

The Communications Simulation Range (ComSim)

Controlled, repeatable and realistic Radio Frequency (RF) environment training solution for radio manufacturers and military end users. Ideal for testing, developing and demonstrating military radios in live, virtual or constructive environments across HF, VHF and UHF (L and S Band) frequency ranges from 1 MHz to 2.5 GHz*.

ComSim products are scalable from a simple 4-port attenuation matrix to a fully immersive 17-port collective training solution.

An operator or instructor controls the RF environment by automatically or manually setting the attenuation level between individual radios. ComSim replaces live RF links with physical links controlled by PC software, which adjusts the attenuation levels by simulating relevant degradation in the quality of communications depending on range, frequency and terrain. The flexible software and the ease in which users can generate different scenario-based testing procedures with minimal training makes ComSim suitable for use across the development lifecycle.

Available fully supported or as a COTS delivery with no support after the initial user training.

*with an extended range matrix



ComSim

- A comprehensive collective training solution for UK MoD Bowman Radio users
- 20 classrooms, each based on a ComSim Attenuating Matrix connecting live vehicle training aids
- Scenario-based exercises that allow trainees to maximise their learning time without needing to physically move their training aids.

Generic ComSim

- RF Simulator for radio manufacturers
- Physically connects off-the-shelf radios through a 4-17-port attenuation matrix
- Safe RF environment to run scenarios for radio comms within a lab, office or field environment
- Ideal for radio evaluation, testing and demonstration



Applications & Specification

ComSim Applications

Test & Development	ComSim allows radio manufacturers to test their radios in both a laboratory environment and in the field, making it ideal for early product development. Typically, a 4-port matrix allow 4 radios to be joined together.
Demonstration	Allows radio manufacturers and military end users to demonstrate and trial radio capabilities in a safe RF environment in the lab or in the field.
Training	Allows the integration of live radio assets onto a representative platform, creating a training aid that also provides connectivity to others to create a collective training environment controlled through one instructor PC.

Matrix Specification

Operating Frequency Range	1 MHz to 30 MHz 20 MHz to 450 MHz Continuous across frequency band
RF Impedance	50 Ohm
Number of ports for RF Attenuation Matrix	Up to 17, 1 per radio
Maximum Input Power (Rack)	1 Watt (30 dBm)

Maximum Input Power (System)	50W (47 dBm) with 20dB attenuators. Fixed attenuators are provided to allow the system to work at the required maximum radio output power.
System Insertion Loss	35-41 dB (nominal) at the connectors to the equipment rack.
Additional Variable Attenuation Range	≥ 100 dB in 1dB steps
Attenuation Accuracy between Ports	≤ ± 3 dB (for any port in any frequency) ≤ ± 2 dB (typical) ≤ ± 1 dB (for a repeated test)
System Isolation	> 160 dB
Rack Isolation	> 120 dB The included two 20 dB fixed attenuators gives end-to-end isolation of > 160 dB so two or more radios on the same frequency can be isolated from each other.
Programmable Noise Source	0 to ~ 30 dB Level above a nominal radio detection, set per radio

