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Re:	IEEE 802.16j-07/007r2: "Call for Technical Comments and Contributions regarding IEEE Project 802.16j"
Abstract	This contribution proposes format of R-FCH within RS-Zone
Purpose	Text proposal for 802.16j Baseline Document
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Format of R-FCH within RS-Zone

Introduction

This contribution describes format of R-FCH within RS-Zone. In order to facilitate the incorporation of this proposal into IEEE 802.16j standard, specific changes to the baseline working document IEEE 802.16j-06/026r2 are listed below.

Text Proposal

[Add new sections 8.4.4.8.1]

8.4.4.8.1 Relay Zone Prefix (R-FCH)

The Relay Zone Prefix is a data structure transmitted in the first relay zone in the downlink subframe and contains information regarding the zone in which it is included and is mapped to the Relay Zone Prefix (R-FCH). Table xxx defines the structure of Relay Zone Prefix.

Table xxx(a) — Relay zone prefix format for all FFT sizes except 128

Syntax	Size	
Next_first_Relay-Zone_ Location	16	The field indicates the next first Relay Zone location reference to the beginning of next frame in unit of 4 PS(physical slot) for 2048 FFT 2 PS(physical slot) for 1024 FFT 1 PS(physical slot) for 512 FFT
Next_first_Relay-Zone_ Permutation	2	0b00 = PUSC 0b01 = FUSC 0b10 = Optional FUSC 0b11 = AMC 2x3 (2 bins by 3 symbols)
Modulation_with_FEC_rate_ Indication	3	0b000: QPSK ½ used on R-MAP 0b001: QPSK ¾ used on R-MAP 0b010: 16-QAM ½ used on R-MAP 0b011: 16-QAM ¾ used on R-MAP 0b100: 64-QAM ⅔ used on R-MAP 0b101: 64-QAM ¾ used on R-MAP 0b110: 64-QAM 5/6 used on R-MAP 0b111 = Reserved
Coding_Indication	3	0b000: CC encoding used on R-MAP 0b001: BTC encoding used on R-MAP 0b010: CTC encoding used on R-MAP 0b011: ZT CC encoding used on R-MAP

		0b100: CC encoding with optional interleaver used on DL-R-MAP
		0b101: LDPC encoding used on R-MAP
		0b110-0b111 = Reserved
Repetition_Coding_Indication	2	0b00: No repetition coding on R-MAP
		0b01: Repetition coding of 2 used on R-MAP
		0b10: Repetition coding of 4 used on R-MAP
		0b11: Repetition coding of 6 used on R-MAP
Used_subchannel_bitmap	6	Bit #0: Subchannel group 0
		Bit #1: Subchannel group 1
		Bit #2: Subchannel group 2
		Bit #3: Subchannel group 3
		Bit #4: Subchannel group 4
		Bit #5: Subchannel group 5
R-MAP_Length	8	Defines the length in slots of the R-MAP message that follows immediately the Relay Zone Prefix, after repetition code is applied.
HCS	8	An 8-bit Header Check Sequence

Next_first_Relay-Zone_Location

Indicates the OFDM symbol index reference to the beginning of next frame in unit of OFDM symbols

Next_first_Relay-Zone_Permutation

Defines the permutation used within the next first R-Zone.

Modulation_with_FEC_rate_Indication

Indicates the modulation used for the R-MAP. The BS shall ensure that R-MAP are sent with the mandatory coding scheme often enough to ensure uninterrupted operation of RS supporting only the mandatory coding scheme.

Coding_Indication

Indicates the FEC encoding code used for the R-MAP. The BS shall ensure that Relay Zone Prefix are sent with the mandatory coding scheme often enough to ensure uninterrupted operation of RS supporting only the mandatory coding scheme.

Repetition coding Indication

Indicates the repetition code used inside the allocated burst. Repetition shall be used only for DIUC indicating QPSK modulation.

Used subchannel bitmap

A bitmap indicating which groups of subchannels are used on the zone and on all other relay zones using PUSC in which 'Use all SC indicator' is set to '0' in R-MAP_IE(). Value of '1' means used by this segment and '0' means not used by this segment.

R-Map_Length

Defines the length in slots of the R- MAP message that follows immediately the Relay Zone Prefix.

HCS

An 8-bit Header Check Sequence used to detect errors in the Relay Zone Prefix. The generator polynomial is $g(D)= D^8 + D^2 + D + 1$. The transmitter shall take all the bytes in the Relay Zone Prefix except the byte

reserved for the HCS and divide them by $g(x)$ and use the remainder as HCS code. At the receiver, dividing the Relay Zone Prefix by $g(x)$ then gives the remainder 0 if correct.

Table xxx(b)—Relay zone prefix format for 128 FFT

Syntax	Size	
Next_first_Relay_Zone_ Permutation	2	0b00 = PUSC 0b01 = FUSC 0b10 = Optional FUSC 0b11 = AMC 2x3 (2 bins by 3 symbols)
Modulation_with_FEC_rate_ Indication	3	0b000: QPSK ½ used on R-MAP 0b001: QPSK ¾ used on R-MAP 0b010: 16-QAM ½ used on R-MAP 0b011: 16-QAM ¾ used on R-MAP 0b100: 64-QAM ⅔ used on R-MAP 0b101: 64-QAM ¾ used on R-MAP 0b110: 64-QAM 5/6 used on R-MAP 0b111 = Reserved
Coding_Indication	3	0b000: CC encoding used on R-MAP 0b001: BTC encoding used on R-MAP 0b010: CTC encoding used on R-MAP 0b011: ZT CC encoding used on R-MAP 0b100: CC encoding with optional interleaver used on R-MAP 0b101: LDPC encoding used on R-MAP 0b110-0b111 = Reserved
Repetition_Coding_Indication	2	0b00: No repetition coding on R-MAP 0b01: Repetition coding of 2 used on R-MAP 0b10: Repetition coding of 4 used on R-MAP 0b11: Repetition coding of 6 used on R-MAP

Used_subchannel_indicator	1	0: Subchannel 0 is used for segment 0,
		   Subchannel 1 is used for segment 1,
		   Subchannel 2 is used for segment 2,
		1: Use all subchannels

R-MAP_Length	5	Defines the length in slots of the R-MAP message that follows immediately the Relay Zone Prefix, after repetition code is applied.
HCS	8	An 8-bit Header Check Sequence