TSG-RAN meeting #23 RP-040124
Phoenix, USA, 10-12 March 2004

Status Report for SI to TSG

Study Item Name: Analysis of OFDM for UTRAN enhancement

SOURCE: Rapporteur (Sarah Boumendil, Nortel Networks) **TSG:** RAN **WG:** 1

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Ref. to SI sheet: RAN_Study_Items.doc

Progress Report since the last TSG (for all involved WGs):

Release 6 Ad Hoc:
- The TR has been adapted to the new scope of the OFDM SI, as approved in RAN#22.
- Simulation results have been presented to validate the OFDM model based on Exponential Effective SIR Mapping (EESM) and reference EESM parameters have been included in the TR for the system-level evaluation.
- System-level performance results have been presented for textbook OFDM (based on the EESM method) and WCDMA (Rake and MMSE equalizer).
- A contribution on the distribution of geometry (G) for system-level performance evaluation has been discussed. The document also discussed the impact of impairments. It has been suggested in RAN1 to take these into account by limiting the instantaneous SIR in system-level simulations.
- A contribution addressing the OFDM data demodulation part of the UE impact analysis has been presented and included in the TR. Another contribution addressing the UE RF functionality has also been discussed. A structure for the section on Node B impacts has been approved.
- Mobility aspects have been discussed.
- Pilot (OFDM-CPICH) considerations and channel estimation for OFDM have been also discussed.

RAN1 #36:
- A quasi-consensus was reached over the remaining steps for the performance evaluation of OFDM in this study.
- System-level performance results have been included in the TR for textbook OFDM and WCDMA (with Rake and MMSE receivers) in Outdoor-to-Indoor/Pedestrian A and B channel models.
- Aspects related to the modelling of Node B impairments and OFDM HARQ combining is system-level simulations have been discussed and related text proposals were included in the TR.
- The modelling of coloured inter-cell interference has been discussed, 2 contributions showing results related to the use of the EESM to model the performance impact.
- Channel estimation for OFDM has been discussed. Link-level performance results for different OFDM-CPICH configurations with real channel estimation have been presented and included in the TR. Link-level simulations have been also presented for textbook OFDM and for WCDMA with a Rake receiver and an MMSE equalizer.
- The Node B impacts have been discussed and this section of the TR has been filled. Aspects related to the impact on RF functionality of the UE have been discussed and related text proposals were included in the TR.
- The synchronisation aspects have been discussed and a text proposal covering this section has been approved.

List of Completed elements (for complex work items):
- Documentation of OFDM fundamentals
- Simulation methodology and assumptions
- Basic system-level evaluation (ideal channel estimation)
- Analysis of required OFDM physical channels
- Performance for the OFDM-CPICH with channel estimation
- Node B impacts
- Aspects of UE impact: RF functionality and data demodulation
- Synchronisation

List of open issues:
- Full verification of EESM modelling of realistic OFDM interference and corresponding performance evaluation
- Frequency re-use aspects

?? Mobility / handover
?? Aspects of UE impact: cell search and measurements and synchronisation
?? Impact evaluation for UL and L2/L3 protocols
?? Performance with Node B impairments

Estimates of the level of completion (when possible):
70-80%

SI completion date review resulting from the discussion at the working group:
RAN#24 (June 04)

References to WG's internal documentation and/or TRs:
[1] R1-040394, TR25.892, Analysis of OFDM for UTRAN enhancement, version 1.1.0.