Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**	
Title	Format of R-MAP within RS-Zone	
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Re:	A response to a Call for Technical Proposal, http://www.ieee802.org/16/relay/docs/80216j-07_007r2.pdf	
Abstract	R-MAP in RS_Zone is used for a parent station (MR-BS or RS) to signal the resource assignment in the RS_Zone. This contribution propose the format of R-MAP in RS_Zone.	
Purpose	To incorporate the proposed text into the P802.16j Baseline Document (IEEE 802.16j-06/026r2)	
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R-MAP Within RS_Zone

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1. Introduction

R-MAP in RS_Zone is used for a parent station (MR-BS or RS) to signal the resource assignment in the RS_Zone. This contribution is addressing the format of R-MAP in RS_Zone.

2. Proposal

As agreed in the session #46, resource assignment will be done by R-MAP. Theoretically, we can use the similar format of DL-MAP/UL-MAP as defined in IEEE802.16e-2005 for R-MAP. However, this is not very efficient since some fields in compressed DL-MAP and UL-MAP messages are redundant. The table below shows these fields.

Field in Compressed DL-MAP	**Bits**	**Required for R-MAP**	**Comments**
Compressed map indicator	3	No	R-MAP always immediately follows the R-FCH
UL-MAP appended	1	No	Can identify Dl or UL IE by R-MAP type value (see proposed text)
MAP message length	11	yes	
PHY synchronization field	32	No	Info known during RS initial network entry
DCD count	8	No	DCD count mainly for MS during initial network entry and sleep mode MS and idle mode MS
Operator ID	8	No	Known during initial network entry
Sector ID	8	No	Known during initial network entry
No. OFDM symbol	8	No	Used to indicate the DL duration only if a dynamic DL RS_Zone

			duration change is supported
DL IE count	8	Yes	May reduce to 6 bits to indicate the number of R-MAP IE
DL IE for loop	Variable	yes	
Field in Compressed UL-MAP	**Bits**	**Required for R-MAP**	**Comments**
UCD count	8	No	UCD count mainly for MS during initial network entry and sleep mode MS and idle mode MS
Allocation Start Time	32	No	Assuming a fixed frame delay
No. OFDM symbol	8	No	Assuming a fixed boundary between DL and UL sub-frame
UL IE for loop	Variable	yes	
Total saving	**17 byte**		

By introducing the new R-MAP format, the total saving is 17 bytes (152 bits). Due to this reason, we propose to introduce new R-MAP format within DL RS_Zone.

3. Proposed text change

++++++++++++++++++++++ Start Text ++++++++++++++++++++++++++++++++

[Modify title of 8.4.5.9 as indicated]

8.4.5.9 R-MAP Message

[Insert the following text in subclause 8.4.5.9]

This message is used to signal the resource assignments and other control information contained in the relay zones transmitted by an MR-BS or RS. This message shall be sent in the first transmitted DL relay_zone. This message shall immediately follow the R-FCH and shall not be preceded by a MAC header and message type field. The modulation and coding rate for the R-MAP message are indicated in the R-FCH. The message format is shown in Table xxx.

Table XXX. R-MAP Message Format.

Syntax	Size	Notes
R-MAP format {		
Length	11	Length of R-MAP
Number of IEs	6 bits	Indicates the number of IEs included

For (i = 0; i<Number of IEs; i++) {		
R-MAP_IE	Variable	
}		
}		

The CRC-32 value shall be appended to the end of R-MAP data. The CRC is computed across all bytes of the R-MAP. The CRC calculation is the same as that used for standard MAP messages.

[Add new subclause 8.4.5.9.1]

8.4.5.9.1 R-MAP IE

R-MAP IE format is shown in Table XXX.

Table XXX. R-MAP IE format

Syntax	Size	Notes
R-MAP_IE ()		
IE Type	6 bits	
If (IE type == (000000-001111)) {		
DL-MAP IE ()}	Variable	DIUC 0-15.
If (IE type == (010000- 011111) {		
UL-MAP IE () }	Variable	UIUC 0-15. UIUC within UL-MAP IE is removed
Else {		
R-link specific IE }	Variable	
}		

The R-MAP IE type values are shown in Table XXX.

Table R-MAP IE type values.

R-MAP IE type	Usage
0-15	OFDMA DL-MAP IE ()
16-31	OFDMA UL_MAP IE ()
33-63	Reserved for R-link specific IEs

R-link specific IE format is shown in Table XXX.

Table R-link specific IE.

Syntax	Size	Notes
R-link_specific_IE ()		
_Length	6 bits	In bytes
_IE specific data	Variable	
}		

[Please make the following change]

8.4.5.9.1.1_RS UL assignment IE