RADAR SIGNAL SIMULATOR

Part Number:
UTS-RSE-R4-18GHz-XY
X - G GUI PC software with scenario modeling.
   - E for only Ethernet based embedded control
Y - Other user specific/customized features
Contact us for more details.

Features
- The system consists of control unit (running GUI) and embedded unit (3U VPX card) which are connected through Ethernet.
- User friendly GUI with library of various types of RADAR models (For PC control model type)
  - Drag and Drop type UI for simulating the positions and directions of entities.
  - Capable of generating multiple different Radar emissions, each with different predefined parameters.
  - Programmable parameters include frequency, pulse characteristics, PRI profile, scan pattern, Radiation pattern etc.
  - User can create, save and load the profiles with all settings retained for simulation.
- Control through Ethernet commands for embedded solution.
- Frequency agility (pulse, CW, FMCW, step, burst, Linear, Non linear, function) - Maximum 2048 values
- PRI and PW agility - Maximum 2048 values

The UTS's RADAR Signal Simulator is state of the art injection/Radiation mode test simulator, which can generate practical signal conditions for test and validation of Radar Warning Receivers, ESM systems, RADARs and several other EW systems.

Optional Features
The following are optional modules of UTS-RSE-R4, and must be ordered separately.
- MAP server for GUI (UTS-RMAP-02)
- Antenna/Servo controller card for Radiation mode extension of RSE (UTS-AC-03)

Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration</td>
<td>GUI software running on Desktop/ Laptop PC and sends the configuration data to Embedded unit (RSE-UNIT).</td>
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<tr>
<td>Interfaces</td>
<td>100 Mbps Ethernet</td>
</tr>
<tr>
<td>Number of emitters and channels</td>
<td>100 Mbps Ethernet/16 emitters, Number of channels to simulate DOA / TDOA can be provided based on requirement. (Size and weight will vary)</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>1 MHz to 18 GHz (Other models available)</td>
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<tr>
<td>Frequency resolution</td>
<td>1 KHz</td>
</tr>
<tr>
<td>Pulse width range</td>
<td>40 ns to CW (resolution 5 nsec)</td>
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<tr>
<td>PRI range and resolution</td>
<td>0.1 us to CW (resolution 5 nsec)</td>
</tr>
<tr>
<td>Output level</td>
<td>-55 dBm to -5d Bm (other models available)</td>
</tr>
<tr>
<td>Libraries and packages</td>
<td>Pre-loaded several RADAR models and configurations</td>
</tr>
<tr>
<td>Training &amp; Support</td>
<td>Field training and continuous web based support</td>
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<tr>
<td>Warranty</td>
<td>1 year</td>
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<tr>
<td>Power requirement</td>
<td>230V AC, 50 Hz +/-10%</td>
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<tr>
<td>Size and weight</td>
<td>19&quot;, 5U Rack mount, 35 Kg (can be customized based on requirements)</td>
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<tr>
<td>Operating Temp range</td>
<td>0°C - 35°C (Commercial use) Other temperature grade models are also available.</td>
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Key Features

- Frequency of operation 0.5 to 18GHz (customizable based on user requirements)
- Unmanned operation through remote wireless link up to 20km (or above based on requirement)
- Control from remote GUI installed in the ship/platform
- Features to configure multi radar scenario with variable PW, PRI and frequency agility.
- GPS based precise time synchronization between remote GUI and embedded RSE unit.
- Quick sensitivity and DF check/calibration can be performed.
- By creating multi RADAR scenario, the DUTs Pulse de-interleaving algorithms can be checked.
- Frequency switched and phase coded RADAR signal can be created to test the Interpulse and Intrapulse analysis capabilities of DUT.
- By configuring complex RADAR waveform the DUT's LPI RADAR detection capabilities can be tested.
- GUI running on Windows/Linux PC.
- Each RADAR can be independently configured with
  - PW agility - constant and varying (pulse wise, batch wise, dwell wise, list, random)
  - PRI agility - constant, stagger, jitter and other (pulse wise, batch wise, dwell wise, list, random)
  - Frequency agility - constant, list, Linear-FM, Non linear-FM and other.
  - Phase coding - Barker, frank, poly phase (P1, P2, P3, P4), poly time (T1,T2,T3,T4) and user defined.
  - Configurable Azimuth and Elevation radiation patterns (isotropic, sinc, pencil, fan, cosec-squared and user programmable)
  - Configurable scan patterns (circular, sector and others)

Airborne or Ship borne ESM/ELINT systems are crucial in Electronic warfare applications. Regular test and calibration of EW systems ensure the readiness of the system. UTS offered RSE-RAD1 is radiation mode test/BITE facility for ESM/ELINT systems with following two modules.

- Embedded RSE unit with wireless remote operation facility (This equipment can be fixed on shore/similar facility)
- GUI for RSE unit with LAN connection to Wireless unit

The Embedded RSE unit can be left without any operator, as all the features can be controlled from the remote GUI. The second entity consists of GUI which can be operated by the ESM operator itself. The operator can configure one threat in RSE-RAD1 and can see immediately the ESM screen to observe the track.

The RSE-RAD1 equipment serves broadly three purposes.

- In simpler form, RSE-RAD1 can be used as field BITE (Built In Test Equipment) facility to check the readiness of system.
- The exhaustive test of ESM system can be carried out by generating complex EW scenario with multiple RADAR threat signals.
- The RSE-RAD1 can be used for field calibration of systems for several parameters such as sensitivity, AOA etc.

Applications

- Byte for ESM ELINT systems
- Testing Radar Warning Receivers (RWS)
- EW Simulators and Training Systems