

Vienna LTE-A Uplink Link Level Simulator v1.6

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Selected Features

- Transmission modes
 - Single transmit antenna
 - Closed Loop Spatial Multiplexing (CLSM)
 - Multi-User MIMO
- Up to 4x4 MIMO transmissions
 - including receive diversity for Single transmit antenna mode
- support for multiple base stations
- support for multiple users via scheduling
- Scheduling
 - fixed scheduler
 - round robin scheduler
 - max. throughput scheduler
 - approx. max. throughput scheduler
 - best CQI
 - fixed MU MIMO
 - max MU MIMO
 - random MU MIMO
 - greedy MU MIMO
- normal and extended Cyclic Prefix length
- Block fading and Fast fading simulations
 - independent and correlated time variant channel traces
- SRS configuration selectable
- DFT spreading selectable
- Channel Estimation methods
 - LS based (LS_AV, LS_SAV, LS_QS)
 - DFT based
 - MMSE estimator
 - 2D MMSE estimator

- Channel Interpolation and Channel Prediction methods
 - flat
 - linear
 - pchip (cubic)
 - spline
 - MMSE
 - 2D MMSE
- Quantized CSI feedback
 - CQI, RI, PMI
 - downlink feedback channel delay adjustable
- BS Receiver types
 - ZF
 - MMSE
 - Interference-aware MMSE (IAMMSE) for inter-cell interference
- Implemented channel models
 - AWGN, flat Rayleigh
 - PedA, PedB, EPedA, PedBcorr
 - VehA, VehB, EVehA
 - TU, ETU, RA, HT
 - ePDP, winner II
 - TR 36.873 - 3D channel model
- Channel averaging for faster simulations
- Channel model interpolation methods
 - Shift to nearest neighbor
 - Sinc interpolation
- Fully parallel computing possible (with MATLAB parallel toolbox)

Performance Metrics

Each metric provided with confidence intervals

- User/Cell Throughput (coded/uncoded)
- User Bit Error Ratio (BER) (coded/uncoded)
- User/Cell Block Error Ratio (BLER)
- User channel estimation error (MSE)
- User channel prediction error (MSE)
- User Peak-to-Average Power Ratio (PAPR)