RLS-2100 Radio Link Simulator

Overview

The Square Peg Communications Inc. RLS-2100 Radio Link Simulator supports hardware-in-the-loop physical layer and end-to-end network performance testing of wideband satellite and terrestrial radio communications systems.

The simulated signal paths include the RF characteristics of the transmitter, uplink, satellite/relay, downlink, and receiver, with realistic modelling of characteristics such as path delay, Doppler, and fading. A touch-screen or keyboard/mouse user interface allows real-world scenarios to be mapped directly to the applicable elements in the signal paths.

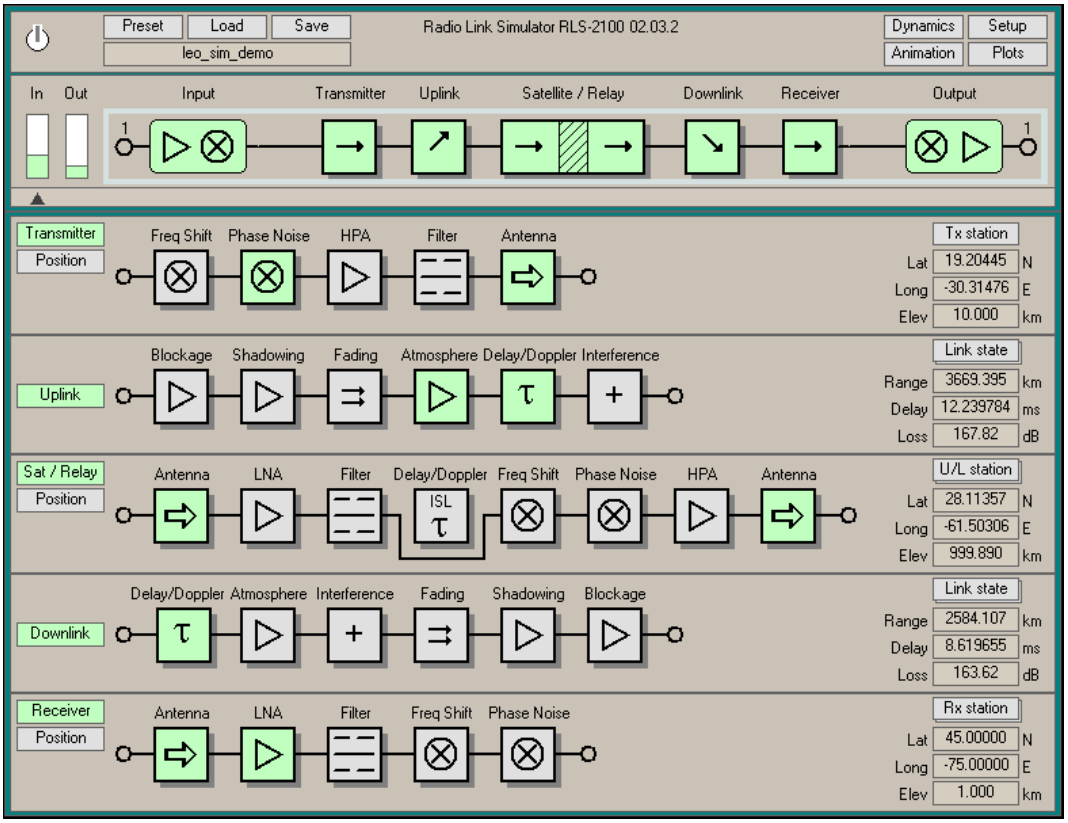
All stations (Transmitter, Satellite/Relay, Receiver) can be in motion, with the affected simulation parameters updated dynamically. The RLS-2100 includes integrated real-time multi-satellite orbit calculation and display for modelling LEO, MEO, HEO, GEO, and mixed satellite constellations. Dual independent integrated GNSS simulators can provide station position to user equipment.

Graphical displays of signal spectrum, signal power profile, station positions, and link parameters facilitate verification of test setups and allow simple visualization of the effects of the applied impairments.

Specifications

FUNCTIONAL CAPABILITIES

Channels	**1 x 1200 MHz or** **2 x 600 MHz or** **4 x 300 MHz or** **4 x 150 MHz**
Frequency	**700 to 2150 MHz (independent input/output)**
Input level	**–40 to +16 dBm**
Output level	**–40 to –10 dBm**
Impairments	▪ **Path delay (fixed or position-based)** ▪ **Doppler (fixed or motion-based)** ▪ **Additive wideband noise** ▪ **Phase noise density (spectrum, level)** ▪ **Phase noise discrete (level, frequency offset)** ▪ **Interference (type, level, frequency)** ▪ **Multi-tap fading (model, bandwidth, C/M ratio, differential delay/Doppler)** ▪ **Blockage and shadowing** ▪ **Antenna gain pattern** ▪ **Antenna phase and amplitude jumps (probability distribution, interval)** ▪ **Atmospheric effects** ▪ **HPA non-linearity** ▪ **Frequency response**
Other capabilities	▪ **Orbital dynamics (LEO/MEO/HEO/GEO)** ▪ **Terrestrial/aeronautical station dynamics** ▪ **Antenna dynamics** ▪ **Dual independent GNSS simulators** ▪ **Station dynamics display** ▪ **Signal spectrum and power profile displays** ▪ **Link parameter graphical displays (range, path delay, path loss, Doppler, Doppler rate)**



SYSTEM VIEW OF RADIO LINK SIMULATOR (SINGLE CHANNEL)

GPS SIMULATOR

Independent positions	**2**
Connector	**SMA(F)**
Impedance	**50 ohms nominal**
Frequency	**1575.42 MHz (GPS L1)**
Level	**–90 to –50 dBm**

ADDITIONAL CAPABILITIES

Cooperative units	**4**
Remote control	**Ethernet**
Station position output	**Ethernet, ARINC 429**
Antenna pointing input	**Ethernet, Serial**
Antenna emulation	**OpenAMIP**
Spectral display	**4 independent, at input or output**
Power profile display	**4 independent, at input or output**
Link parameter display	**4 independent, for uplink, downlink, ISL or composite path** **Range, loss, delay, delay rate, Doppler or Doppler rate**
Reference mode	**Internal, external, disciplined**

MONITOR & CONTROL INTERFACES

Sync	**TTL, configurable as input or output**
Reference	**100 MHz**
Ethernet	**10/100/1000 Base T**
Serial	**RS-232/422/485**
USB	**USB 2.0, USB 3.0**
Video	**DisplayPort, HDMI, VGA**

MECHANICAL/ENVIRONMENTAL

Form factor	**19" / 2.5U rack mount**
Size (with bumpers)	**L 51 cm x W 51.75 cm x H 12.07 cm** **L 20 in x W 20.38 in x H 4.75 in**
Weight	**≈ 7 kg (15 lb)**
Power connector	**IEC 320 male**
Voltage	**100-240 VAC, 50/60 Hz**
Current (typical)	**≈ 1.5 A rms at 115 VAC**
Operating temperature	**10°C to 35°C**
Operating humidity	**20% to 75% relative humidity, non-condensing**
Regulatory	**FCC, CE and RoHS compliant** **Safety: EN61010-1** **Emissions & immunity: EN61326-1** **Class A**

CONTACT US

For more information contact:

Square Peg Communications Inc.
4017 Carling Avenue, Suite 200
Ottawa, Ontario K2K 2A3
CANADA
Tel: +1 613 271 0044 Fax: +1 613 271 3007
Web: www.squarepeg.ca
Email: sales@squarepeg.ca