



**3GPP RAN WG1 #7  
Hannover (Germany)  
Aug 30th-Sept 3rd 1999**

**R1-99d34**

Ad-hoc 9 report (FDD Power control)

Source : Chairman

# Summary

- **The proposed agenda was agreed (see attached annex a)**
- **The objectives of the meeting were presented by chairman and agreed (see annex)**
- **The report of the activities on the reflector between WG1#6 and WG1#7 was reviewed (R1-99a78) and approved. As a result of the report presentation a number of correction/actions point for verification of 25.214**
  - > Finalisation of the power control steps to be used in normal mode at the UE (3 dB will not be used in normal mode)
  - > Correction of the section related to power offset
  - > Action point to check that 25.214 should not make any assumption on how measurements are derived but only rely on measurements as defined in other RAN specifications
  - > Need to check the setting of the gain factors in the UE
- **All liaisons statements received from other working groups were reviewed. Answers to some of them could be agreed (Answer to R1-99 from WG2 on outer loop power control). Other liaison statements did not require answer or could not be answered due to lack of analysis (R1-99c42, on slow power control).**

# Summary

- **Downlink power control limits**
  - > Text proposal contained in R1-99B80 approved with modifications
- **Uplink Power control in normal mode**
  - > All contributions were addressed
  - > Finalisation of the power control for emulated steps was achieved
  - > Text proposal R1-99b42 was reviewed and structure + text related to the power control in normal mode approved
- **Downlink power control in soft handover**
  - > All contributions addressed
  - > Working assumption taken on the downlink power control in soft handover on the basis of R1-99B15). Text proposal contained in R1-99b16 to be updated by the proponents

# Summary

- **Other areas**

- > Contributions could not be reviewed due to lack of time
- > Chairman invited parties to look into the documents. There is fair chance that a common proposal could be prepared for the uplink power control in SHO. Contributions on open loop power control and PC in compressed mode could be dealt with in small time
- > Contributions not addressed may be handled in the plenary if time allows

# Detailed Conclusions

- **Power control step**

- > ad-hoc 09 agreed that in normal mode the power control step 3 dB should not be used.

- **Power offsets**

- > Modifications to 25.214 was agreed to reflect that no signalling is considered as a WA. It is FFS whether it is allowed to vary the power offsets in time in the course of the communication.

- **Measurements**

- > it is to be checked whether the text in 25.214 makes some assumptions on how measurements are derived. It is the view of ad-hoc 09 that such measurement derivation method should not be in 25.214. The requirements on the measurements should be set and then it is upto the manufacturer to decide whether the DPDCH can be used in addition to the DPCCH.

- **Beta value settings**

- > The current specification does not indicate how to set the initial value of beta and how to modify it. This might not be a WG1 only issue and we should ensure that a spec covers this.

# Conclusions

- **Liaison statements received from other groups**

- > R1-99a93, Liaison statement to WG1 on fast closed loop power control in FDD mode, RAN WG4
  - *Change of terminology agreed: fast closed loop power into inner loop power*
  - *LS to WG4 will be sent to WG4 to ask about the minimum performance requirements for algo2 and power control in soft handover*
- > R1-99c43, Reply to LS from WG1 on power control issues, RAN WG2
  - *The liaison statement was noted. No action was identified*
- > R1-99c39, LS on status of the work on power control issues, RAN WG2
  - *It was agreed to draft a liaison statement answering this LS with following content*
    - Yes there should be some specification of the DL outer loop power control algorithm in the UE. However testability is not clear at this stage
    - Concerning the measurements to rely on, we still face the testability problem
      - in the case of multiple transport channels in the CCTrCH several FER could be used
      - For low BER, FER and BER might not be applicable due to averaging time
    - What about the uplink outer loop power control ?
- > R1-99c42, Liaison statement on Slow transmit power control, RAN WG2
  - *The LS was noted. No answer could be agreed before the agenda point on Slow*

# Detailed Conclusions

- **Power control in normal mode**

- > Contributions addressed

- *R1-99b80 Power limits for downlink power control, Ericsson*
    - *R1-99b41, Algorithm 2 Power Control in Normal Mode, Philips*
    - *R1-99b42, Text Proposal on Power Control, Philips (non SHO case)*
    - *R1-99b43, Optimal Performance of Tri-State TPC, Philips*
    - *R1-99c62, Power Control Scheme with Adaptive Step, SK Telecom*
    - *R1-99c48, Clarification on Power Over-Shoot Protection for Normal Mode, Nortel Networks*

- > Power control limits

- *proposal in R1-99b80 approved with some modification*
      - removal of the “dBm” indication in the limit naming
      - addition of a note <Note : The range and definition of the Maximum\_DL\_Power and Minimum\_DL\_Power are to be clarified by WG3

# Detailed conclusions

- **Power control in normal mode**

- > Power control limits (Ctn'd)

- *a Liaison statement will be drafted to WG3 copy WG4 and WG2 to address a list of questions*

- Are these limits expressed as a fraction of the maximum power of the cell or in an absolute manner ?
      - It is to be clarified whether this power is related only to transmitted symbols or is an average over all symbols
      - Does this limit apply when power offsets are used ?
      - Are these limits modified when variable rate is used ?
      - We should align as much as possible the power definition with terminology used by WG4



# Detailed conclusions

- **Power control in normal mode**

- > 0 dB power control

- *Panasonic withdraws the 0 dB power control for the downlink due to the EMC problem*
    - *Panasonic withdraws the 0 dB power control for the uplink power control if the number of pilot bits would be decreased to 0, however they would like to maintain their proposal if there were some pilot bits.*
    - *R1-99b43, Optimal Performance of Tri-State TPC, Philips presented*
      - Conclusion to this topic was that the agreement on power control in normal mode remains unchanged (the normal mode PC relies on two algorithms, algo 1 and algo 2. The 0 dB power control cannot be agreed for inclusion at this stage.

# Conclusions

- **Power control in Normal mode**

- > Emulated step (R1-99b41 and R1-99b42 for the SHO part)
  - *Simulation results for the emulated step contained in R1-99b41 were presented and clarifications/comments taken*
  - *Structure of the modification of the power control section agreed from R1-99b42*
  - *Text for the non SHO case approved and will be forwarded to WG1 for endorsement.*

- **R1-99c62, Power Control Scheme with Adaptive Step, SK Telecom**

- > This proposal relies on the use of power control step smaller than 1 dB
- > It was agreed not to include such technique in Release 99 since it is not consistent with the agreed set of power control steps for Release 99
- > Such technique is for consideration for future Releases

# Detailed conclusions

- **Power control in normal mode**

- > R1-99c48, Clarification on Power Over-Shoot Protection for Normal Mode, Nortel Networks
  - *The contribution was reviewed in details.*
  - *Further information was requested from the proponents on the impact on the reduction of the standard deviation of the power control error on the capacity*
  - *The proposal could not be accepted at this stage*

# Detailed conclusions

- **Downlink Power control in soft handover**
  - > Contributions for that agenda item
    - *R1-99b15, DownLink Power Control Rate Reduction during Soft Handover, Nortel Networks*
    - *R1-99b16, Text proposal for Specifications 25.214 and 25.211 on downlink power control, Nortel Networks*
  - Conclusion
    - *It was agreed as a working assumption to introduce the possibility to reduce the power control rate in soft handover. UTRAN will decide on a per UE basis whether the rate is the 1500 Hz or 500 Hz and set the parameter DPC\_MODE accordingly.*
    - *The proponent will produce an updated version of the text proposal contained in R1-99b16 to reflect comments*

# Detailed conclusions

- **Agenda items not addressed**

- Power control in soft handover

- *R1-99b42, Text Proposal on Power Control, Philips (SHO case)*
- *R1-99c27, On the Reliability of the Emulated Small Step Size During Soft Handover, Nortel Networks*
- *R1-99c47 Emulated Small Step Size during Soft Handover, Nortel Networks*

- On open loop power control

- *R1-99c14 RACH open loop power control, Ericsson*

- Slow power control

- *R1-99c00, Text modification for slow transmit power control in 25.211, 25.212 and 25.214, NEC*
- *R1-99c01, Benefits of slow transmit power control, NEC*
- *R1-99c16, A New Power Control Ratio Measurement for Slow Transmit Power Control*

# Annex: Objectives of the meeting

- **Finalisation of the fast PC in normal mode (no soft handover)**
  - > Conclusion on the algo 2 for the emulated steps
    - *confirm the working assumption and agree on the concatenation period*
  - > Conclusion on the inclusion of zero power control step
  - > Conclusion on power control overshooting scheme
- **Finalise the fast power control scheme in compressed mode**
  - > when emulated step are not used
    - *setting the recovery period for the case where emulated step are not used*
  - > address the case where emulated steps are used in normal mode
- **Conclude on downlink PC in soft handover**
- **Finalise uplink power control in soft handover**
  - > update the specification to cover the emulated step case.

# Annex A : Objectives of the meeting

- **Objectives of this meeting**
  - > Progress on open loop power control
  - > Progress on outer loop power control in connection with WG2 work
  - > Update the progress status and list of items requiring further work