Agenda item:	
Source:	Nokia
Title:	Further restrictions on the application of the Tx diversity modes in DL
Document for:	Discussion and approval

Summary:

According to the current specifications, different Tx diversity modes can be very flexibly applied on the downlink physical channels. It is possible, for example, that Tx diversity is used on dedicated channels but not on common channels. This flexibility is problematic from CPICH measurements point of view because the UE does not know how many antennas are used to transmit the common pilot.

An easy fix to the problem is to require that if Tx diversity is applied on any of the downlink channels it will also be applied on P-CCPCH. This change will balance the CPICH measurements and P-CCPCH decoding performance. Furthermore, the "STTD indicator" information element included in the BCH and in the neighbor cell information lists will also tell if CPICH is transmitted from 1 or 2 antennas.

The same information as provided by "STTD indicator" can also be retrieved from SCH which is modulated by symbol "a' taking up values +1 or –1. As detection of "a" requires phase reference from CPICH it is beneficial to know if Tx diversity is used on SCH. Therefore, it is proposed that it is mandatory to use Tx diversity also on SCH when ever it is used on any of the downlink channels.

3GPP TSG RAN WG1 Meeting #11
San Diego, USA, 29th, Feb.-3rd, Mar., 2000

Document R1-00-0296

CHANGE REQUEST

25.211 CR 039 Current Version:

For submission to: TSG RAN #7 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [ ] | *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: Nokia **Date:** 29th, Feb., 2000

Subject: Further restrictions on the application of the Tx diversity modes in DL

Work item:

Category:

F	Correction	[ ]	**Release:** Phase 2	[ ]
A	Corresponds to a correction in an earlier release	[ ]	Release 96	[ ]
B	Addition of feature	[ ]	Release 97	[ ]
C	Functional modification of feature	[X]	Release 98	[ ]
D	Editorial modification	[ ]	Release 99	[X]
			Release 00	[ ]

Reason for change: For CPICH measurement purposes it is necessary for UE to know if CPICH is sent from 1 or 2 antennas. That information will be easily available to UE if the proposed modifications are adopted.

Clauses affected: 5.3.1

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

5.3 Downlink physical channels

5.3.1 Downlink Transmit Diversity

Table 10 summarizes the possible application of open and closed loop Transmit diversity modes on different downlink physical channels. Simultaneous use of STTD and closed loop modes on DPCH and PDSCH is not allowed. In addition, if Tx diversity is applied on any of the downlink physical channels it shall also be applied on P-CCPCH and SCH.

Table 10: Application of Tx diversity modes on downlink physical channels
"X" – can be applied, "–" – not applied

Channel	Open loop mode		Closed loop Mode
	TSTD	STTD	
P-CCPCH	–	X	–
SCH	X	–	–
S-CCPCH	–	X	–
DPCH	–	X	X
PICH	–	X	–
PDSCH (associated with DPCH)	–	X	X
AICH	–	X	–