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Agenda Item: AH21
Source: CWTS
To: TSG RAN WG1
Title: Coding of transport format combination indicator (TFCI)
Document for: Discussion and Approval

Introduction

This document describes coding of transport format combination indicator (TFCI) for low chip rate TDD option.

Conclusion

It's proposed to discuss and include the following text proposal into the clause 8.2.1 Coding of transport format combination indicator (TFCI) of TR25.928.

----- changes to TR25.928 begin -----

8.2.1 Coding of transport format combination indicator (TFCI)

[Description:]

Encoding of the TFCI bits depends on the number of them and the mode of modulation applied. When the modulation of QPSK is deployed, encoding of the TFCI bits is the same as it in the high chip rate option. When the modulation of 8PSK is applied, the encoding of the TFCI bits is a little different from it in high chip rate option.

[Rational:]

Encoding of the TFCI bits depends on the number of them and the mode of modulation applied. When the modulation of QPSK is deployed, encoding of the TFCI bits is the same as it in the high chip rate option. That is to say, if there are 6-10 bits of TFCI, the TFCI bits are encoded using a (32,10) sub-code of the second order Reed-Muller code. If the number of TFCI bits is in the range 3 to 5, the TFCI bits are encoded using a (16, 5) bi-orthogonal (or first order Reed-Muller) code. If the number of TFCI bits is 1 or 2, then repetition will be used for coding. In this case each bit is repeated to a total of 4 times giving 4-bit transmission ($N_{\text{TFCI}}=4$) for a single TFCI bit and 8-bit transmission ($N_{\text{TFCI}}=8$) for 2 TFCI bits. When 8PSK service is transmitted, the modulation of 8PSK is applied in low chip rate option. In this case of 8PSK service, the odd bits of the encoded TFCI bits from the TFCI coder are repeated (e.g. the input is b0, b1, b2, b3, b4... the output will be b0, b1, b1, b2, b3, b3, b4...). Thus the amount of encoded bits of TFCI in this case will be 48, 24, 12, 6 respectively for the 6-10, 3-5, 2, 1 TFCI bits. The same TFCI lengths like in WB-TDD are supported (0, 4, 8, 16, 32).

| [Other TFCI coding scheme for 8PSK is also considered.](#)

[Explanation difference:]

In high chip rate option, encoding of the TFCI bits depends on the number of them. 1-10 bits of TFCI are supported. Thus, the amount of encoded bits of TFCI is 32, 16, 8, 4 respectively for the 6-10, 3-5, 2, 1 TFCI bits.

In the low chip rate option, encoding of the TFCI bits depends on the number of them and the mode of modulation applied. When the modulation of QPSK is deployed, encoding of the TFCI bits is the same as it in the high chip rate option. In this case of 8PSK service, the odd bits of the encoded TFCI bits from the TFCI coder are repeated, thus the amount of encoded bits of TFCI in this case will be 48, 24, 12, 6 respectively for the 6-10, 3-5, 2, 1 of TFCI bits. The repetition of TFCI odd bits is necessary to guarantee the same number of symbols.

----- changes to TR25.928 end -----