | | |
|----------|----------------|-------------------------|
| Receiver | Freq. Range | Channel Freq. + 3.5 MHz |
| | Freq. Accuracy | + 200 KHz |
| | Sensitivity | ≤ -35 dBm |
| | Range | |

Accessories

Directional antenna (Hand-held or mounted on side of case)
 AC Power Cord
 Direct Connect Cable
 Directional Antenna Cable
 Operators Manual
 TAP-200 Anti-Radiation Coupler (Optional)

* Standard condition values

Physical

Packaging - MIL-PRF-28800, Style C
 Size: 14.5x9.4x6.5 in. (36.8x23.9x16.5 cm.)
 Weight: 20 lbs. (9.1 kg.)
 Operating Temperature: -28 to +55 C
 Battery Operation: 8 hours at 20% Duty Cycle
 AC Operation/Charging: 100-240 VAC, 50-400 Hz