

Boston, USA, Jan. 15 - 18, 2001

**Agenda Item:** AH21  
**Source:** Siemens AG  
**To:** TSG RAN WG1  
**Title:** Coding of SS commands in 1.28Mcps TDD  
**Document for:** Decision

---

## 1. Summary

The SS command, one kind of L1 control signals, is an identifier sent in downlink, to instruct a timing adjustment. In 3.84 Mcps TDD, the SS information is not transmitted. Because of uplink synchronisation in 1.28 Mcps TDD, SS information is transmitted, as one of L1 signals, once per 5ms sub-frame. The length of the SS command is 1 symbol.

## 2. Introduction

The SS command is an identifier sent in downlink, to instruct a timing adjustment each M frames. The length of the SS command is 1 symbol, which gives maximum distance between the 'Up' and 'Down' command.

The SS bits "11" mean "Up" command which increasing synchronisation shift  $k/8 T_c$ , "00" mean "Down" command which decreasing the timing advance by  $k/8 T_c$  while "01" means "do-nothing" – no change - when using QPSK.

If the modulation of 8PSK is applied, e.g. in case of 2Mbps service, the number of the SS bits is 3. The specific coding of SS for the case of 8PSK service is similar as that of the modulation of QPSK. The "Up" command, SS bits "110" means increasing timing advance  $k/8 T_c$ . The "Down" command "000" means decreasing the timing advance by  $k/8 T_c$  while "011" means "do nothing" – no change. It gives maximum distance between the "Up" and "Down" commands from the modulation constellation point view.

M (1-8) and k (1-8) can be adjusted during call setup or readjusted during the call.

---

### 3. Proposal

We propose to add following paragraphs in the working CR for TS25.221 as the description of the coding of SS commands in the 1.28Mcps TDD.

The respective sections are proposed to be deleted from the working CR for TS25.222.

----- Beginning of text proposal for working CR for 25.221 -----

### 6.2.2.3 Transmission of SS

#### Coding of SS for QPSK:

The SS command is an identifier sent in downlink transmission only, to instruct the UE whether the synchronisation shift has to be increased or decreased by  $k/8 T_c$  or has to remain unchanged. The length of the SS command is one symbol. The coding of the SS command is shown in table XX.

The default value of  $k$  (1-8) is broadcast in the BCH. The value of  $k$  can also be adjusted during call setup or readjusted during the call.

Note: The smallest step for the SS signalled by the UTRAN is  $1/8 T_c$ . For the UE capabilities regarding the SS adjustment of the UE it is suggested to set the tolerance for the executed command to be  $[1/9;1/7] T_c$  (to be defined in TSG RAN WG4).

**Table XX: Coding of the SS for QPSK**

<b>SS</b>	<b>SS Bits</b>	<b>Meaning</b>
'Down'	00	Decrease synchronisation shift by $k/8 T_c$
'Up'	11	Increase synchronisation shift by $k/8 T_c$
'Do nothing'	01	No change

#### 4.4.5.2 Coding of SS for 8PSK:

The SS command is an identifier sent in downlink transmission only, to instruct the UE whether the synchronisation shift has to be increased or decreased by  $k/8 T_c$  or has to stay unchanged. The length of the SS command is one symbol. The coding of the SS command is shown in table XXX.

The default value of  $k$  (1-8) is broadcast in the BCH. The value of  $k$  can also be adjusted during call setup or readjusted during the call.

Note: The smallest step for the SS signalled by the UTRAN is  $1/8 T_c$ . For the UE capabilities regarding the SS adjustment of the UE it is suggested to set the tolerance for the executed command to be  $[1/9;1/7] T_c$  (to be defined in TSG RAN WG4).

**Table XXX: Coding of the SS for 8PSK**

<b>SS</b>	<b>SS Bits</b>	<b>Meaning</b>
'Down'	000	Decrease synchronisation shift by $k/8 T_c$
'Up'	110	Increase synchronisation shift by $k/8 T_c$
'Do nothing'	011	No change

----- End of text proposal for working CR for 25.221 -----

----- Beginning of text proposal for working CR for 25.222 -----

~~4.4.5 Coding of Synchronisation Shift Control(SS)~~

~~4.4.5.1 Coding of SS for QPSK~~

~~4.4.5.3 Coding of SS for 8PSK~~

----- End of text proposal for working CR for 25.221 -----