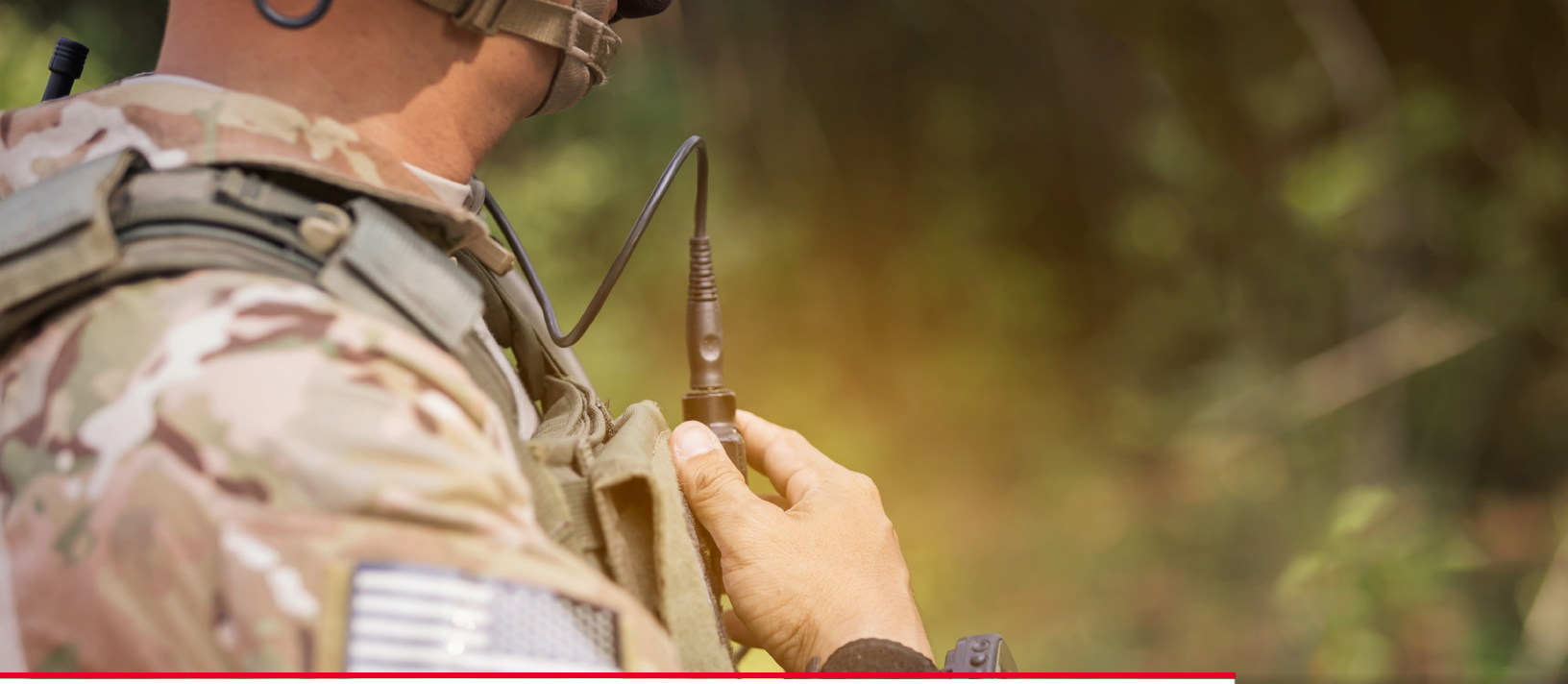


SOLUTION BRIEF

PROPSIM F64 MANET
Channel Emulation Solution

Mission Critical Communications Secured

Highly Scalable Channel Emulation Solution for MANET and Mesh Radio Testing.
The need for robust wireless communications systems for mission critical operations has dramatically increased as defense organizations transition from using traditional stationary forces to rapidly deploying military forces with high mobility requirements. Ensuring the robust operation of avionics, surveillance, radar or satellite systems for mission critical wireless communications, manufacturers and military forces requires the ability to test mixed networks that combines tactical and avionics radios with satellite links.

Increased complexity and technological advancements, such as MIMO and beamforming in wireless military communication systems, has accelerated the need to test large mesh-network topologies with dynamically changing radio channel and interference conditions. There is also a stronger demand for more comprehensive testing using realistic field-to-lab simulations for early fault detection.

The PROPSIM F64 MANET Channel Emulation solution addresses a wide range of challenges associated with the development of modern tactical wireless systems. The solution enables users to conduct end-to-end performance and interoperability testing of Mobile Ad-Hoc Networks (MANET) and Mesh radio systems (a self-forming and self-healing reliable network that eliminates single points of failure). It delivers unrivaled performance and flexibility in terms of duplicating realistic field conditions in an accurate and repeatable manner.

The PROPSIM MANET Channel Emulation Solution is a highly scalable and flexible solution that supports:

- full mesh configurations of up to 64 radios using 4032 independent fading channels in a single unit for testing large SISO and MIMO mesh-network topologies
- up to 1.2GHz of instantaneous bandwidth for ultra-wideband support for testing gigabit links
- advanced MANET test scenario building with purpose-built intuitive scenario-based user interface including access to all key radio channel parameters to address custom testing needs.

High-performing, network level channel emulation solution to easily replicate field-testing conditions in a repeatable way:

- Scales from single link testing up to whole network level testing
- Standard and waveform agnostic testing guarantees operation with all proprietary systems
- From single antenna to high order MIMO, including antenna modelling

Advanced radio channel modelling for

- Dynamic mesh with multipath links
- Full control of Doppler, delay, and phase
- Advanced tools for test scenario creation

Figure 1. F8800A PROPSIM F64 MANET Channel Emulation Solution

Highly Scalable and Flexible PROPSIM MANET Channel Emulation Solution

Supports up to 64x64 full mesh topology

Testing mesh-networks is challenging due to the high number of possible topologies and the historical need to create a full network of radios in the field, which can be very costly, resource intensive and time-consuming. With PROPSIM F64 MANET Channel Emulation Solution, users are able to easily replicate field-testing conditions in a repeatable way in a controlled laboratory environment. The solution scales from single link to whole network level testing by simultaneously connecting 64 devices into single PROPSIM MANET Channel Emulator.

Scalable use of resources and bandwidth

The wide signal bandwidth support – up to 1.2GHz – enables users to test the widest tactical radio links as well as frequency-hopping within a single channel.

Full testing of arbitrary MANET radio systems

PROPSIM F64 MANET Channel Emulation Solution is compatible with any kind of wireless links and system parameters, which enables users to test radios with any type of arbitrary waveform. The standard independent file-based emulation engine guarantees operation with any proprietary radio systems.

Industry Leading Intuitive Channel Modeling Tools with the Most Accurate Channel Modelling Technology

PROPSIM F64 MANET Channel Emulation Solution uses an intelligent Scenario Wizard that guides the user through the first steps for simple set-up procedure. The PROPSIM F64 MANET Channel Emulation Solution allows users to create dynamic scenarios and advanced modelling of an entire operational environment, including multi-link multi-antenna configurations.

PROPSIM MANET Solution offers the most accurate signal fading processing in terms of time, phase and amplitude, all within an easy-to-use and configure user-interface with powerful options:

- built-in input power measurement
- fully automated phase and amplitude calibration without the need for a vector network analyzer

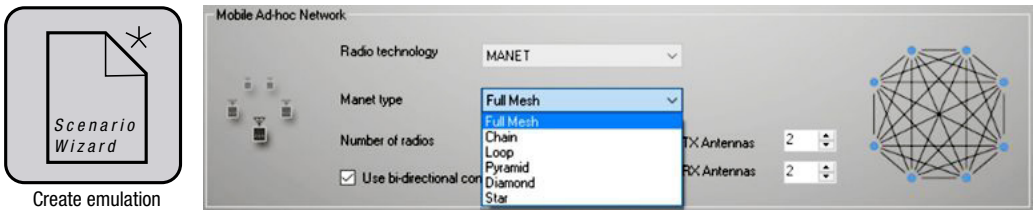
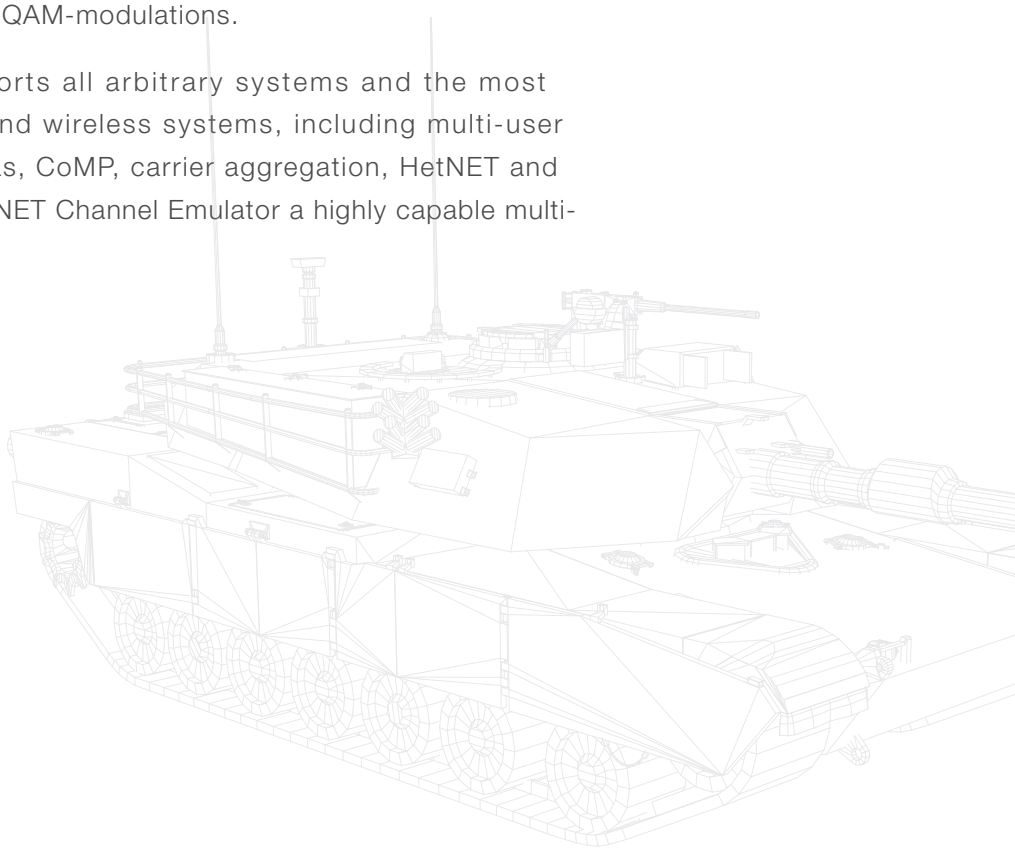


Figure 2. Easy-to-use Scenario Wizard guides the user through the first steps for simple set-up procedure

Easy operation across a vast range of functions

PROPSIM MANET Solution uses the PROPSIM MANET Channel Emulator platform to offer complete testing with real radio hardware and RF equipment. The radios are exposed to realstic link and radio conditions in a controlled laboratory environment. The accuracy requirements of the system exceeds even the most demanding specifications of modern tactical radios, including the linearity requirements for 256 QAM and 1024 QAM-modulations.

The PROPSIM F64 platform supports all arbitrary systems and the most advanced standard technologies and wireless systems, including multi-user MIMO, beamforming, smart antennas, CoMP, carrier aggregation, HetNET and multi-RAT. This makes PROPSIM MANET Channel Emulator a highly capable multi-purpose tool.



Virtual battlefield in the laboratory

PROPSIM F64 scales up to full battlefield simulation with large scale mesh topologies. Possibility for automated 24/7 testing and ATE remote control interface (GPIB, LAN) enable unattended, cost-effective and quick test case execution.

Propsim model	Amount of RF channels	Max number of digital channels	Max number of radios in full mesh
F64	8	512	8
F64	32	2048	32
F64	64	4096	64

Table 1. Resource scaling and full mesh topologies

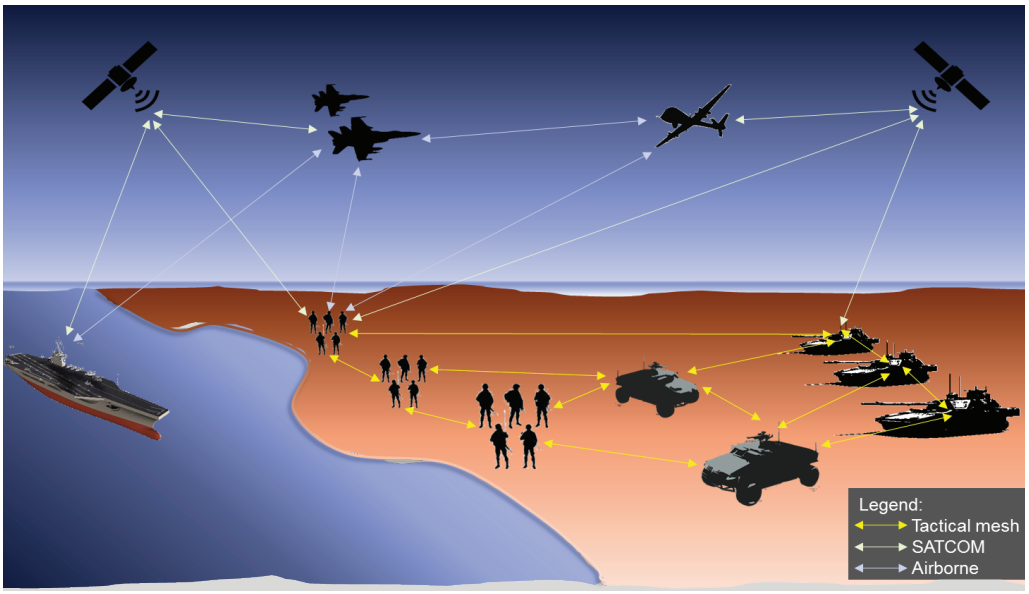


Figure 3. Bringing the virtual battlefield into a laboratory environment