Agenda Item: **6.3**

Source: **Ericsson**

Title: *Liaison to WG1:* **Using 8 lsb of SFN in each BCH radio frame**

Document for: **Approval**

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1   Introduction

The SFN counter on BCH in each cell in each radio frame is 12 bits long (B =12 bits). However, it is not obviously necessary for each cell to broadcast these B bits in every BCH radio frame.

The number of bits needed on BCH in every radio frame is related to soft handover (maximum possible ambiguity in node synchronisation between RNC and Node Bs and data frame transport delay differences). It seems reasonable to assume that this value is not greater than the number of bits used by CFN, which is 8 bits.

2   Discussion

In principle, we can partition B into B = M (msb) + L (lsb) bits, where L is the number of bits needed to be transmitted within every radio frame. The remaining M bits are related to paging etc, not needed for Soft Handover, and could be sent over a longer period.

Currently, it is a WG1 assumption that B bits (M+L) are transmitted on BCH every radio frame. Two alternatives are presented, other alternatives may also be possible.

Alternative 1: If we assume L=8 (corresponding to the length of CFN), then M=4.

Alternative 2: Use L=4. The RNC can handle the remaining 4 bits needed for calculations of offsets during soft handover. This is possible if the node synchronism (SRNC - NodeB) is known to a degree better than +/- 8 frames.

WG3 question: Does UE need to report the full CFN length offset between cells at handover (alt. 1) or could UTRAN partly handle the offset calculation (alt. 2)?

3   Proposal

If approved by WG3, it is proposed that a liaison is sent to WG1:

Propose a scheme according to alternative 1 (assuming that WG3 prefers alternative 1) where the L bits are transmitted (and incremented) on BCH in every radio frame, while the M bits are transmitted on BCH over a number of radio frames.