

# Keysight Technologies

## Propsim FS8 Channel Emulator 2.7 GHz

Data Sheet



Compact and Scalable  
RF Channel Emulator

## Compact RF channel emulator for advanced performance testing

- Used by major mobile operators for reverberation chamber based supplementary MIMO OTA testing
- Ideal for single cluster anechoic chamber based MIMO Over-The-Air device performance evaluation
- Enhance multi-mode chipset and device testing with one box testers or real base stations during all development phases from R&D to conformance
- Perform special VHF and UHF and mobile ad-hoc network radio testing

## Protect your investment with Prosim FS8 2.7 GHz

- Scalable channel emulator platform for present and future testing requirements
- The market's most compact RF channel emulator in terms of size and weight, supporting up to 8 RF and 32 digital channels
- Compact 6U height hardware design for easy rack installation or bench top use
- Multi-unit setups supported (up to 6)
- LTE - CA MIMO support. Single unit supports up to 4CC bands each 40 MHz wide

## Easy operation across a vast range of functions via GUI or Automation API

- Includes wizard with guided steps for simple test scenario creation and editing
- Enables bi- and uni-directional operation of RF ports
- Offers built-in input power measurement
- Provides fully automated phase and amplitude calibration without a vector network analyzer
- Automated 24/7 testing and ATE remote control interface for GPIB and LAN enable unattended, cost-effective and quick test case execution
- Compatible with other Prosim products test automation interfaces, enabling smooth and convenient transfer or share of test automation scripts between teams

## Supports industry leading channel modeling tools

- Prosim Geometric Channel Modeling Tool (GCM) enables easy multi-link test scenario definition based on SCME, WINNER models to test MU-MIMO, beamforming, smart antennas, CoMP, Carrier Aggregation, HetNet and multi-RAT performance and interoperability testing of real devices with real base stations
- Prosim field-to-lab Virtual Drive Testing Modeling Tool enables advanced troubleshooting of field issues, benchmarking, interoperability and regression testing by importing field measurement data from a live network captured by drive test tools such as Nemo Outdoor and Nemo Handy
- Prosim MIMO OTA modeling tools are compatible with CTIA/3GPP/CCSA test plans and enable simple benchmarking of off-the-self devices in anechoic chamber installations

## Ready test scenario packs include:

- MIMO OTA performance test scenarios for major mobile operator test plans in North America
- CTIA/3GPP MIMO OTA test scenarios
- FAST-OTA capability for up to 12x faster device MIMO OTA testing compared to conventional test methods
- MANET radio testing

## Specifications

|   |   |
|---|---|
| RF interface channel configurations   | 2, 4, 6 or 8  |
| MIMO emulation  | 2x2, 4x2, 4x4, 8x2, 8x4   |
| MANET emulation   | up to 8 radios in chain, and 5 radios in full mesh network topology                                       |
| RF interface channel frequency range  | 30 to 2700 MHz  |
| RF interface channel signal bandwidth   | 40 MHz  |
| Number of fading paths per fading channel   | up to 48  |
| Number of fading channels   | up to 32 all independently controllable via GUI for fading, Doppler, path amplitude and path phase offset |
| Internal interference generators  | LTE fully configurable and synchronous. AWGN and CW   |
| Excess delay range  | up to 3000 $\mu$ s  |
| Number of integrated RF local oscillators   | up to 4 internal  |
| Multi-emulator synchronization  | up to 6 units   |
| Input power measurement   | Automatic input level setting   |
| Input power meter modes   | Continuous and RF burst-triggering  |
| Integrated duplex components for uplink and downlink separation   |   |
| User-defined active RF connector settings simplify switching between test case in automated tests                       |   |
| ATE control interface for effortless test case automation   |   |
| Integrated phase and amplitude calibration (no need for VNA)  |   |
| Fully automatic phase and amplitude calibration with Keysight Technologies ACU external hardware unit (no need for VNA) |   |

## RF Performance

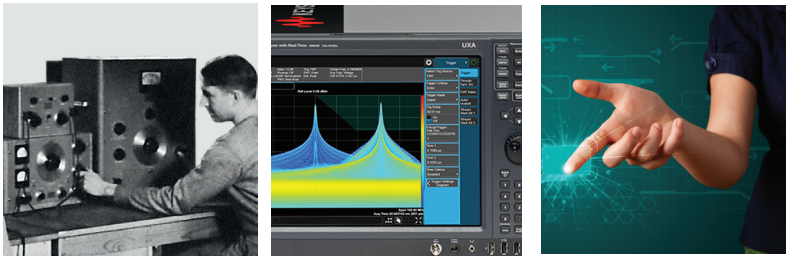
|   |  |
|---|--|
| RF input level range                      | - 50 - +20 dBm (CF 10 dB, SNR >35 dB)<br>- 30 - +20 dBm (CF 10 dB, SNR >60 dB, full range) |
| RF output level range                     | - 120 to - 20 dBm (RMS, CF 10 dB)  |
| Peak output level                         | max. 0 dBm   |
| RF output level setting resolution        | 0.1 dB   |
| Digital fading channel dynamics           | 60 dB  |
| Number of fading paths per fading channel | up to 48   |
| Noise floor                               | - 165 dBm/Hz typical (output RMS level < -40 dBm)  |
| EVM                                       | OFDMA 20 MHz BW < -45 dB typical   |

## Channel Modeling

|  |  |
|--|--|
| Standard channel models  | 3GPP LTE, WCDMA, GSM, 3GPP2 (IS-54, IS 95), TETRA, ITU 3G, WLAN, DVB-T/H   |
| Optional channel models  | LTE Advanced evaluation models, IMT-Advanced models, SCM and SCME models, WINNER, WINNER+, TD-LTE Sounder measured high speed train channel models   |
| Fading profiles  | Constant, Rayleigh, Rice, Nakagami, Lognormal, Suzuki, Pure Doppler, flat, rounded, Gaussian, Jakes, Butterworth, user-defined profiles, models from 3rd party simulation tools and ray-tracing applications |
| Delay profiles   | Constant, sinusoidal sliding delay, linear sliding delay, 3GPP birth-death, 3GPP sliding delay group, user-defined, delay profiles from 3rd party simulation tools and ray-tracing applications              |
| Channel configuration topologies   | Very flexible, single or multiple independent or fully synchronized MIMO, MISO, SIMO, SISO, MANET/mesh carrier aggregation, CoMP and relaying transmission schemes   |
| Run-time fading engine   | Amplitude, delay, Doppler and environment separately controlled for each fading channel  |
| Channel modeling tool for user-defined channel models  |  |
| Emulation of dynamic impulse response data   |  |
| Flexible control of pre-defined shadowing profiles or user-defined path loss profiles; control of up to 128 channels independently   |  |
| Emulation of 2D and 3D beamforming channels, single and multi-user scenarios, measured   |  |
| Emulation of high-speed train scenarios; measured with channel sounder or defined with channel modeling tools  |  |
| Field to lab virtual drive testing modeling tool for C2K/GSM/WCDMA/ LTE device and base station testing in the lab; use measured radio channel data captured with scanners, test terminals or receivers from the field; seamless operation with Keysight Nemo drive test tools |  |
| MIMO OTA modeling tool for CTIA/3GPP/CCSA MIMO OTA testing supports the latest CTIA and 3GPP compliant test scenarios and channel model validations; optional tools for LTE-CA inter- and intraband MIMO (DL), Uplink-MIMO, Bi-directional and 3D MIMO OTA testing             |  |
| Geometric channel modeling tool for user-defined Multi-link MIMO, beamforming and smart antenna scenarios testing; includes dynamic spatial models, user-defined antenna patterns, 3D modeling and IMTA, WINNER and SCME models  |  |
| Custom channel modeling tool kit for external PC   |  |
| Maximize your investment: hardware platform extensions and additional features can be purchased and installed at any time after the initial delivery of an emulator platform   |  |

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