

Title: Proposal to introduce the SIR measurement
Source: TIM/Telecom Italia Lab, Telefonica, Mobilkom Austria, AT&T
Wireless Services, Blu
Agenda item:

During TSG-RAN WG2 meeting#18 (15 – 19 January 2001), proposal R2-010217 (CR 25.302 89r1) removed the (downlink) SIR measurement. This appeared to be based on the decision not to specify the use of SIR for setting the outer loop power control. The latter decision was made in an RRM ad hoc in Turin held in February 1999. However, there was never an agreement to delete the SIR measurement itself, only an agreement that there is no need to specify the inner loop behaviour as this was seen to be implementation dependent.

However, it is believed that the SIR measurement can be a valuable tool to an operator both planning their network and in the field. This is because it can give an indication on the quality of the link in the downlink, albeit with coarse accuracy.

Similar analogy can be drawn from GSM where the RXQUAL parameter is not very well defined and does not have good accuracy. Furthermore, it is believed that this parameters is not tested and is very much implementation dependent. Yet, it is used extensively for power control and handover algorithms along with other features. Furthermore, it is a useful indicator that there is interference to a link. It must be stressed that RXQUAL has no direct relationship to speech quality but nevertheless it remains a useful indicator.

Based on such analogy and the benefits gained from experience in operation, we feel that a similar issue is needed

SIR can be seen as a measure of loss of orthogonality between codes and could be approximated to adjacent and co-channel interference effects in FDMA systems. The loss of orthogonality can be attributed to many factors such as the choice of codes on the downlink, effects of using secondary scrambling codes and more interestingly, multipath and channel conditions.

It is understood that the parameter may not be easy to define and difficult to set requirements against. Nevertheless, past experience has shown that such a parameter may still be useful. In the event, what is being requested here is that a measurement report is sent.

Proposal:

We propose that the TSG RAN mandates the relevant WGs to start the technical evaluation, in order to introduce the downlink SIR measurement in the RAN specifications. The evaluation should:

- elaborate the purposes of the SIR measurement,

- set performance requirements to meet those purposes,
- identify possible techniques to meet those requirements, including techniques that might already be used for other purposes,
- identify reporting procedures and signalling, and
- alignment with the O&M procedures.