Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	Corrections and clarifications on concatenation scheme.
Date Submitted	**2004-08-19**
Source(s)	Panyuh Joo, Seungjoo Maeng, Jaeho Jeon, Soonyoung Yoon, Jeong-Heon Kim, Jaehyok Lee, Myungkwang Byun, Inseok Hwang, Jaehee Cho, Jiho Jang, Sanghoon Sung, Hoon Huh, Samsung Electronics Co. Ltd. jaehee1.cho@samsung.com
Re:	IEEE P802.16-2004
Abstract	The corrections and clarifications for concatenation schemes are provided.
Purpose	Adopt changes
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Corrections and clarifications on concatenation scheme

1. Motivation

The purpose of the concatenation is lengthening codeword as long as possible to improve coding gain.
However, the current scheme does not provide such functionality for a specific parameter combination.
It is inconsistent with other parameter combination that ensures the longest concatenation.
Further, the current description of concatenation is incomplete when the repetition coding is applied.
The clarification for the repetition coding case is necessary.

2. Details

When n =D*J, the longest concatenation results shall be D codewords of length corresponding to the concatenated J subchannels. However, the current scheme results in D-2 codewords of length corresponding to the concatenated J subchannels and 2 codewords of length corresponding to the concatenated J/2 subchannels (J is even number is assumed for simple description).
For the repetition coding, the number of subchannels for the concatenation scheme shall be the number of allocated subchannels divided by the repetition.

3. Changes summary

[Change the text at line 45 page 592 in 8.4.9.2]

— *n*: number of allocated subchannels~~/Number of repetition coding~~

[Change the table 315 at line 56 page 593 in 8.4.9.2]

Number of subchannels	Subchannel concatenated
n<=j	1 block of n subchannels

n>j	If(n mod j = 0)
	k blocks of j subchannels
	else
	(k-1) blocks of j subchannels
	1 block of ceil((m+j)/2) subchannels
	1 block of floor((m+j)/2) subchannels

[Change the text at line 62 page 598 in 8.4.9.2.3.1]

— *n*: number of allocated subchannels~~/Number of repetition coding~~

[Change the table 322 at line 3 page 599 in 8.4.9.2.3.1]

Table 322—Subchannel concatenation rule for CTC

Number of subchannels	Subchannels concatenated
n <= j n≠7	1 block of n subchannels
n=7 j=10	1 block of 4 subchannels 1 block of 3 subchannels

n > j	If(n mod j = 0)
	k blocks of j subchannels
	else
	(k-1) blocks of j subchannels
	1 block of L_{b1} subchannels
	1 block of L_{b2} subchannels
	Where:
	L_{b1} = ceil((m+j)/2)
	L_{b2} = floor((m+j)/2)
	If (L_{b1} == 7) or (L_{b2} == 7)
	$L_{b1} = L_{b1} + 1$; $L_{b2} = L_{b2} - 1$;

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