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Re:	This is in response to the call for proposal, 80216j-06_034.pdf, sent out by 802.16j TG.	
Abstract	This contribution proposes Message definition to support MS network entry procedures in non-transparent Relay Station systems with centralized allocation model.	
Purpose	To propose specfication text to describe message signaling for MS network entry in non-transparent Relay Station systems with centralized allocation model.	
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Message definition to support MS network entry in centralized allocation model

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Introduction

This contribution proposes Message definition to support MS network entry procedures described in [1] in non-transparent Relay Station with centralized allocation model in order for Access RS to process and response to CDMA ranging code. A non-transparent RS transmits its own preamble, DL-MAP and UL-MAP. Therefore, a MS recognizes it as a BS. The non-transparent RS has two types, centralized and distributed allocation model. The centralized allocation type RS does not create DL-MAP and UL-MAP by itself, however RS may modify it if required. Associated MR-BS creates and sends DL-MAP and UL-MAP to the RS, and the RS broadcasts them on its access link.

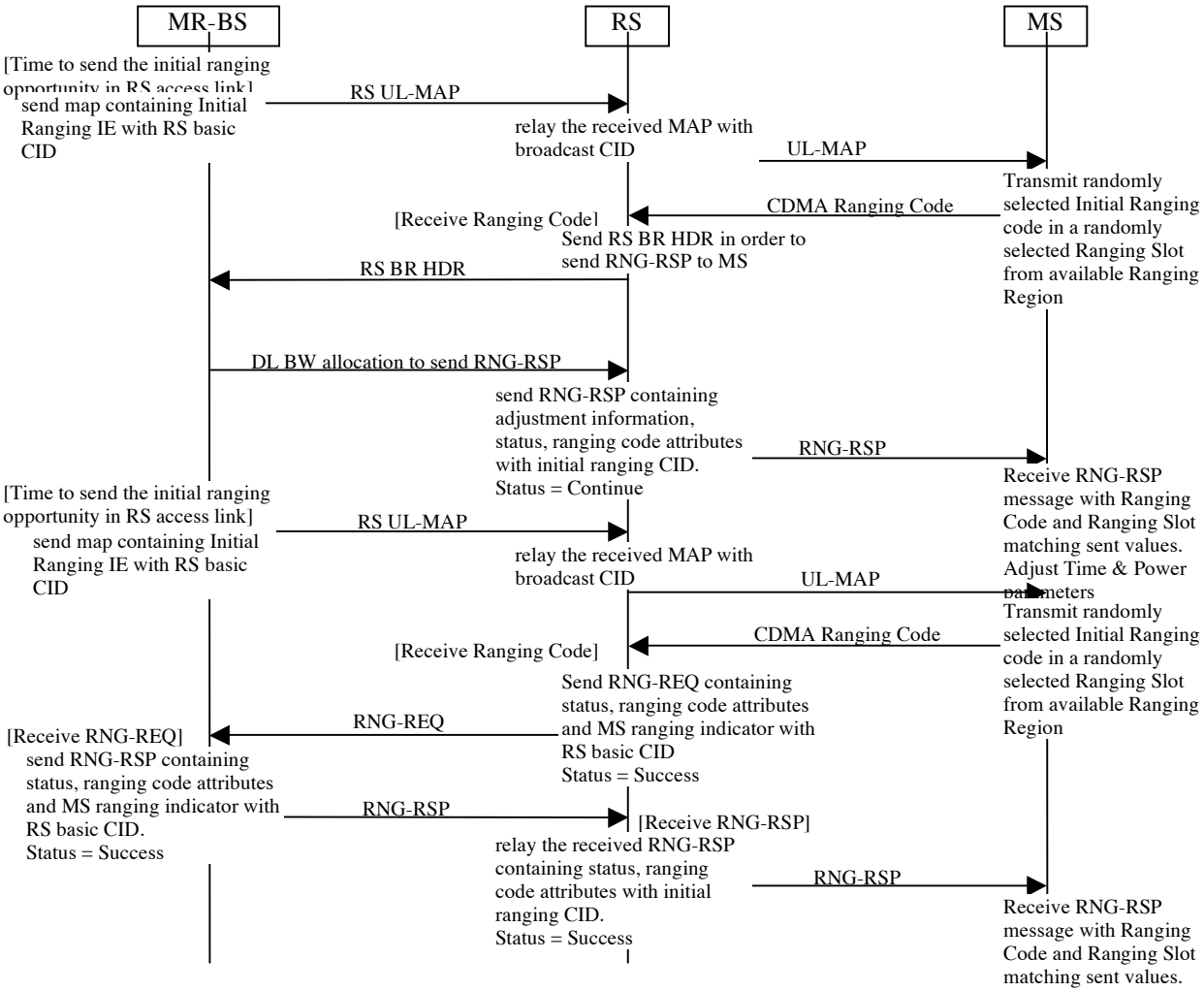
Access RS shall process CDMA ranging code during MS/RS network entry and sends RNG_RSP (status = continue) locally on its access link. In case of centralized allocation model, RS shall require to request bandwidth from MR-BS to send RNG_RSP on its access link. This contribution proposes additional HDR, IE and message to support above procedure. The complete details on the proposal of MS entry procedure in Non-transparent RS in centralized scheduling are described in [1].

MS network entry in Non transparent RS with Centralized scheduling

In MS network entry procedures in non-transparent RS systems, MS scans for downlink channel and establish synchronization with the non-transparent RS, then obtains transmit parameters from UCD message as described in 6.3.9.1 through 6.3.9.4.

The initial ranging process shall begin by sending an initial-ranging CDMA codes on the UL allocation dedicated for that purpose (for more details see 6.3.10.3).
When RS receives the CDMA code resulting in continue status, RS shall locally send RNG_RSP to MS on the access link. In order to send RNG_RSP to MS on the access link, it sends either **RS BR header** or **RNGRSP_RES_REQ** message to the MR-BS. Upon receipt of RS BR header or RNGRSP_RES_REQ message at MR-BS, MR-BS will allocate resources for RNG_RSP and indicate to RS with **RNG_RSP_ALLOC IE**. This procedure shall also be used in case of periodic ranging and handover ranging. Furthermore, the above procedure shall also be used in case of periodic ranging where RS receives the CDMA code resulting in success status,
When the RS receives multiple codes in a frame resulting in continue status, the RS sends a RS BR header, which contains information of number of received codes. The message sequences chart (Table xxx-1) defines the ranging and adjustment process that shall be followed by compliant RSs and MR-BSs

Table xxx Ranging and automatic adjustments procedure in MR mode



text proposal to the specification

++++++++++++++++++++++++++++ Begin ++++++++++++++++++++++++++++++++

Change Table 7g in 6.3.2.1.2.2 (MAC signaling header type II):
Table 7g—Type field encodings for MAC signaling header type II

Type field	MAC header Type (with HT/EC=0b11)	Reference figure	Reference table
0	Feedback header, with another 4-bit type field, see Table 7i for its type encodings.	20h, 20i	7h
1	~~*Reserved*~~ Extended MAC Signaling Header Type II	—	—

[Insert the following subclause at the end of 6.3.2.1.2.2:]

6.3.2.1.2.2.2 Extended MAC Signaling Header Type II

This type of MAC header is UL specific. There is no payload following the MAC header. The Extended MAC signaling header type II is illustrated in Figure XX. Table XX describes the encoding of the 3-bit extended type field following the type field.

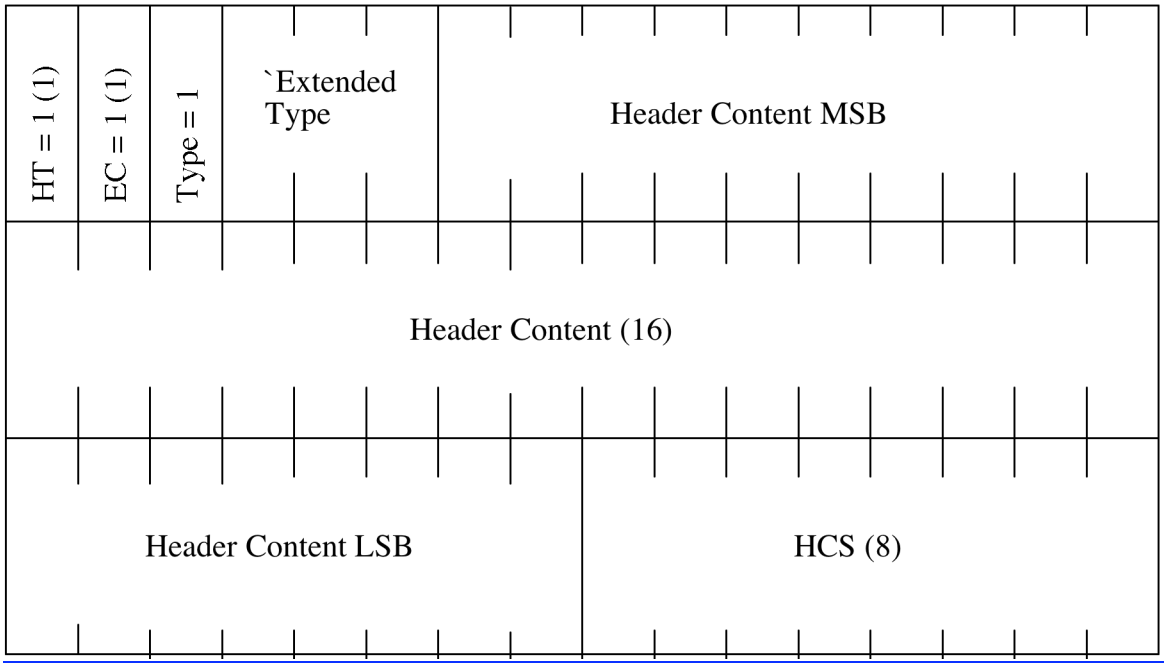


Figure XX Extended MAC Signaling Header Type II Format

Table X-1—Extended Type field encodings for Extended MAC signaling header type II

Extended Type field	MAC header Type	Reference figure	Reference table
0	RS BR Header	xx	xx
1-7	*Reserved*		

6.3.2.1.2.2.2.1 RS BW Header

RS BW request header is sent by the RS to request bandwidth for its access link from the MR-BS to send RNG_RSP. The RS Bandwidth request header is illustrated in Figure xx.

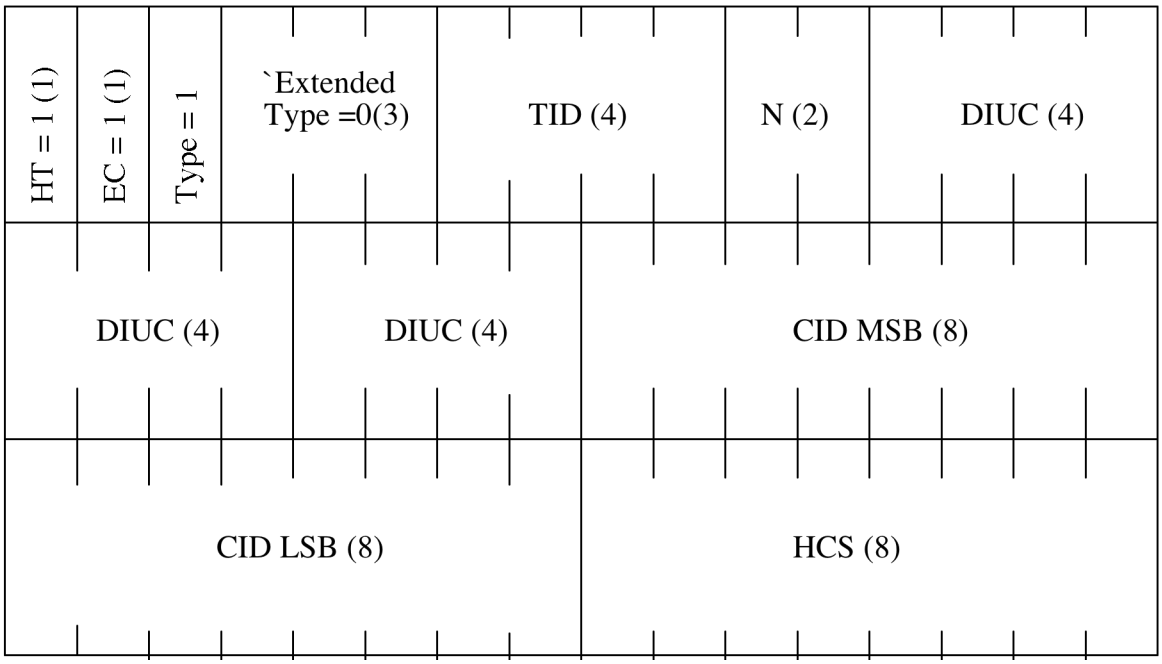


Figure XX RS BR Header Format

Table XX— Description of fields in RS BR header

Name	Length (bits)	Description
TID	4	Transaction Identifier. MR-BS when allocate resources using RNG_RSP_ALLOC_IE will sent the same TID. These TID used at RS for mapping to generate RNG_RSP

N	2	Requesting BW for sending N number of RNG_RSP.
DIUC	4	Indicates the DIUC used by RS to transmit RNG_RSP. MR-BS allocates sufficient resources to send RNG_RSP from RS using RNG_RSP_ALLOC_IE.
CID	16	Basic CID of the RS for which the RS bandwidth request header is sent.
HCS	8	Header Check Sequence (same usage as HCS entry in Table 5).

Change Table 277c as indicated

Extended-2 DIUC (hexadecimal)	Usage
OB	RS-RNG_RSP_ALLOC_IE
0C-0D	Reserved

Insert the following subclause 8.4.5.3.28

8.4.5.3.28 RNG_RSP_ALLOC IE

This IE is transmitted to RS from MR-BS . This IE provides the allocation to RS for transmission of RNG_RSP to SS.

Table xxx—RS-RNG_RSP_ALLOC IE format

Syntax	Size	Notes
RS-RNG_RSP_ALLOC_IE {	-	-
Extended 2 DIUC	4 bits	0x0B
CID	16 bits	RS Connection Identifier

TID	4 bits	Transaction ID
N	4 bits	Number of allocation
for(i=0; i < N; i++) {	-	-
DIUC	4 bits	
OFDMA Symbol Offset	8 bits	
Subchannel offset	6 bits	
Boosting	3 bits	000: normal (not boosted); 001: +6dB; 010: -6dB; 011: +9dB; 100: +3dB; 101: -3dB; 110: -9dB; 111: -12dB;
No. OFDMA Symbols	7 bits	
No. Subchannels	6 bits	
Repetition Coding Indication	2 bits	0b00 – No repetition coding 0b01 – Repetition coding of 2 used 0b10 – Repetition coding of 4 used 0b11 – Repetition coding of 6 used
}		
}		

Insert new subclause (6.3.2.3.62)

6.3.2.3.62 RNGRSP_RES-REQ

RS shall use RNGRSP_RES-REQ message to request resources from MR-BS for sending RNG_RSP message on its access link.

Table xxx— RNGRSP_RES_REQ Message format

Syntax	Size	Notes
RNGRSP_RES_REQ_Message_Format() {	-	-
Management message type = TBD	8 bits	-

TID	4 bits	Transaction ID
N	4 bits	Number of allocation requested
for(i=0; i < N; i++) {	-	-
DIUC	4 bits	
}		
TLV Encoded Information	Variable	TLV Specific
}		

TID
MR-BS when allocate resources using RNG_RSP_ALLOC_IE will sent the same TID. These TID used at RS for mapping to generate RNG_RSP

N
Requesting BW for sending N number of RNG_RSP.

DIUC
Indicates the DIUC used by RS to transmit RNG_RSP. MR-BS allocates sufficient resources to send RNG_RSP from RS using RNG_RSP_ALLOC_IE.

The RNGRSP_RES-REQ shall contain the following TLVs:

HMAC/CMAC Tuple (see 11.1.2)

The HMAC/CMAC Tuple shall be the last attribute in the message.

References

[1] M.Okuda, et. al. "MS network entry for non-transparent Relay Station", IEEE C802.16j-07_008, IEEE 802.16 meeting #47, London, January 2007.

[3] S. Maheshwari, et. al "Resource Request for Bandwidth and Ranging ", IEEE C802.16j-07_039, IEEE 802.16 meeting #47, London, January 2007.

[4] Shashikant Maheshwari, "RS support for OFDMA Based Ranging" IEEE C80216j-06_193, IEEE 802.16 meeting #46, Dallas, November 2006.