

# Avionics

## RGS 2000 TCAS REPLY GENERATOR



**AEROFLEX**  
A passion for performance.

Your complete RF source for the testing of TCAS computers

The RGS 2000 TCAS Reply Generator is a self-contained RF Test Station designed to be a complete RF resource for the testing of TCAS (Traffic Alert and Collision Avoidance System) computers. User-friendly menus displayed on the electroluminescent flat panel display allow the operator to:

- Decode and display Mode S and Mode C Interrogation Data
- Measure and display port-to-port relative amplitude and phase of interrogation signal
- Measure and display interrogation pulse characteristics including peak pulse power, pulse frequency, pulse spacing, pulse width, and pulse rise/fall time
- Measure and display interrogation pulse frequency spectrum
- Simulate up to 154 intruders including generation of Mode S and Mode C instrument replies, Mode S squitter, Mode C fruit and intruder movement simulation
- Perform manual or GPIB controlled testing

### **GENERAL SPECIFICATIONS**

#### **TRANSMITTER OPERATION**

##### **FREQUENCY**

###### **Range**

1025 to 1155 MHz

###### **Resolution**

0.1 MHz

###### **Accuracy**

± 0.1 MHz

##### **POWER**

###### **Range**

-85 to -20 dBm

###### **Resolution**

1.0 dB

###### **Accuracy**

± 1.0 dB

##### **PULSE MODULATION**

###### **Rise Time**

0.075 ± 0.02 μs

###### **Fall Time**

0.150 ± 0.04 μs

###### **Width Mode C**

0.450 ± 0.05 μs<sup>†</sup>

###### **Width Mode S**

0.500 ± 0.05 μs<sup>†</sup>

**ON/OFF Ratio**

>60 dB

**Pulse Ripple**

<1 dB

**Ampl. Var.**

<2 dB

**UNWANTED OUTPUTS****Harmonics**

<60 dB

**Spurious**

<30 dB

**BEARING SIMULATION****Port-to-Port Relative Phase**

Range 0 to 359°

Resolution 1.0°

Accuracy ±1.0°

**Port-to-Port Relative Amplitude**

Range -15 to 0 dB

Resolution 0.25 dB

Accuracy ±0.25 dB

**RANGE SIMULATION****Range**

500 ft to 160 NMI

**Resolution**

0.01 NMI

**Accuracy**

±0.01 nmi<sup>2</sup>

**VELOCITY SIMULATION****Span**

-2000 kts to + 2000 kts

**Resolution**

1 kt

**Accuracy**

1 kt<sup>2</sup>

**ALTITUDE SIMULATION****Range**

-1000 to 126700 ft

**Resolution**

10 ft

**Accuracy**

10 ft<sup>2</sup>

**VERTICAL SPEED****Range**

-6000 to +6000 fpm

**Resolution**

1 fpm

**Accuracy**

±1 fpm<sup>2</sup>

**RECEIVER OPERATION**

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**Input VSWR**

<1.2

**UUT PEAK POWER MEASUREMENT****No Damage**

Max Peak 1000 W per port

Max CW 1 W per port

**Normal Operation**

Range 0.03 W to 500 W peak per port. 1030  
±10 MHz Video BW >12 MHz

Resolution 0.1 dB

Absolute Accuracy ±1 dB

Relative Accuracy ±0.25 dB

**UUT FREQUENCY MEASUREMENT****Range**

1030 ±10 MHz

0.1 W to 500 W per port

Video BW >12 MHz

**Resolution**

1 kHz

**Accuracy**

± 1 kHz (sample averaging)

**UUT RELATIVE PHASE MEASUREMENT****Range**

0 to 359°, 1030 ±10 MHz

0.1 W to 250 W per port, Video BW > 12 MHz

**Resolution**

1°

**Accuracy**

±1°

**UUT PULSE CHARACTERISTICS MEASUREMENT****Pulse Width**

Range 0.7 to 32 μS

Resolution 0.01 μS

Accuracy 0.01 μS

**Pulse Spacing**

Range 0.5 to 32 μS

Resolution 0.01 μS

Accuracy 0.01 μS

**Pulse Rise and Fall Times**

Range 0.04 to 0.4 μS

Resolution 0.01  $\mu$ S  
Accuracy 0.01  $\mu$ S

#### **UUT SPECTRUM ANALYSIS**

##### **Scan Center**

1030 MHz

##### **Scan Width**

$\pm$ 90 MHz

##### **Resolution**

0.1 MHz

##### **Accuracy**

Amplitude

$\pm$ 3 dB

##### **Frequency**

$\pm$ 0.1 MHz

##### **Input Power**

125 W to 500 W

##### **Dynamic Range**

>60 dB

#### **POWER REQUIREMENTS**

##### **Voltage**

115/230 VAC, 175 W

##### **Frequency**

50/60 Hz

Note 1: Non-standard reply pulse widths may be specified via the GPIB

Note 2: Stated accuracy is valid for most scenarios. The maximum error shall not exceed the displacement of the intruder in 0.1 second as allowed by D0185 par. 2.4.1.2w.

#### **PHYSICAL CHARACTERISTICS**

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##### **Weight**

109.5 lbs. (49.6 kg)

##### **Height**

12.25" (31.12 kg)

##### **Width**

19" (48.26 kg)

##### **Depth**

20" (50.80 kg)

#### **ORDERING INFORMATION**

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RGS 2000-06	TCAS Reply Generator Collins ITS-700 Configuration
RGS 2000-11	TCAS Reply Generator Universal Configuration
RGS 2000-16	TCAS Reply Generator ATA TELI Configuration
RGS 2000-20	TCAS Reply Generator AlliedSignal GAA Configuration
RGS 2000-21	TCAS Reply Generator w/o Spectrum Analyzer

#### **OPTIONAL ACCESSORIES**

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ACTTA-100A	TCAS Interface Unit (used in TPPT-81A stations)
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#### **EXTENDED WARRANTY**

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WRGS/203C	Extended standard warranty 36 months with scheduled calibration
WRGS/205C	Extended standard warranty 60 months with scheduled calibration

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.