3GPP TSG RAN Meeting #25 **RP-040372**
Palm Springs, CA, USA, September 7– 9, 2004

Title: **Alternate transmitter performance metric (e.g. cubic metric)**
Release: Release 6
Source: Motorola, Nokia, Panasonic, Qualcomm

Introduction

In the framework of the “FDD enhanced uplink” work item, RAN1 has discussed an alternate transmitter performance metric. In the LS from RAN1 (R4-040485), RAN WG1 kindly asks RAN WG4 to consider the attached RAN WG1 contribution and comment on the relevance of using this new metric, when evaluating candidate uplink physical channel configurations for FDD enhanced uplink in terms PA requirements

Due to short timescales available in RAN4 to conduction simulations and agree a value for empirical factor Y, and then obtain RAN4 agreement, this proposal is presented to RAN plenary. If this proposal is accepted, that RAN WG4 kindly asks RAN WG1 to consider the following RAN4 refinement to RAN1 cubic metric equation when evaluating candidate uplink physical channel configurations for FDD enhanced uplink.

Proposal

Based on discussion on the RAN4 ad-hoc reflector to refine the RAN 1 Cubic metric equation the follow proposal was agreed.

RAN4 has come to the conclusion that the cubic metric is a more efficient predictor when evaluating uplink physical channel configurations for FDD enhanced uplink in terms of PA requirements. The amount of PA UE headroom can be approximated by

PA UE headroom = [20 * log10((v_norm^3)rms) - 20 * log10((v_norm_ref^3)rms)] / [y]

Where "v_norm" is the normalized voltage waveform of the input signal. RAN4 suggest the empirical factor of y = 1.41 is based on initial results and, if necessary, may be refined as more data (using more PA samples and signal configurations) are acquired.

1.41 is the value agreed from the ad-hoc discussion and includes implementation margin.