Joint 3GPP RAN WG1 and SA WG4 meeting
R1-99i78 November 19th, Paris, France

Tdoc

Source: Nokia

AMR characterisation test cases with UTRA

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UTRA FDD power control

- Two important cases exists:
  - Power control works well, for example with Pedestrian A with 3 km/h etc. low termial velocity cases
  - Power control does not have that much impact, like with Vehicular A, 120 km/h.
- The use of antenna diversity will have an impact, should be used in the uplink simulations
- In the downlink subject for consideration, whether TX diversity should be used
- Summary: Test cases with and without inner loop power control (or rather low and high velocity environments)

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UTRA FDD TFCI vs. BRD

- Both have impact on the error patterns
- However in both cases, an error will mean that the whole frame is in error, thus the error pattern will be very similar
- Use of BRD in characterisation test cases can be reference result to a specific implementation of a BRD algorithm.
  - The solution given in Annex A in 25.212 is only an example

- Summary: TFCI should be used to reduce test cases and avoid error pattern dependance on the implementation
- Note: Modeling of TFCI errors will have also a small impact on error pattern.

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UTRA FDD AMR mapping

- For the AMR from service mapping point of view, the test the effect of using the AMR on a spreading factor 128 vs. spreading factor 256.
  - This would mean propably 1/2-rate coding with spreading factor 256 and puncturing and also possible lower rate AMR mode.
- This could be considered as interesting test case for AMR quality trade off when seeking for the maximum number of simulatenous users.
- In connection with this, equal/unequal error protection could be considered, to have one case with error pattern from equal error protection case. (SF 256 & 7.95 kbits/s AMR rate)
- SUMMARY: To test the trade of impact when dealing with code/slot limitations

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UTRA TDD specific issues

- The low/medium velocity case if of interest, to see the speech quality impact in case where power control works and where the update rate (100 Hz for example) is too slow. (3 km/h vs. 50 km/h)
  - Expected to be clear impact on the error pattern
- The use of BRD has not been much discussed with TDD,
  - TDD also the TFCI should be used.

- The service mapping question in TDD the trade of between spreading factors 8 vs 16 (30 vs 60 AMR users approximatey) for AMR, where impact of this quality trade of could be interesting. (Mode change of AMR needed propably as well and different coding rates)
- (Note TDD downlink instead of SF 8, two times SF 16 used)

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Test Case Summary

- FDD:
  - 3 km/h vs. 120 km/h error pattern (Pedetrian A vs Vehicular A)
  - With TFCI
  - Mapping to spreading factors 128 and 256 (downlink)
  - EEP & UEP (for SF 256)

- TDD:
  - 3 km/h vs. 50 km/ error pattern (Pedestrian A etc.)
  - Mapping to spreading factors 8 and 16 (uplink) or 1 times 16 vs 2 times SF 16 (downlink)

  - Note: This list is intended for basis of the discussion on the guidance to S4. Actual test cases will depend also if there is a party that agrees to produce expected error pattern. Error patterns should be generated by individual companies involved.

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Additional Items for consideration

- Accomodation of the signalling channel together with AMR
  - Signaling for higher layer control which is not needed continuosly

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