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Document for: **Discussion and decision**

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1. Introduction

Operator's Harmonization Group (OHG) agreed on a harmonized Global 3G (G3G) CDMA standard framework and TSG RAN #4 approved the OHG basic technical requirements. Based on the initial study of the impacts of the harmonization [1] it is assumed here that the number of slots per frame is changed from 16 to 15. This means that there would be odd number slots per frame instead of even number. This change makes the demodulation process of the SCH symbol more complicated, since TSTD on SCH scheme is optionally used in BS. In order to avoid unnecessary performance degradation this document proposes a modification to the current TSTD on SCH scheme described in [2].

2. Discussion

Odd number of slots per frame means that when using the alternating antenna hopping of the SCH symbols (current TSTD on SCH) as described in the specification [2], the SCH symbol is not any longer transmitted from the same diversity antenna in the beginning of every frame. So although the frame synchronization is obtained, it is not possible to unambiguously define from which antenna the SCH symbol was transmitted. This gives unexpected and undesired degradation in the demodulation of the SCH symbols. The demodulation of the SCH symbol is needed when the STTD indication for PCCPCH is acquired using the modulation of SCH symbol. The current hopping pattern after the harmonization (15 slots per frame) is illustrated in Figure 1.

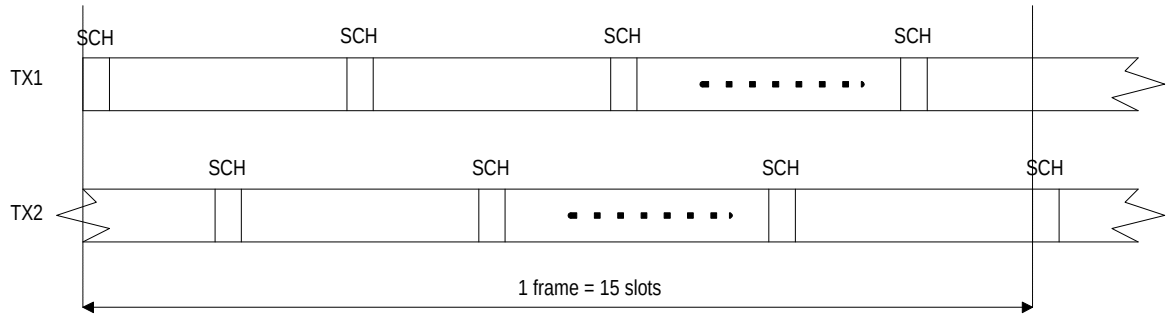

Figure 1. Current hopping pattern for TSTD on SCH scheme after harmonization.

Uncertainty in the SCH demodulation can be avoided with an antenna hopping pattern, which starts the transmission of the SCH symbol from the same predefined antenna (e.g. from the TX antenna 1) in the beginning of every frame. The hopping pattern can still be alternating within a frame. The antenna, which is used to transmit the common CDM pilot, is a good starting antenna for the hopping pattern. The common CDM pilot is always sent

independent on whether TX diversity is in use or not. Using the new hopping pattern at least the transmission antenna for every second SCH symbol in each frame can be unambiguously determined after the frame synchronization. It also becomes simpler to detect whether the TSTD on SCH scheme is in use or not. The new hopping pattern is shown in Figure 2.

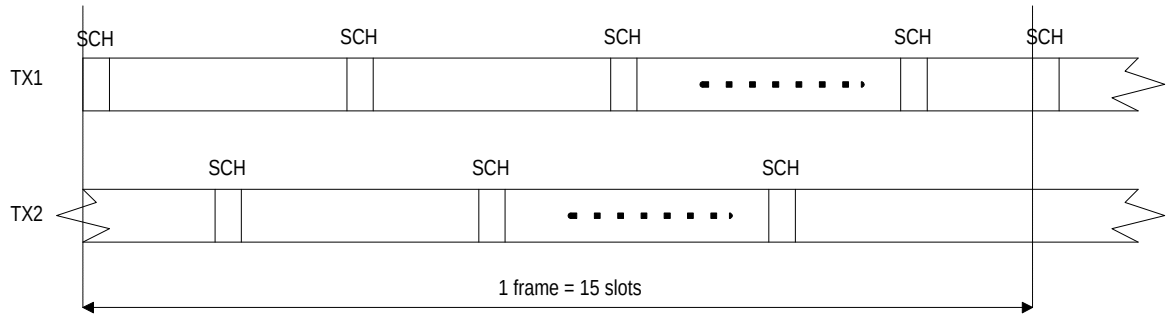

Figure 2. New hopping pattern for TSTD on SCH scheme.

3. Proposal

This document proposes a new antenna hopping pattern for TSTD on SCH scheme. The proposed antenna hopping is shown in Figure 2.

4. References

[1] TSGR1#5(99)677: "Impacts of the OHG harmonization recommendation on UTRA/FDD and UTRA/TDD"

[2] TS 25.211 v2.1.0: "Physical channels and mapping of transport channels onto physical channels (FDD)", 3rd Generation Partnership Project (3GPP)