**REAL-TIME CHANNEL SIMULATOR FOR HF COMMUNICATIONS**

**DT4630 RTSIM**

**HIGHLIGHTS**

- Stand-alone operation (incl. touch-screen operation)
- High-reliability hardware built for continuous operation
- Full remote control via remote front panel GUI
- Remote scripting capability for simulation setup automation
- Easy software update of complete device via USB stick or CD
- Channel simulation according to the Watterson model described in ITU-R F.1487
- Direct conversion architecture with full HF band support (1 MHz to 30 MHz)
- Simulation bandwidth of 1.6 MHz
- Clock synchronization to external 10 MHz reference clock signal
- Very little processing delay (below 50 μs)

**FEATURES**

**Control interfaces**

- Front panel GUI with touch-screen and keypads for direct device configuration
- Remote front panel GUI executable for Win32 (portable application: no installation required, for easy use can be copied e.g. to a USB stick and run from there)
- Compact web interface for remote control
- Remote scripting capability for simulation setup automation

**RF input and output**

- Analogue RF input with 50 Ohm and max. input level of +10 dBm
- Direct sampling ADC with 100 MS/s
- Analogue RF output with 50 Ohm and max. output level of -20 dBm
- RF input and output range from 1 MHz to 30 MHz
- Configurable output attenuation of up to 127 dB
- Clock synchronization to external 10 MHz reference clock signal (e.g. GPS)

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The figure shows the concept of the DT4630 RTSIM and its integration into the HF radio communication link under test.
Real-time channel simulation
- Simulation algorithm according to Watterson model as described in ITU-R F.1487
- Simulation bandwidth of 1.6 MHz
- Multipath simulation of up to four path
- All path individually configurable for path delay, Doppler spread, Doppler shift and attenuation
- Tapped delay line processing for delays up to 20 ms
- Doppler spread configurable from 0 Hz to 75 Hz
- Doppler shift configurable from 0 Hz to ±100 Hz
- Relative path attenuation configurable from 0 dB to 20 dB
- Signal output can be charged with white Gaussian noise (AWGN) from -160 dBm/Hz to -20 dBm/Hz

Options

Extended interferers option
This option provides an extended set of interferer mechanisms to enable the simulation of advanced interference scenarios for the radio communication link. The option contains:
- Configurable noise floor over the whole frequency range (AWGN)
- Two sinusoidal interferers at arbitrary frequencies over the whole frequency range

Customer-specific options are available on request. Please do not hesitate to contact us with your requirements.

The figure shows the simulation algorithm according to the Watterson model suitable for the simulation of the ionospheric transmission channel.
For further information, please visit
WWW.IIS.FRAUNHOFER.DE