TSG-RAN Working Group 1 meeting #9
Dresden, Germany
November 30 – December 3, 1999

TSGR1#9(99)k17

Agenda item:

Source: Samsung Electronics

Title: CR 25.214-037: The new SSDT ID code

Document for: Decision

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1. Abstract

This CR requests some changes to the SSDT ID code of Section 5.1.4.1.1 in 25.214.

The modifications are editorial in the sense that no functionality is added, removed, or modified.

- Codewords of two SSDT ID Code tables for both 1 FBI bit and 2FBI bits are changed. The reason is that the code of the changed tables has better performance than that of the deleted ones.

2. Reference

[1] TSG-RAN Working Group 1 meeting #9 R1-99j40, "SSDT ID Code"

3GPP TSG-RAN WG1 Meeting #9
Dresden, Germany, 30 Nov – 3 Dec 1999

Document R1-99k17
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.214	CR	037r1	Current Version:	V 3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: RAN # 6 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

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: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: Samsung Electronics **Date:** 1 Dec 1999

Subject: SSDT ID code

Work item: TS 25.214

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**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			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The proposed SSDT ID code has better performance than the current one.

Clauses affected: 5.1.4.1.1

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:

<--------- double-click here for help and instructions on how to create a CR.

5.2.1.4 Site selection diversity transmit power control

5.2.1.4.1 General

Site selection diversity transmit power control (SSDT) is an optional macro diversity method in soft handover mode.

Operation is summarised as follows. The UE selects one of the cells from its active set to be ‘primary’, all other cells are classed as ‘non primary’. The main objective is to transmit on the downlink from the primary cell, thus reducing the interference caused by multiple transmissions in a soft handover mode. A second objective is to achieve fast site selection without network intervention, thus maintaining the advantage of the soft handover. In order to select a primary cell, each cell is assigned a temporary identification (ID) and UE periodically informs a primary cell ID to the connecting cells. The non-primary cells selected by UE switch off the transmission power. The primary cell ID is delivered by UE to the active cells via uplink FBI field. SSDT activation, SSDT termination and ID assignment are all carried out by higher layer signalling.

5.2.1.4.1.1 Definition of temporary cell identification

Each cell is given a temporary ID during SSDT and the ID is utilised as site selection signal. The ID is given a binary bit sequence. There are three different lengths of coded ID available denoted as "long", "medium" and "short". The network decides which length of coded ID is used. Settings of ID codes for 1-bit and 2-bit FBI are exhibited in table 3 and table 4, respectively.

Table 3: Settings of ID codes for 1 bit FBI

ID label	ID code "long"	"medium"	"short"
a	000000000000000	0000000(0)	00000
b	111111111111111	1111111(1)	11111
c	~~000000001111111~~ 010101010101010	~~0000111(1)~~ 0101010(1)	~~00011~~ 01010
d	~~111111110000000~~ 101010101010101	~~1111000(0)~~ 1010101(0)	~~11100~~ 10101
e	~~000011111111000~~ 001100110011001	~~0011110(0)~~ 0011001(1)	00110
f	~~111100000000111~~ 110011001100110	~~1100001(1)~~ 1100110(0)	11001
g	~~001111000011110~~ 011001100110011	~~0110011(0)~~ 0110011(0)	~~01010~~ 01100
h	~~110000111100001~~ 100110011001100	~~1001100(1)~~ 1001100(1)	~~10101~~ 10011

Table 4: Settings of ID codes for 2 bit FBI

ID label	ID code (Column and Row denote slot position and FBI-bit position.) "long"	"medium"	"short"
a	0000000(0) 0000000(0)	000(0) 000(0)	000 000
b	1111111(1) 1111111(1)	111(1) 111(1)	111 111
c	0000000(0) 1111111(1)	000(0) 111(1)	000 111
d	1111111(1) 0000000(0)	111(1) 000(0)	111 000
e	~~0000111(1)~~ ~~1111000(0)~~ 0101010(1) 0101010(1)	~~001(1)~~ ~~110(0)~~ 010(1) 010(1)	~~001~~ ~~100~~ 010 010
f	~~1111000(0)~~ ~~0000111(1)~~ 1010101(0) 1010101(0)	~~110(0)~~ ~~001(1)~~ 101(0) 101(0)	~~110~~ ~~011~~ 101 101
g	~~0011110(0)~~ ~~0011110(0)~~ 0101010(1) 1010101(0)	~~011(0)~~ ~~011(0)~~ 010(1) 101(0)	~~010~~ ~~010~~ 010 101
h	~~1100001(1)~~ ~~1100001(1)~~ 1010101(0) 0101010(1)	~~100(1)~~ ~~100(1)~~ 101(0) 010(1)	~~101~~ ~~101~~ 101 010

ID must be terminated within a frame. If FBI space for sending a given ID cannot be obtained within a frame, hence if the entire ID is not transmitted within a frame but must be split over two frames, the last bit(s) of the ID is(are) punctured. The relating bit(s) to be punctured are shown with brackets in table 3 and table 4.

5.2.1.4.2 TPC procedure in UE

The TPC procedure of the UE in SSDT is identical to that described in subclause 5.2.3.2.

5.2.1.4.3 Selection of primary cell

The UE selects a primary cell periodically by measuring the RSCP of CPICHs transmitted by the active cells. The cell with the highest CPICH RSCP is detected as a primary cell.

5.2.1.4.4 Delivery of primary cell ID

The UE periodically sends the ID code of the primary cell via portion of the uplink FBI field assigned for SSDT use (FBI S field). A cell recognises its state as non-primary if the following two conditions are fulfilled simultaneously:

- the received primary ID code does not match with the own ID code,
- and the received uplink signal quality satisfies a quality threshold, Qth, a parameter defined by the network.

Otherwise the cell recognises its state as primary.

At the UE, the primary ID code to be sent to the cells is segmented into a number of portions. These portions are distributed in the uplink FBI S-field. The cell in SSDT collects the distributed portions of the primary ID code and then detects the transmitted ID. Period of primary cell update depends on the settings of code length and the number of FBI bits assigned for SSDT use as shown in table 5

Table 5: Period of primary cell update

code length	The number of FBI bits per slot assigned for SSDT	
	1	2
"long"	1 update per frame	2 updates per frame
"medium"	2 updates per frame	4 updates per frame
"short"	3 updates per frame	5 updates per frame

5.2.1.4.5 TPC procedure in the network

In SSDT, a non-primary cell can switch off its DPDCH output (i.e. no transmissions).

The cell manages two downlink transmission power levels, P1, and P2. Power level P1 is used for downlink DPCCH transmission power level and this level is updated as the same way specified in 5.2.3.2 regardless of the selected state (primary or non-primary). The actual transmission power of TFCI, TPC and pilot fields of DPCCH is set by adding P1 and the offsets PO1, PO2 and PO3, respectively, as specified in 5.2.3.1. P2 is used for downlink DPDCH transmission power level and this level is set to P1 if the cell is selected as primary, otherwise P2 is switched off. The cell updates P1 first and P2 next, and then the two power settings P1 and P2 are maintained within the power control dynamic range. Table 6 summarizes the updating method of P1 and P2.

Table 6: Updating of P1 and P2

State of cell	P1 (DPCCH)	P2 (DPDCH)
non primary	Updated by the same way as specified in 5.2.3.2	Switched off
primary		= P1