

Source: TSG-RAN-WG1
To: TSG-RAN-WG3
Title: Reply to WG3 regarding the operation of SSdT

Working group 1 would like to thank working group 3 for their help in the standardisation of SSdT. Working group 1 see SSdT is an important part of the physical layer specifications, bringing significant improvements in the downlink system capacity.

WG3 has asked, WG1 to answer the following three questions.

1) Is it possible to operate SSdT when only one cell site is connected to UE, i.e. to say keep ssdt on all the time irrespective of the number of active cells. WG3 believes that this question can be clarified by identifying the following points

- a) The impact on performance due to the site selection error in case of the only one radio Radio Link in the active set and ssdt in on.*
- b) The degradation of UL performance in the same case due to continuously transmitting FBI field within UL DPCCH*

2) In WG3's specification, DL transmission power of Node-B's in the same active set is balanced by the reference power informed by Serving RNC to each Node-B. Should this power reference be applied to a hidden power of P1, which has been defined in SSdT parts of TS25.214? If so, could WG1 adapt the definition of the Tx code power measurement to include SSdT case?

3) Currently WG3 has a working assumption to set the UL DPCCH FBI structure (default, 2bit, 1bit). What is required at Node-B, for Node-B to interpret these FBI fields (S and D fields)? Should the serving RNC explicitly inform Node-B, in addition to the DPCCH structure, also about how many bits of S and D fields of FBI should be assigned respectively. Or is it enough for the serving RNC to indicate only activation status of SSdT and/or TxAA to Node-B?

Answers to the above questions

- 1) It is possible for SSdT to operate with only one radio link in the active set (that is SSdT can continue to function in non-soft handover). However WG1 cannot see any benefits in operating SSdT with only one radio link. It is possible this will degrade the radio link performance for an individual UE. Although preliminary simulation results (include in TSG-R1 (99) g24) indicate that any degradation is minimal.
- 2) Yes, downlink power balancing is performed during SSdT (in soft handover). This is no different from the normal soft handover case. (balancing is perform on the hidden power of P1)
- 3) The RNC should explicitly state the number of FBI bits required for both SSdT and closed loop transmit diversity (TxAA). Different modes of SSdT require 1 or 2 bits from the FBI field. At present closed loop transmit diversity (TxAA) only requires 1 FBI bit for all modes, but this may change in the future.

Conclusion

WG1 sees no benefit in using a sub-optimal uplink DPCCH structure for SSdT, with regards to the radio performance. In the physical layer specifications it has been assumed the structure of the radio links can be modified during the lifetime of the connection.

WG1 would prefer SSdT to only operate during soft handover, however it may operate in non-soft handover cases, with some degree of performance loss.