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Source : TSG RAN WG1
Title : Answer on LS on the decoding of the TFCI in UL radio frames
To : 3GPP RAN WG3
Cc: : 3GPP RAN WG2

RAN WG1 has discussed the LS on the decoding of TFCI in UL radio frames [1], and would like to provide our comments.

The question from RAN WG3 was that is the probability, that Node B cannot detect somehow that the TFCI has been misinterpreted, high enough to be worth of consideration in UTRAN user plane procedures.

The purpose of the question was not fully clear to WG1. Was the idea perhaps that upon detecting a bad frame, there could be some error concealment procedure done by the application, in order to correct some of the bit errors (e.g. in AMR vocoder). And further, if the error is caused by detecting wrong TFCI word, all bits in the transport block are erroneous, and no error concealment is in that case possible. Then it would be beneficial that the application would be aware of this occasion.

Or was the concern perhaps related to the selection combining in soft handover. That it would be beneficial to know if frame error indicated by CRC error from one of the links in soft handover is due to TFCI word detection error.

The status in RAN WG1 is anyhow following. Currently there is no method available in Layer 1 to distinguish whether frame error has occurred due to detecting wrong TFCI word or due to some other reason. With CRC check result, it can only be detected that some bit errors have been found in the transport block.

During the discussion in RAN WG1, it was mentioned that by looking at the TFCI words in the consecutive radio frames in the case of transport channel having TTI (transmission time interval) greater than 10 ms, some method for detecting TFCI word error could be developed. However, this would work only in very limited cases, since in the general case the TFCS, transport format combination set will contain several transport channels, having unequal TTIs. In which case TFCI word can change at the rate of the smallest TTI, and looking at consecutive frames cannot be used.

Thus, in the WG1 specifications there is no method currently defined for distinguishing that a TFCI word detection error has occurred. If there is a need, WG1 can study the issue further.

However it should be noted, that TFCI word error rate has been proven to be below the frame error rate of the user data, taken into account different possible QoS requirements. E.g. if user data requires 1 % BLER (or 10%), TFCI has <<1 % (correspondingly <<10%) word error rate.

References:

[1] TSGR1#8(99)f75 Liaison statement on the decoding of the TFCI in UL radio frames.