TSG-RAN Working Group 1(Radio) meeting #8 ***TSGR1#8(99)f34***
New York, USA, 12 –15 October 1999

Agenda Item:

Source: **Nokia**

Title: **Text proposal for 4.3.2.1 of TS25.213v2.3.0**

Document for: **Discussion in AH10**

Introduction

During email discussion Ericsson suggested to revise section 4.3.2.1 of TS25.213v2.3.0 to prevent some confusion to take place. Nokia agrees with Ericsson on that the current text is misleading and proposes the following changes.

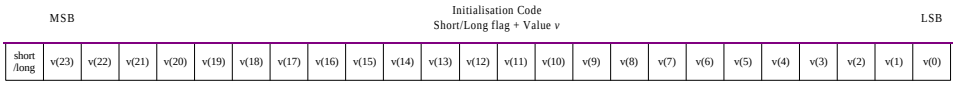
4.3.2 Scrambling codes

4.3.2.1 General

The uplink scrambling codes are complex valued and either long or short, indicated by higher layers. The codes are numbered using 24-bit values resulting in 2^{24} uplink scrambling codes of each type.

~~There are 2^{24} uplink scrambling codes. Either short or long scrambling codes should be used on the uplink. Both short and long scrambling codes are represented with complex-value.~~

~~The uplink scrambling generator (either short or long) shall be initialised by a 25 bit value. One bit shall indicate selection of short or long codes (short = 1, long = 0). Twenty four bits shall be loaded into the scrambling generators as shown in sections 4.3.2.2 and 4.3.2.3.~~



~~Figure 3 Initialisation Code for Uplink Scrambling generator~~

The *n*:th long uplink scrambling code, corresponding to one radio frame of 10 ms, is defined as:

$$S_{ul,n}(i) = \begin{cases} c_{1,n}(i)(1 + jc_{2,n}(i)) & \text{if } i \text{ is even} \\ c_{1,n}(i)(1 - jc_{2,n}(i-1)) & \text{if } i \text{ is odd} \end{cases}$$

where i = 0, 1, …, 38399, and i = 0 corresponds to the chip transmitted first in time.

The *n*:th short uplink scrambling code, corresponding to one radio frame of 10 ms, is defined as:

$$S_{ul,n}(i) = \begin{cases} c_{1,n}(i \bmod 256)(1 + jc_{2,n}(i \bmod 256)) & \text{if } i \text{ is even} \\ c_{1,n}(i \bmod 256)(1 - jc_{2,n}((i-1) \bmod 256)) & \text{if } i \text{ is odd} \end{cases}$$

where i = 0, 1, …, 38399, and i = 0 corresponds to the chip transmitted first in time.

~~Both short and long scrambling codes are formed as follows:~~

~~$C_{scramb} = c_1(w_0 + jc_2'w_1)$~~

~~where w_0 and w_1 are chip rate sequences defined as repetitions of:~~

~~$w_0 = \{1 \quad 1\}$~~

~~$w_1 = \{1 \quad -1\}$~~

~~Also, c_1 is a real chip rate code, and c_2' is a decimated version of the real chip rate code c_2.~~

~~With a decimation factor 2, c_2' is given as:~~

~~$c_2'(2k) = c_2'(2k+1) = c_2(2k), \quad k=0,1,2….$~~

The constituent codes $c_{1,n}$ and $c_{2,n}$ are formed differently for the short and long scrambling codes as described in Sections 4.3.2.2 and 4.3.2.3.