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| Project | IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 > | |
| Title | Change on RNG-REQ/RSP Message and Multicast Operation over IEEE 802.16n | |
| Date Submitted | 2012-05-14 | |
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| Re: | “IEEE 802.16-12-271,” in response to Letter Ballot Recirc #37a on P802.16n/D2 | |
| Abstract | Change on RNG-REQ/RSP messages and multicast operation in GRIDMAN Draft Standard | |
| Purpose | To discuss and adopt the proposed text in the draft amendment document on GRIDMAN | |
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Change on RNG-REQ/RSP Message and Multicast Operation over IEEE 802.16n

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1. Introduction

This document provides change on ranging purpose indication in RNG-REQ message.

2. References

- [1] IEEE 802.16-12-0132-00, GRIDMAN System Requirement Document including SARM annex, January 2012.
- [2] IEEE P802.16nTM/D2, Air Interface for Broadband Wireless Access Systems - Draft Amendment: Higher Reliability Networks, April 2012.
- [3] IEEE P802.16.1aTM/D2, WirelessMAN-Advanced Air Interface for Broadband Access Systems - Draft Amendment: Higher Reliability Networks, April 2012.
- [4] IEEE P802.16Rev3/D6, IEEE Draft Standard for Local and metropolitan area networks; Part 16: Air Interface for Fixed and Mobile Broadband Wireless Access Systems,” April 2012.
- [5] IEEE P802.16.1TM/D6, IEEE Draft for WirelessMAN-Advanced Air Interface for Broadband Wireless Access Systems, April 2012.

3. Proposed Text on the IEEE 802.16n Amendment Draft Standard

Note:

The text in **BLACK** color: the existing text in the P802.16n Amendment Draft Standard

The text in **RED** color: the removal of existing P802.16n Amendment Draft Standard Text

The text in **BLUE** color: the new text added to the P802.16n Amendment Draft Standard Text

[-----Start of Text Proposal-----]

[Remedy1: Change the text line #2, page 6 to line #12, page 7 on P802.16n/D2 as follows:]

6.3.2.3.5 RNG-REQ (ranging request) message

Change the text in 6.3.2.3.5 RNG-REQ (ranging request) message as follows:

.....
The following TLV parameter shall be included in the RNG-REQ message when the MS is attempting to perform reentry, HO, or location update:

Ranging Purpose Indication

The presence of this item in the message indicates the following MS action:

If Bit 0 is set to 1, in combination with a serving BSID, it indicates that the MS is currently attempting to HO or reentry; or, in combination with a Paging Controller ID, indicates that the MS is attempting network reentry from idle mode to the BS.

If Bit 1 is set to 1, it indicates that the MS is initiating the idle mode location update process.

Bit 2: Seamless HO indication. When this bit is set to 1 in combination with other included information elements, it indicates the MS is initiating ranging as part of seamless HO procedure.

Bit 3: Ranging Request for Emergency Call Setup. When this bit is set to 1, it indicates MS action of Emergency Call Process.

Bit 4: MBS update. When this bit is set to 1, the MS is currently attempting to perform location update due to a need to update service flow management encodings for MBS flows.

~~Bit 5: HR Multicast location update. When this bit is set to 1, it indicates the HR-MS is currently attempting to perform location update for multicast update.~~

~~Bits 5-7: Reserved~~

Bit 5: Network Reentry from idle mode of MS which has entered idle mode in AAI-only ABS

~~Bit 6-7 Reserved~~

Bit 6: Ranging Request for HR Network. When this bit is set to 1, it indicates the HR-MS is currently attempting to perform ranging as a part of HR-Network operation.

Bit 7: Reserved

Insert the following text at the end of ~~6.3.2.3.6~~ 6.3.2.3.5 RNG-REQ (ranging request) message:

The following parameter shall be included in the RNG-REQ message when the MS is attempting to perform ranging as a part of operation in HR-Network.

Extended Ranging Purpose Indication for HR-Network (see 11.5)

indicates the ranging purpose of the MS during operating for HR-Network

The following parameter shall be included in the RNG-REQ message when the MS is attempting to perform ranging

request for HR multicast (HR multicast service flow update or location update due to crossing Multicast Group Zone or ~~the MS is attempting to update~~ multicast security key update).

~~action code for HR multicast (see 11.5)~~ **Action Code for HR Multicast (see 11.5)**

~~to indicate~~ **indicates** the ranging purpose of the MS during receiving multicast service

6.3.2.3.6 RNG-RSP (ranging response) message

Insert the following text at the end of 6.3.2.3.6 RNG-RSP (ranging response) message as follows:

The following parameters, if needed to update, shall be included only if the ~~bit 5~~**bit 6** of ranging purpose indication **is** set to 1 and **Extended Ranging Purpose Indication for HR-Network is 0x00 with** the bit0 of ~~action code~~ **Action Code for HR Multicast** in the RNG-REQ message are set to 1.

HR multicast service flow update mapping info (see 11.1.13)

HR multicast service flow update mapping info is used by the BS' in one multicast zone to provide consistency of HR Multicast Group ID mapping used in other multicast zone as determined by the serving multicast zone.

[Remedy2: change section 11.5, page 53-54 on P802.16n/D2 as follows:]

11.5 RNG-REQ management message encodings

Change Table ~~685~~**686** - RNG-REQ message encodings as indicated:

Table 685686 - RNG-REQ message encodings

| Name | Type (1byte) | Length | Value (variable length) | PHY scope |
|----------------------------|--------------|--------|--|-----------|
| Ranging Purpose Indication | 6 | 1 | <p>Bit 0: HO indication (when this bit is set to 1 in combination with other included information elements indicates the MS is currently attempting to HO or network reentry from idle mode to the BS)</p> <p>Bit 1: Location update request (when this bit is set to 1, it indicates MS action of idle mode location update process)</p> <p>Bit 2: Seamless HO indication (when this bit is set to 1 in combination with other included information elements indicates the MS is currently initiating ranging as part of the seamless HO procedure)</p> <p>Bit 3: Ranging Request for Emergency Call Setup (when this bit is set to 1, it indicates MS action of Emergency Call Process)</p> <p>Bit 4: MBS update. When this bit is set to 1, the MS is currently attempting to perform location update due to a need to update service flow management encodings for MBS flows.</p> <p>Bit 5: HR Multicast service flow update. When this bit is set to 1, the MS is currently a need to update multicast service flow management encodings for multicast transmission due to crossing Multicast Group zone.</p> <p>Bits 5-7: Reserved</p> <p>Bit5: Network Reentry from idle mode of MS which has entered idle mode in AAI-only ABS</p> <p>Bits 6-7: Reserved</p> <p><u>Bit 6: Ranging Request for HR-Network (when this bit is set to 1, it indicates MS action of HR-Network Process).</u></p> <p><u>Bit 7: Reserved</u></p> | |

Table ~~685686~~ - RNG-REQ message encodings

| Name | Type (1byte) | Length | Value (variable length) | PHY scope |
|---|----------------------|-------------------|--|-----------|
| | ... | ... | | ... |
| Extended Ranging Purpose Indication for HR-Network | 30 | 1 | 0x00: Ranging request for HR Multicast 0x01-0xFF: Reserved | |
| action code for HR multicast Action Code for HR Multicast | 2531 | 1 | Bit0: Multicast service flow update Bit1: Location update due to multicast zone change Bit2: Multicast security key update Bit3-7: Reserved | |

[Remedy3: change line #11, page 102 to line#10, page 103 on P802.16n/D2 as follows:]

16.9.1.2 Multicast communication in normal operation mode

When an HR-MS moves across Multicast zone boundaries in Active Mode or Sleep Mode, the HR-MS performs the handover procedure as described in 6.3.21.

When the HR-MS transits to a new Multicast Zone while in Active Mode or Sleep Mode, the HR-MS shall send RNG-REQ message described in 6.3.2.3.5 with Ranging Purpose Indication ~~Bit5~~Bit6 setting to 1 and [Extended Ranging Purpose Indication = 0x00 with Action Code for HR Multicast bit0 setting to 1](#) at the target HR-BS. In response to the request for multicast service flow update, the HR-BS shall transmit RNG-RSP message described in 6.3.2.3.6, which may include multicast service flow update mapping info to provide updated service flow management encodings for any affected multicast flow as part of the handover procedure.

16.9.1.3 Multicast communication operation in idle mode

When an HR-MS in Idle mode moves to an HR-BS which does not belong to HR-MS' previous Multicast Group Zone, the HR-MS is expected to update the multicast service flow management encodings at that HR-BS to provide continuous reception of multicast content. The HR-MS may obtain the multicast information in the target Multicast zone through MOB_NBR-ADV message described in 6.3.2.3.42 in the Multicast Zone of the service HR-BS. If the idle mode HR-MS has not received such information from the serving Multicast Zone, the HR-MS shall use location update procedure to acquire updated multicast service flow management encodings. In order to perform the multicast location update process, the HR-MS shall transmit RNG-REQ message described in 6.3.2.3.5 with the Ranging Purpose Indication ~~Bit5~~Bit6 setting to 1 and [Extended Ranging Purpose Indication = 0x00 with Action Code for HR Multicast bit0 setting to 1](#). In addition to changing the multicast group zone, when the HR-MS detects current paging zone changes, the bit1 of the action code for HR multicast is set to 1. In the case of performing multicast security key update, the bit2 of the action code for HR multicast is set to 1. In response to the request for multicast location update, the HR-BS shall transmit RNG-RSP message described in 6.3.2.3.6, which may include the Multicast Group Zone identifier, Multicast Indication Cycle, and HR Multicast Group ID to provide update service flow management

encodings for any affected multicast flow(s).

[-----End of Text Proposal-----]