



T-49 C/CA

Transponder/TCAS Test Set Datasheet



Description

The T-49C provides test capability for Traffic and Collision Avoidance Systems (TCAS) and Transponders. (Modes A, C, and S). The T-49C is supplied with a single, TAP-135 antenna coupler. A second coupler is supplied with the T-49CA. The second coupler facilitates testing of dual-antenna installations on large aircraft. In addition, the second coupler can be used for antenna isolation during diversity testing.

- Meets European Test Requirements for Mode S Elementary Surveillance
- Performs Test Requirement as per FAR Part 43, Appendix F
- Compliant with European CE Requirements
- Standard 2 year Limited Warranty



Transponder

- Test set automatically determines capability of transponder being tested (ATCRBS or Mode S) and selects appropriate tests
- Test set can be selected for automatic sequencing or manual selection of individual transponder tests
- Test set supplied with TAP-135 Antenna Coupler, Omni-Directional Antenna, and Directional Antenna (Mounted in case lid)

TCAS

- Tests TCAS I, TCAS II, and Traffic Advisory Systems with Mode C Interrogations
- Simulates distance and various altitudes above and below aircraft under test (AUT):
 - ◆ Same altitude as AUT
 - ◆ 200 ft. above/below AUT
 - ◆ 4,000 ft. above/below AUT
 - ◆ 10,000 ft. above/below AUT
 - ◆ Descending from +3,500 above to -3,500 ft. below AUT
- Allows simulation of ATCRBS or Mode S intruder
- Automatically obtains the Transponder Under Test Altitude (When Operating)

Tests Performed & Specifications

Transponder

The T-49C performs the following tests based on the capabilities of the transponder under test:

- Mode A - ID code, IDENT, percent reply, F1, F2, data pulse spacing, and pulse width
- Mode C - Altitude (feet and grey code), percent reply F1, F2, data pulse spacing, and pulse width
- Side-lobe suppression (SLS) – Tests at P1/P2=0 and P1/P2 = -9 dB
- 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 I.D. 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 (UF4/DF20) – Mode S altitude, percent reply
- Undesired replies (UF11) – Checks for reply to incorrect Mode S interrogation
- Acquisition squitter – Pass/Fail indication of squitter period, decoded Mode S address, interrogator code
- Extended squitter – Pass/Fail indication of squitter period, decoded Mode S address
- Max Airspeed – Decodes and displays maximum airspeed
- Diversity – Displays Pass/Fail indication of RF leakage through Mode S transponder
- Measures and displays transponder power (dBm or watts), frequency, and receiver sensitivity
- Decodes and displays Flight I.D.
- Decodes and displays Mode S address in Octal and Hex

Receiver Specification

Frequency	Measurement Range	1087 to 1093MHz
	Measurement Accuracy	± 300 KHz
Power	Measurement Range	40 to 60 dBm
	Measurement Accuracy	± 3 dB (with TAP-135)
Sensitivity	Measurement Range	-65 to -82 dBm
	Measurement Accuracy	± 3 dB (with TAP-135)
Reply Percent	Measurement Range	0 to 100%
	Measurement Accuracy	± 5%



TCAS

The T-49C allows testing of TCAS I, TCAS II and Traffic Advisory Systems. The T-49C allows the test set operator to simulate ATCRBS and Mode S intruders.

Front panel controls allow the operator to select intruder parameters including:

- Distance: Intruder moves from 14 to 1 NMI (intruder can be stopped and re-started)
- Velocity: 300 kts.
- Altitude offsets from aircraft under test: 0, ± 200, ±4,000, ±10,000 ft.
- Crossing altitude scenario: Intruder moves from 3,500 ft. above to 3,500 ft. below aircraft under test

Transmitter Specification

Generator	Output Frequency	1030 MHz / ± 0.1MHz
	Output Power	High +10 dBm / ± 1 dBm
		Low -10 dBm / ± 1 dBm
	Pulse Amp. ON/OFF Ratio	> 35 Db
	DPSK Accuracy	± 22 degrees
	DPSK AM	< 10%
	Transmitter Modes	1, 2, 3/A,C, S

Physical Characteristics

- Packaging – MIL-PRF-28800, Style C
- Size: 14.5 x 9.4 x 6.5 inches
- Weight: 19 pounds
- Operating Temperature: -30° to +55° C
- Battery Operation: 8 hours at 20% Duty Cycle
- AC Operation/Charging: 100-120 VAC, 50-400 Hz (Optional – 200 to 240 VAC)

Accessories (Supplied)

- TAP-135 Antenna Coupler
- Omni-Directional Antenna
- Lid-mounted Directional Dipole Antenna
- AC Power Cord
- Operators Manual

Accessories (Optional)

- TAP-141 Direct Connect Attenuator
- TAP-135 w/ 50 Ft Cable (Std in T-49CA)
- 5 and 10 year Warranties available

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