TSG-RAN Meeting #28
Quebec City, Canada, 1-3 June 2005

RP-~~050341~~050363
Agenda Item 8.14

Source: **Cingular Wireless**

Title: **New Study Item Proposal: Further Improved Minimum Performance Requirements for UMTS/HSDPA UE**

Document for: Approval
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Work Item Description

Title: Further Improved Minimum Performance Requirements for UMTS/HSDPA UE

1   3GPP Work Area

X	Radio Access
	Core Network
	Services

2   Linked work items
None

3   Justification

It is beneficial to introduce further improvements in REL7 for HSDPA performance requirements, for example, 10 code UEs (i.e., for categories 7 and 8), to further increase the attractiveness and performance of the higher code capability UE classes. Initial improvements were introduced for REL6 based on an LMMSE chip-level equalizer reference receiver and 2-branch RAKE receiver.

Two-branch advanced receivers (for example using LMMSE) would combine the complementary benefits of diversity in low Ior/Ioc and equalization in higher Ior/Ioc. Another promising technique is interference cancellation[1]. These techniques can provide benefits in flat channels, and with low Ior/Ioc. GERAN has adopted advanced receiver performance requirements based on interference cancellation, and there is active development of methods for CDMA systems as well. A combination of a two-branch LMMSE chip-level equalizer and/or interference cancellation could be a suitable reference receiver for defining these new performance requirements- but other techniques of suitable performance, complexity, and maturity should also be considered as available.

Further, the benefits of diversity, advanced receivers, and interference cancellation can be applied to HSDPA and non-HSDPA transport channels, increasing overall system capacity and quality of service.

4   Objective

The purpose of this study item is to investigate the feasibility of introducing further improvements to the minimum performance requirements of UMTS/HSDPA UE, according to a reference receiver consisting of a two-branch advanced receiver, interference cancellation, and/or other techniques suitable and available for study within the study-item schedule   If proven feasible, the resulting work item would be completed in the release 7 timeframe.

Work Task Breakdown
  - •   TSG RAN #30 (November 2005): Reference receiver concept, spatial and temporal interference models agreed

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[1] 3GPP RAN previously considered Common Pilot Channel interference cancellation. This study item is proposed to consider more general interference cancellation and other advanced techniques.

- TSG RAN #31 (March 2006): Detailed simulation assumptions and test case scenarios agreed
- TSG RAN #32 (June 2006): Review of simulation results, agreements on further simulations to conclude performance requirements.
- TSG RAN #33 (September 2006): Review of final results, transition to work item for minimum performance requirements.

TSG RAN #29 (September 2005): Simulation assumptions and test case scenarios agreed
- TSG RAN #30 (November 2005): Review of simulation results, agreements on further simulations to conclude performance requirements.
- TSG RAN #31 (March 2006): Review of final results, transition to work item for minimum performance requirements.

5   **Service Aspects**
None

6   **MMI-Aspects**
None

7   **Charging Aspects**
None

8   **Security Aspects**
None

9   **Impacts**

Affects:	USIM	ME	AN	CN	Others
Yes		X			
No	X		X	X	X
Don't know					

10   **Expected Output and Time scale**

New specifications						
Spec No.	Title	Prime rsp. WG	2ndary rsp. WG(s)	Presented for information at plenary#	Approved at plenary#	Comments
Affected existing specifications						
Spec No.	CR	Subject		Approved at plenary#		Comments
25.101		UE Radio transmission and reception (FDD)		RAN#31 (March 2006)		

11   **Work item rapporteurs**

Marc Grant (Cingular Wireless)

12   **Work item leadership**
RAN WG 4

13   Supporting Companies

Cingular Wireless, InterDigital Communications Corp, Qualcomm, Orange

14   Classification of the WI (if known)

	Feature (go to 14a)
	Building Block (go to 14b)
X	Work Task (go to 14c)

14a The WI is a Feature: List of building blocks under this feature
14b The WI is a Building Block: parent Feature is Improvements of Radio Interface.
14c The WI is a Work Task: parent Building Block is Improved Receiver Performance Requirements for HSDPA