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Source(s)	Hyunjeong Kang, Changyoon Oh, E-mail: changyoon.oh@samsung.com Jungje Son Samsung Electronics, Suwon, Korea Rakesh Taori Samsung Advanced Institutes of Technology (SAIT)
Re:	IEEE802.16-07/059"IEEE 802.16 Working Group Letter Ballot #28a: Announcement"
Abstract	This contribution proposes a signaling method for indicating the relay zone
Purpose	Discuss and adopt proposed text by TG16j
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Comment on relay zone indicator

Hyunjeong Kang, Changyoon Oh, Jungje Son, Rakesh Taori*

Samsung Electronics, Samsung Advanced Institutes of Technology (SAIT)*

1. Introduction

The 802.16j draft [1] presents a method of indicating a relay zone with DIUC=13 in the frame structure for non-transparent mode. When MR-BS or superordinate RS transmit DL-MAP with DIUC=13 in the access zone, its subordinate RS recognizes that the IE includes the OFDMA symbol offset of a relay zone. For the perspective of MS, we expect that MS will ignore the received signal in the region. However, legacy MS do not have a capability to implement DIUC=13.
So 802.16j should define another method of indicating to RS the start of a relay zone, while MS recognize the existence of another zone and ignore signals from the region.
Currently, in transparent mode, STC_DL_ZONE_IE is used as a relay zone indicator, while in non-transparent mode, DIUC=13 is used as a relay zone indicator. A single mechanism of relay zone indicator is enough to enable relay zone.

2. Proposed solution

As a signaling method to indicate a relay zone in the access zone, STC DL Zone IE with Relay zone indicator is proposed. When MR-BS or RS transmits the STC DL Zone IE with Dedicated Pilot =1 and relay zone indicator =1, the MS with this signaling, i.e., Dedicated Pilots=1, shall ignore the relay zone and the RS with relay zone indicator=1 shall recognize the existence of relay zone.

3. Proposed text change

[Insert the followings at the end of subclause 8.4.5.3.4 :]

MR-BS or RS may transmit the STC DL Zone IE in the DL-MAP in the access zone to indicate the location of a DL relay zone in the same frame. In this case, the Relay zone indicator and the Dedicated Pilots in the STC DL Zone IE shall be set to 1. With this signaling, the MSs ignore that zone and the RSs shall recognize the existence of the relay zone.

[Change Table 396 in subclause 8.4.5.3.4 as follows :]

Table 396 – OFDMA STC DL Zone IE format

Syntax	Size (bit)	Notes
STC_DL_ZONE_IE() {	-	-
Extended DIUC	4	STC/DL_Zone_SWITCH = 0x01

Length	4	Length=0x04
OFDMA symbol offset	8	Denotes the start of the zone (counting from the frame preamble and starting from 0)
Permutation	2	0b00: PUSC permutation 0b01: FUSC permutation 0b10: Optional FUSC permutation 0b11: Adjacent subcarrier permutation
Use All SC indicator	1	0: Do not use all subchannels 1: Use all subchannels
STC	2	0b00: no STC 0b01: STC using 2/3 antennas 0b10: STC using 4 antennas 0b11: FHDC using 2 antennas

Matrix indicator	2	STC matrix (see 8.4.8.1.4)
		If(STC==0b01 or STC==0b10)
		{
		0b00 = Matrix A
		0b01 = Matrix B
		0b10 = Matrix C
		0b11 = Reserved
		}
		else if(STC==0b11)
		{
		0b00 = Matrix A
		0b01 = Matrix B
		0b10-11 = Reserved
		}

DL_PermBase	5	-
PRBS_ID	2	Value: 0..2. Refer to 8.4.9.4.1
AMC type	2	Indicates the AMC type in case permutation type=0b11, otherwise shall be set to 0. AMC type (NxM=N bits by M symbols) 0b00: 1x6 0b01: 2x3 0b10: 3x2 0b11: Reserved Note that only 2x3 Band AMC subchannel type (AMC Type=0b01) is supported by MS.
Midamble presence	1	0: Not present 1: MIMO midamble present at the first symbol in STC zone
Midamble boosting	1	0: No boost 1: Boosting (3dB)
2/3 antennas select	1	0: STC using 2 antennas 1: STC using 3 antennas Selects 2/3 antennas when STC=0b01

Dedicated pilots	1	0: Pilot symbols are broadcast 1: Pilot symbols are dedicated. An MS should use only pilots specific to its burst for channel estimation (Notes: this field shall be set to 1 when Relay zone indicator=1)
Transparent relay transmit power adjustment	2	Unsigned integer in the range +8dB to -22dB with 10dB intervals indicating power adjustment for transparent relay to be applied relative to the assigned EIRP (see 8.4.4.7.1.2). Power adjustment (dB) = 8 - unsigned 2 bit value * 10.
Relay zone indicator	1	0: Normal STC DL Zone 1: Relay zone indicator
Reserved	1	Shall be set to zero
}		

[Insert the followings at the end of subclause 8.4.5.4.7 :]

MR-BS or RS may transmit a UL Zone IE in the UL-MAP in the access zone to indicate the existence of a UL relay zone.

[Change line 38-40 at page 99 of subclause 6.3.9.9.3 as follows :]

After registration, the non-transparent RS shall obtain the location of the relay zone containing the R-FCH through 'Relay zone indicator (~~DIUC=13~~STC DL Zone IE, see 8.4.5.3.4)' in the DL-MAP message in the access zone.

[Delete subclause 8.4.5.3 in page 194:]

[Delete subclause 8.4.5.4.2 in page 200:]

Reference:

[1] IEEE P802.16j/D2 December 2007