

IWSLS²

International Workshop on Link- and System Level Simulations

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The GTEC 5G Link-Level Simulator

Tomás Domínguez Bolaño



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- 1 Introduction
- 2 The GTEC Testbed
- 3 The GTEC 5G simulator
- 4 Execution of Simulations
- 5 Measurements methodology
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- fully integrated with the GTEC testbed
- publicly available under the GPLv3 license at https://bitbucket.org/tomas_bolano/gtec_testbed_public.git

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- The GTEC testbed and the GTEC 5G simulator have been used for experimental evaluations of OFDM and FBMC waveforms

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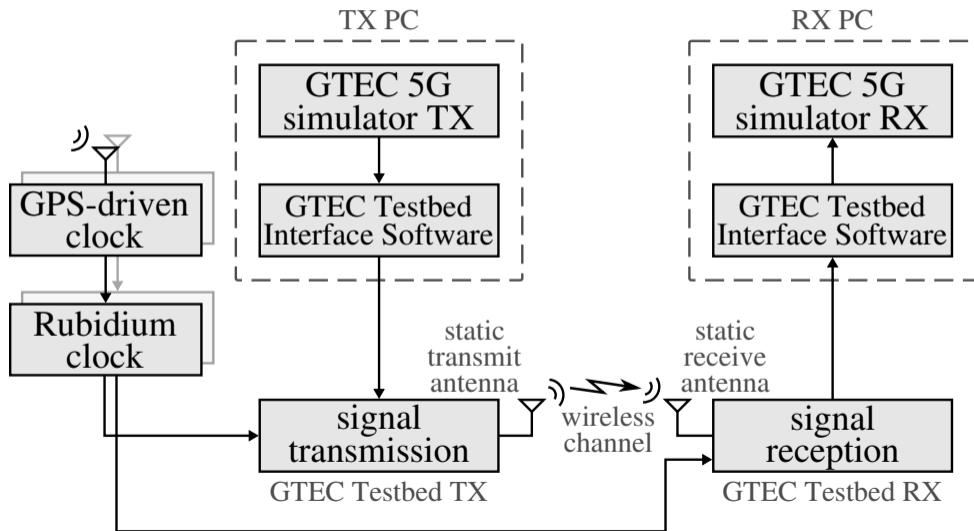
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 - ▶ Communicates directly with the USRP
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 - GTEC 5G Simulator
 - ▶ Generate and process the signals

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 - time and frequency synchronization
 - FBMC interference cancellation methods: auxiliary pilots

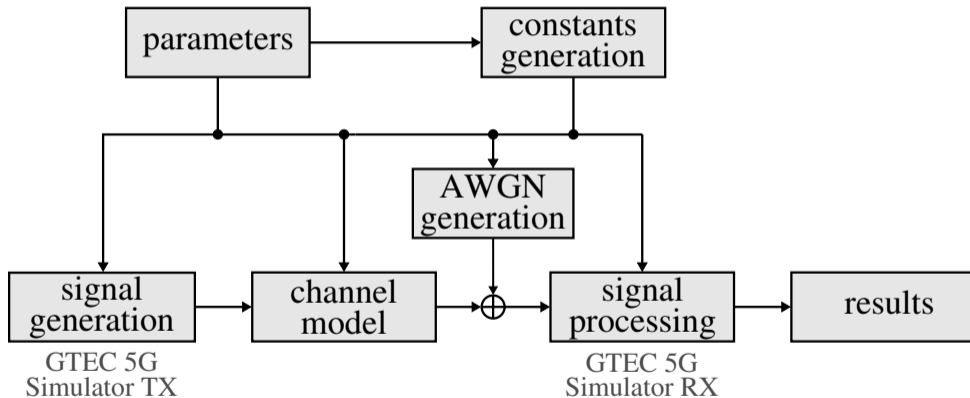
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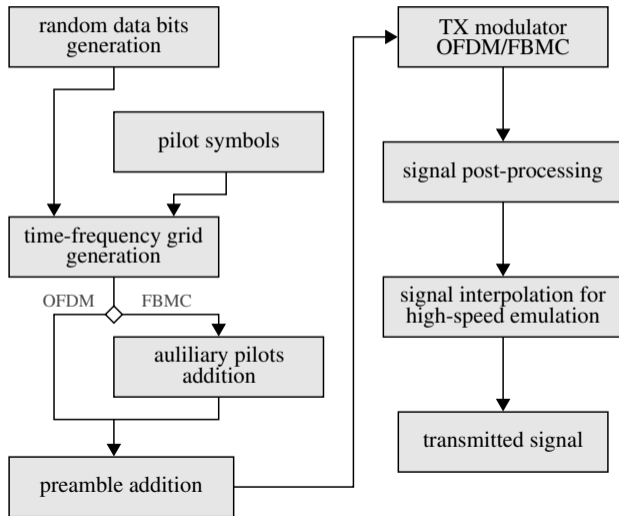
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- Configured via an standardized parameters file
- Several channel models for simulations
 - AWGN
 - Flat Rayleigh fading
 - Standardized channel models using the MATLAB `stdchan` function

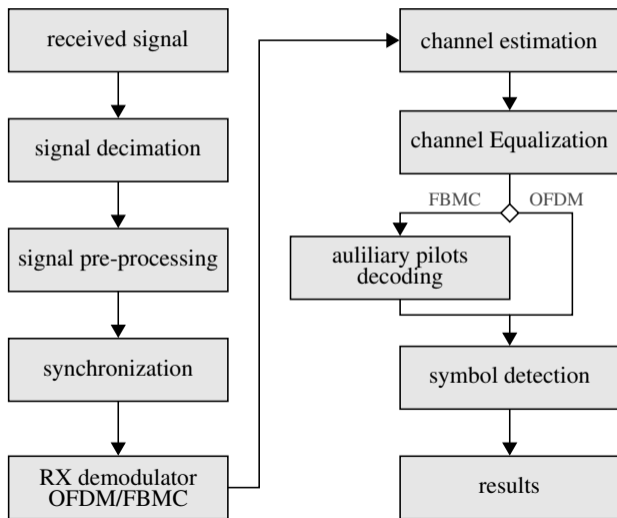
Structure of the Simulator



Structure of the Transmitter Block



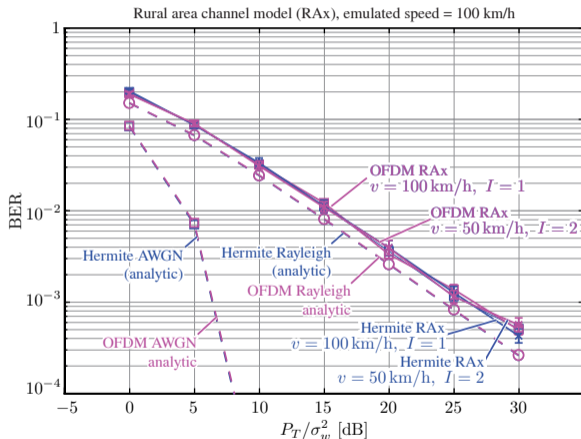
Structure of the Receiver Block



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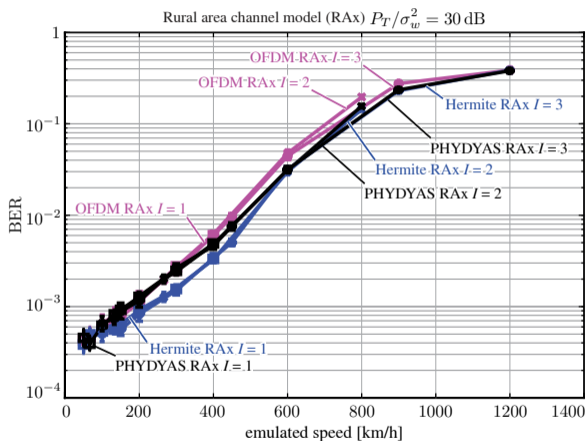
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Simulations iterating by noise



Sample results of BER versus emulated speed for OFDM and FBMC with the PHYDYAS and Hermite prototype filters. Rural Area channel model (RAx) channel model and $P_T/\sigma_w^2 = 30$ dB.

Simulations iterating by speed

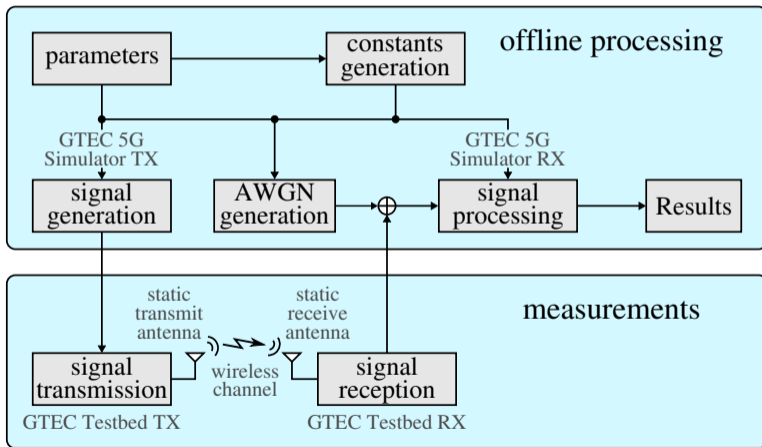


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Measurements methodology



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- We explained how simulations are performed and showed some exemplary results.
- We described the typical workflow followed during a measurement campaign.

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