
TSG-RAN Working Group1 meeting #12 R1(00)0470
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Title: Proposed Study Plan for Node B Synchronization over the Air:
Document for: Discussion

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1 Introduction

This contribution presents a list of the critical issues to be resolved as part of the Node B Synchronization Study for TDD

References [1] through [4] have been early contributions to propose solutions for Node B Synchronization over the air.
Reference [5] is the Work Item Description Approved by TSG RAN#7.
Reference [6] presents a preliminary comparison of the two early proposals.
Reference [7] presents a commentary on the simulation of reference [3], generally agreeing with the simulation results based on purely analytical techniques.
Reference [8] suggests a new clock model to use in system evaluations.

This contibution attempts to list the critical issues that must be resolved.

2 Issues

The following issues are identified:

- Required Accuracy: Maximum acceptable misailgnment.
  - Pico cells;micro cells; macro cells.
- Clock drift models
- Impact on normal system performance due to "resource stealing'
- Required reliability
- Link Margin and impact on reliability of measurement process
- Required Update Rate: derived from required accuracy, clock drift models, and reliability of measurement process (probability of success)
- Cost impact on network (base station cost)
- Signalling Load on Network
- Operational Costs-need for special maintenance actions
- RNC to RNC coordination
- Use of UE TDOA measurements to aid process
- Use of optimized algorithms in RNC

3 Recommendation

The participants are encouraged to improve this list, prioritize issues, and identify a work plan to systematically resolve these issues

4 References

[1] Synchronization of TDD Cells, TSGR3#6(99)905, Sophia Antipolis, France,August 23-27, 1999, InterDigital Comm. Corp.

[2] NBAP & RNSAP Procedure for TDD Synchronization (some additions/modifications to R3-99905)TSGR3#6(99) 882, Italtel / Siemens, August 23rd 1999,Sophia Antipolis, France

[3]Node B synchronisation for TDD, Siemens, TSGR1#10(00)0074, Beijing, China, January 18-21 2000

[4] Synchronisation of Node B's in TDD via Selected PRACH Time Slots, Siemens, TSG RAN WG1 (99)G42, New York, USA, October 12 - 15, 1999

[5] RP-000055 Proposed work item "NodeB Synchronisation for TDD" (Siemens)

[6] Node B Synchronization over the Air:
Preliminary Comparison of Alternatives , InterDigital Communications Corporation, R1(00)0468, Soeul, Korea 10-13 April, 2000:

[7] Node B Synchronization over the Air: A purely analytical verification of Tdoc R1-00-0074 simulation results.R1(00)0473 Korea 10-13 April, 2000, InterDigital Communications Corporation

[8] Proposed Clock Model for Node B Synchronization over the Air: R1(00)xyzz, InterDigital Communciations Corporation, Soeul, Korea 10-13 April, 2000