



# ADVANCED TECHNICAL GROUP

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<http://www.avionteq.com/ATG-TTG-7000-TCAS-Transponder-Test-Set.aspx>

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## TTG-7000 TCAS/TRANSPONDER TEST SET

The TTG-7000 TCAS/Transponder Test Set is a RF Signal Generator Designed for Testing of TCAS (Traffic Alert and Collision Avoidance System) and Transponder Hardware and Software.

The TTG-7000 Test Set Supplies a 10.4 Inch Touchscreen LCD Display for Operator Control of all Test Set Capabilities. The TTG-7000 can be Remotely Controlled Via either GPIB, LAN, RS-232 or USB.

The TTG-7000 Test Set can be Used Throughout the Development Cycle, from Engineering Hardware and Software Validation Testing to Manufacturing Tests.

Features:

- Simulates 32 Dynamic/400 Static Intruders
- ADS-B Squitters
- Four Port Antenna Simulation
- Hybrid Surveillance
- DO-181, 185, 260, and 300 testing.
- Six Independent Transmitters
- TX/RX Data Logging Capability
- Data Parsing for Analysis
- Pulse and Frequency Measurement
- USB/GPIB/Ethernet Interface



## **Transmitter Specifications:**

### **Frequency**

**Range:** 962 – 1213 MHz  
**Resolution:** 100 KHz  
**Accuracy:** +/- 10KHz

### **Power**

**Range:** -10 to -90 dBm per Element  
**Resolution:** 1 dB  
**Accuracy:** +/- 1 dB  
**Port:** Top (4 Elements)  
Bottom (4 Elements)  
Any Individual Element

Calibrated at 1090, 1030, and 978 (UAT unit)  
Calibration performed on top/bottom (All ports)

### **Pulse Modulation**

**Accuracy:** +/- 0.05 uSec  
**On/Off Ratio:** > 80 dB  
**Rise/Fall Time:** Normal (<100 nS)/Slow (600 nS)  
**External Pulse Modulation**

### **Phase Simulation**

**Range:** 0 to 359 °  
**Resolution:** 1°  
**Accuracy:** Typical <+/- 1°, max +/- 3°  
(4 Port Simulation)

### **Range Simulation**

**Range:** 0 to 150 NMI  
**Resolution:** 12.5 Feet  
**Accuracy:** +/- 25 Feet

### **Velocity Simulation**

**Range:** +/-2000 Kt/Hr  
**Resolution:** 1 Kt/Hr  
**Accuracy:** +/- 1 Kt/Hr

### **Vertical Speed Simulation**

**Range:** +/-32608 Ft/Min  
**Resolution:** 64 Ft/Min  
**Accuracy:** +/- 64 Ft/Min

### **Altitude Simulation**

**Range:** -1000 to 126700 Feet  
**Mode:** Gilham and 25 Feet  
**Resolution:** 25/100 Feet up-to 50175 Ft  
100 Feet above 50175 Ft

## **Receiver Specifications:**

### **VSWR**

< 1.4

### **Max Input Power**

+57 dBm

### **Internal Antenna Simulation**

### **1030 Receiver with BPSK Demod**

### **1090 Receiver**

**Dynamic Range:** 40 dB

**Dual Receiver:** Top/Bottom

### **Power Measurement**

**Range:** +17 to +57 dBm  
**Resolution:** 0.1 dB  
**Accuracy:** 1 dB

### **Relative Phase Measurement**

**Range:** 0 to 359 degrees  
**Resolution:** 1 degree  
**Accuracy:** +/- 4 degrees

### **Frequency Measurement**

**Resolution:** 1 KHz  
**Accuracy:** 1 KHz  
Using Special Test Mode

### **Pulse Characteristic Measurement**

**Resolution:** 10 nS



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**ISO 9001-2000  
Certified**

**www.a-tg.com**

## **Front Panel Menus:**

### **Receiver Screen**

#### **UUT and Test Set Signals:**

- UF Interrogations
- DF Replies
- ATCRBS Interrogations
- ATCRBS Replies

#### **Data Logging Capability**

**Timestamp:** 25 nSec Resolution

#### **Signal Trapping Capability**

#### **User and Pre-Defined Trap Mask**

### **Transmitter Screen**

**Signals:** UF Interrogations  
DF Replies  
ATCRBS Interrogations  
ATCRBS Replies

#### **Transmit Sequence**

#### **Reply File Sequence**

#### **Special Transmit Sequences**

### **TCAS ADSB Screen**

**Dynamic Intruder:** 32  
**Static Intruder:** 400

#### **ADS-B Intruder Simulation**

#### **Intruder Information Entry:**

- Range/Bearing/Altitude
- Latitude/Longitude/Altitude

#### **Range Offset**

#### **Phase Noise and BIAS**

#### **Own Aircraft Information**

#### **Hybrid Surveillance/BDS Register**

#### **ATCRBS Fruit**

### **Display Screen**

**Displays Intruders**

### **ATE Line Screen**

**Display Decoded ATE Line Messages**

### **Transponder Screen**

- % Reply
- Interrogation Message Selection
- Interference Testing
- Suppression Out
- Antenna Diversity

## **Software Interface:**

- Command Set
- USB 2.0
- Ethernet
- GPIB
- RS-232
- Web Server
- GPIB Commands Emulation
- User Applications (On request)

## **Interfaces:**

- Suppression Bus (Front/Back)
- ATE Lines (Front/Back)
- 429 Tx/Rx (Front/Back)
- Two Scope BNC Outputs (Front /Back)
- LAN (Front/Back)
- USB Type B Control (Front)
- 2 USB Type A (Front) for HID/Flash Drives
- 6 External Pulse Modulation Inputs (Back)
- Top/Bottom Receiver Coupled Outputs

## **Physical Characteristics:**

- Power:** 115/230 VAC, 50/60 Hz
- Height:** 10.5 inches
- Width:** 19 inches
- Depth:** 16.5 inches
- Weight:** 28 lbs



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