TSG-RAN Working Group 1 AH21 **_TSGR1(00)0831_**

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Agenda Item:	**AH21**
Source:	CWTS
To:	TSG RAN WG1
Title:	Selection of the length of channel impulse response for low chip rate TDD option
Document for:	Discussion and Approval

Introduction

This document describes the selection of the length W of the channel impulse response for low chip rate TDD option. This method enables K midambles to carry out channel estimation over W chips, providing KW=P, P being the length of the period m_p (i.e. The basic midamble), which is 128 in low chip rate TDD option.

Conclusion

It's proposed to discuss and include the following text proposal into the clause 7.2.2.3 training sequence of TR25.928.

References:

[1] B.Steiner, P.Jung: "Uplink Channel Estimation in Synchronous CDMA Mobile Radio Systems with Joint Detection", The fourth International Symposium on Personal, Indoor and Mobile Radio Communications(PIMRC'93), Japan, Sept. 1993.

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[Description:]

The training sequences, i.e. Midambles, of different users active in the same slot are time shifted versions of one single periodic basic code. Different cells use different periodic basic codes, i.e. different midamble sets. In this way a joint channel estimation for the channel impulse responses of all active users within one time slot can be done by one single cyclic correlation. The different user specific channel impulse response estimates are obtained sequentially in time at the output of the correlator. Up to 16 midambles in one time slot are possible within the low chip rate TDD option.

Steiner's method [1] is adopted by both low and high chip rate TDD to generate the different midambles in the same time slot. In both low and high chip rate systems, W, the length of the impulse response of the mobile radio channels, is an important parameter. There is only one burst type for normal time slot in the low chip rate TDD option, and the length of midambles is different from the high chip rate option, so the selection of W needs to be defined seperately.

[Rational:]

Table 2: Basic Midamble Codes

The midamble has a length of Lm=144 which is corresponding to

K=2, 4, 6, 8, 10, 12, 14, 16 W= $\left\lfloor \frac{P}{K} \right\rfloor$ P=128.

Note: that $\lfloor x \rfloor$ denotes the largest integer number less or equal to x.

Depending on the possible delay spread cells are configured to use midambles which are generated from the Basic Midamble Codes (see table 2)

The cell configuration is broadcast on BCH.

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