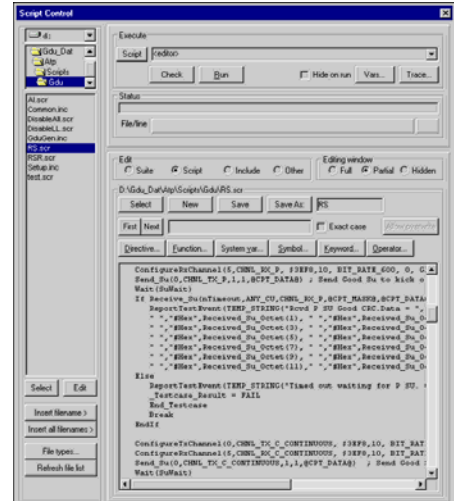
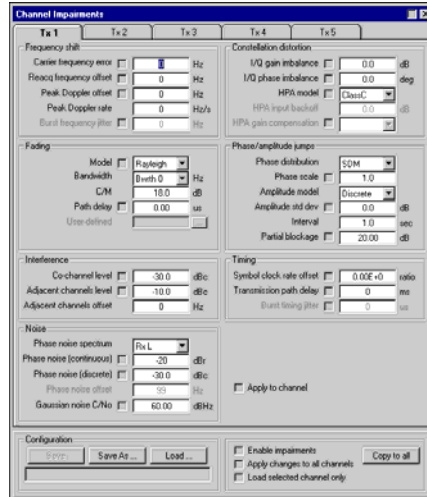
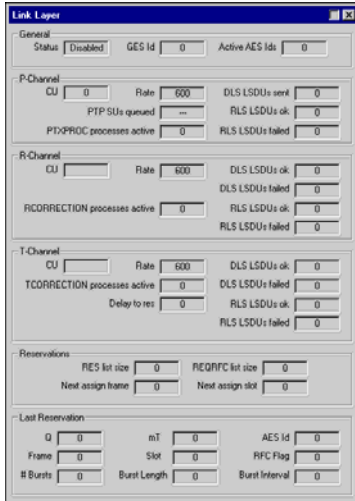




# Square Peg Communications Inc.

## Aeronautical Ground Data Unit (GDU)



### OVERVIEW

Square Peg Communications Inc.'s Aeronautical Ground Data Unit (GDU) is a software application that runs on the generic Physical Layer Tester (PLT) platform. The GDU supports the testing of physical layer performance and protocol operation for Ground Earth Stations (GESs) and Aeronautical Earth Stations (AESs) implementing Inmarsat Aero services.

The GDU supports all of the Classic Aero channel types and also implements the Inmarsat Aero link layer. Interfaces are provided for external devices, including codecs, to be connected through the GDU to the equipment under test.

The GDU can run autonomously under external control. Alternatively a familiar Windows based user interface provides easy access to test functions. A powerful scripting language allows every feature of the GDU and equipment under test to be exercised in automated testcases and suites.

A complete set of Inmarsat AATS scripts is available, eliminating the requirement for a separate Micro-VAX. Scripts are also available to automate physical layer testing. For testing of normal operation and end-to-end connectivity, a GES emulator is also available.



### SPECIFICATIONS

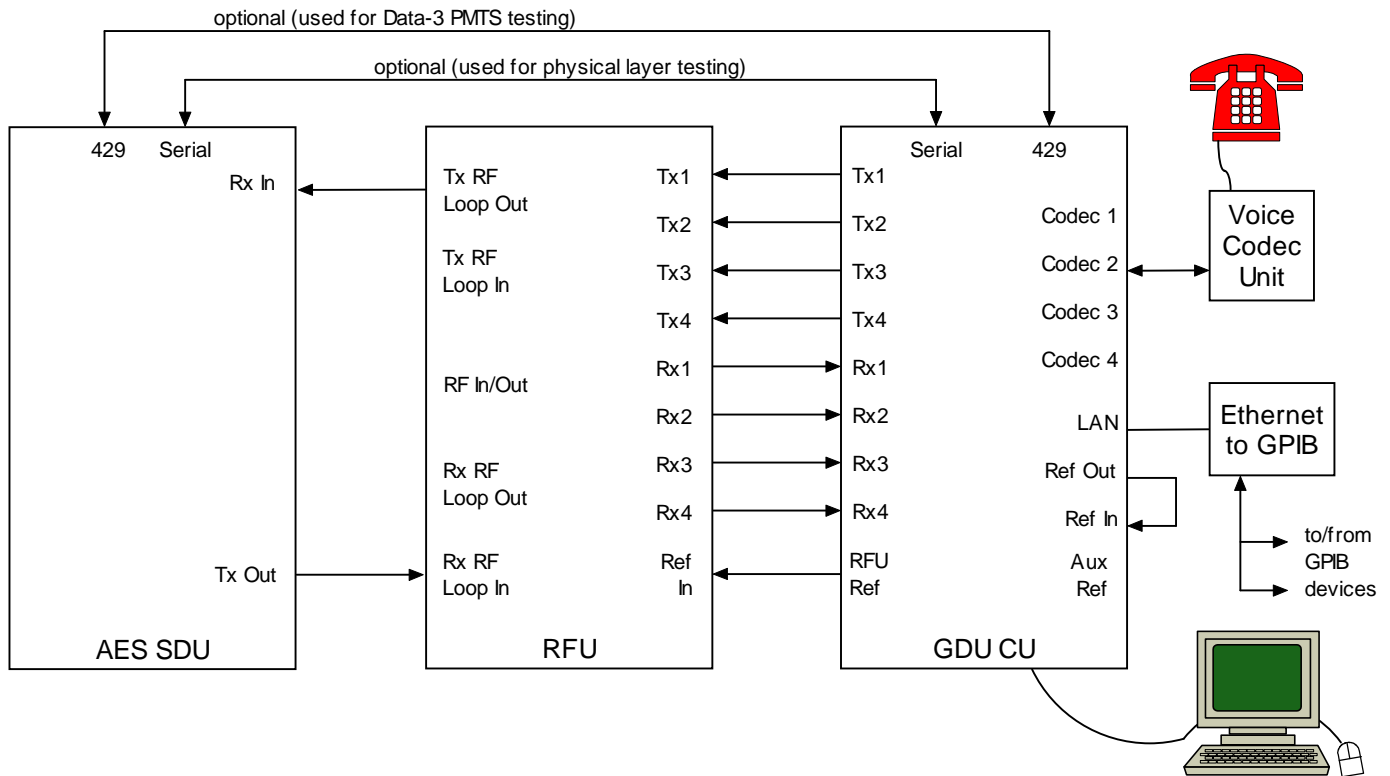
#### KEY FEATURES

- General** Integrates with legacy Inmarsat Access Approval Test System for link layer and network layer testing of AESs. Protocol Testing can also be performed using only the GDU.
- Compatibility** Drop in replacement for TRL and SkyWave Ground Data Units

#### TRANSMIT CAPABILITIES

- Modulators** 1 - 5 simultaneous (1 - 4 on PLT-H platform)
- Channel Types & Rates**
  - P, R and T Channels:** 600, 1200, 2400, 4800 and 10,500 bps
  - C Channels:** 8400 and 21000 bps

- Channel Impairments** Independently-specifiable parameters:
  - Fixed carrier frequency error
  - Doppler rate, peak offset
  - Reacquisition carrier offset
  - Adjacent channel interference level and frequency offset
  - Co-channel interference level
  - I/Q gain and phase imbalance
  - Continuous phase noise spectrum, level
  - Discrete phase noise level
  - Fading model, bandwidth, C/M ratio, differential delay



## GDU CONFIGURATION FOR TYPE APPROVAL TESTING

### TRANSMIT CAPABILITIES (Continued)

- |                                 |   |
|---------------------------------|---|
| Channel Impairments (continued) | <ul style="list-style-type: none"> <li>▪ Phase/amplitude jump distribution, magnitude, interval</li> <li>▪ Transmission path delay</li> <li>▪ Symbol rate error</li> <li>▪ HPA non-linearity</li> <li>▪ AWGN</li> </ul> |
| Link Layer                      | Embedded implementation of Aero Link Layer  |

### RECEIVE CAPABILITIES

- |                       |   |
|-----------------------|---|
| Demodulators          | 1 - 5 simultaneous (1 – 4 on PLT-H platform)  |
| Channel Types & Rates | <b>P, R and T Channels:</b><br>600, 1200, 2400, 4800 and 10,500 bps<br><b>C Channels:</b><br>8400 and 21000 bps |
| Link Layer            | Embedded implementation of Aero Link Layer  |

### ETHERNET INTERFACE CAPABILITIES

- |               |   |
|---------------|---|
| Medium        | 10/100BaseT   |
| Functionality | GESTE interface, remote control interface, GPIB interface (with Ethernet-to-GPIB converter) |

### SERIAL INTERFACE CAPABILITIES

- |               |  |
|---------------|--|
| Medium        | RS-232                                 |
| Functionality | GESTE interface, AES control interface |

### AVIONICS INTERFACE CAPABILITIES

- |               |  |
|---------------|--|
| Medium        | ARINC-429 (with PCI ARINC-429 card)  |
| Functionality | Label transmission / reception, Williamsburg bit-oriented protocol file transfer |

### LOGGING CAPABILITIES

- |         |  |
|---------|--|
| General | <b>GESTE interface messages</b><br><b>Transmitted/received SUs</b><br><b>Test sequence progress and outcome</b><br><b>System events, faults, and abnormal conditions</b> |
|---------|--|

### SCRIPT CAPABILITIES

- |              |   |
|--------------|---|
| General      | <b>Procedure-based (like Basic, C or Pascal)</b><br><b>Functions for string processing, math, user interaction, logging, I/O (serial, TCP/IP, GPIB)</b><br><b>Integrated development environment</b>  |
| GDU-specific | <b>Configuring and controlling modems</b><br><b>Flexible definition of SU formats</b><br><b>Formatting and sending SUs</b><br><b>Receiving SUs</b><br><b>Sending and receiving link layer LSDUs</b><br><b>Generating signal blockage events</b> |



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