Project	IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>
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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 procedures for MS CDMA-based BR with non-transparent RS under Centralized Scheduling
Purpose	Discussion and Adoption in IEEE 802.16j
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notification via the IEEE 802.16 web site <http://ieee802.org/16/ipr/patents/notices>.

MS CDMA-based BR in Non-transparent RS System under Centralized Scheduling

Introduction

This contribution describes MS CDMA-based bandwidth request (BR) in non-transparent RS system under centralized scheduling scheme. 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

6.3.6 Bandwidth allocation and request mechanisms

6.3.6.8 Relaying support for Contention-based CDMA Bandwidth Requests

6.3.6.8.2 Contention-based CDMA Bandwidth Requests with non-transparent RS

6.3.6.8.2.1 Non-transparent RS with Centralized Scheduling

   The RS should support the CDMA-based mechanism as specified in the following paragraphs of this subclause. The BR ranging process shall begin by sending BR-ranging CDMA codes on the UL allocation dedicated for that purpose (for more details see 6.3.10.3). The RS shall monitor ranging channel assigned by the MR-BS.

   Once a RS receives the CDMA code resulting in success status, it transmits a RNG-REQ with the RS basic CID to the MR-BS, containing ranging status and ranging code attributes. The RNG-REQ may also contain adjustment information, such as frequency, timing and power if necessary. When the RS successfully receives multiple codes in a frame, the RS sends a RNG-REQ message which contains information of multiple received codes.

   When the MR-BS receives the RNG-REQ with success status, it sends a RS UL-MAP to the RS including a CDMA_Allocation-IE. The MS shall use the allocation to transmit a Bandwidth Request MAC PDU and/or data.

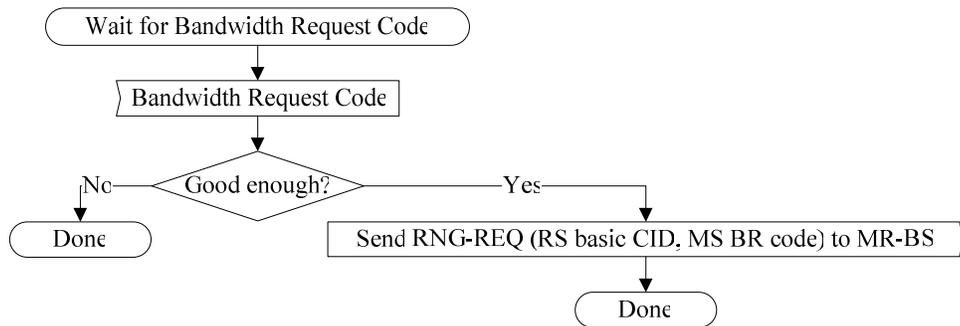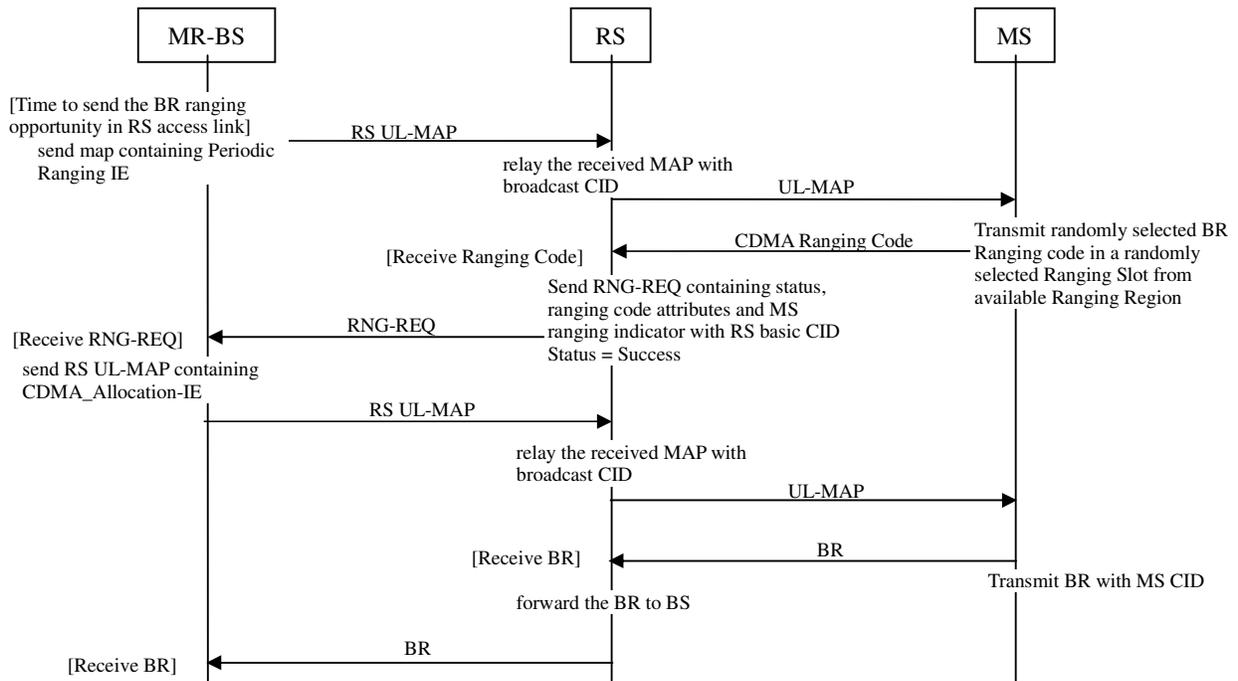Table xxx: MS CDMA Bandwidth Request procedure in non-transparent RS systems

MR-BS	RS	MS

[Time to send the BR ranging opportunity in RS access link] send map containing Periodic Ranging IE

RS UL-MAP →

relay the received MAP with broadcast CID

UL-MAP →

Transmit randomly selected BR Ranging code in a randomly selected Ranging Slot from available Ranging Region

← CDMA Ranging Code

[Receive Ranging Code]

Send RNG-REQ containing status, ranging code attributes and MS ranging indicator with RS basic CID Status = Success

← RNG-REQ

[Receive RNG-REQ]

send RS UL-MAP containing CDMA_Allocation-IE

RS UL-MAP →

relay the received MAP with broadcast CID

UL-MAP →

← BR

[Receive BR]

Transmit BR with MS CID

forward the BR to BS

← BR

[Receive BR]

Wait for Bandwidth Request Code

Bandwidth Request Code

Good enough?

No → Done

Yes → Send RNG-REQ (RS basic CID, MS BR code) to MR-BS

Done

Figure xxx MS CDMA-based Bandwidth Request – Non-transparent Access RS (part 1)

Wait for anonymous BW allocation in RS UL-MAP

anonymous BW allocation in RS UL-MAP

Send anonymous BW allocation to MS

Wait for BR on the burst specified by CDMA Allocation IE

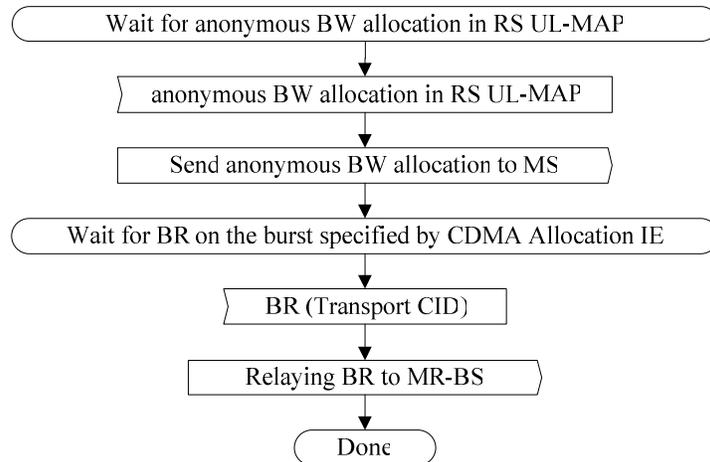BR (Transport CID)

Relaying BR to MR-BS

Done

Figure xxx MS CDMA-based Bandwidth Request – Non-transparent Access RS (part 2)
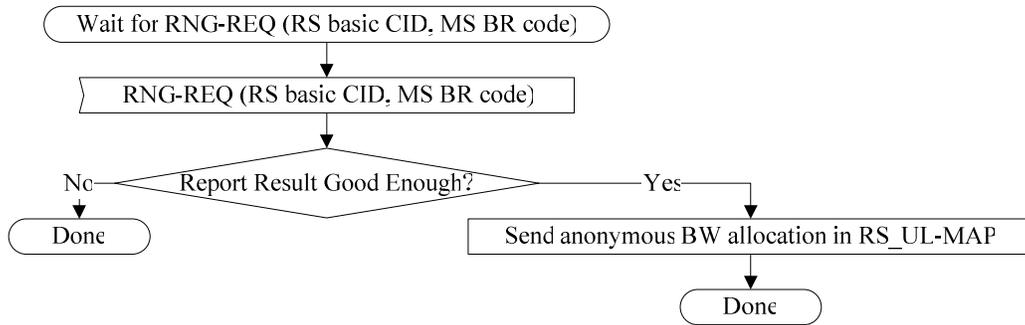
Figure yyy MS CDMA-based Bandwidth Request with Non-transparent RS – MR-BS

6.3.6.8.2.2 Non-transparent RS with Distributed Scheduling

[This subclause is just a place holder. The contents are in a different contribution.]

Insert the following rows into Table 364 at 11.5 RNG-REQ TLV:

Table 364—RNG-REQ message encodings

Name	Type (1 byte)	Length	Value (variable-length)	PHY Scope
Received Ranging Codes	TBA	Variable	Received Ranging Codes is a compound TLV value that indicates received code information.	OFDMA
Timing Adjust	TBA.1	4	Tx timing offset adjustment (signed 32-bit). The amount of time required to adjust SS transmission so the bursts will arrive at the expected time instance at the BS. Units are PHY specific (see 10.3).	OFDMA
Power Level Adjust	TBA.2	1	Tx Power offset adjustment (signed 8-bit, 0.25 dB units). Specifies the relative change in transmission power level that the SS is to make in order that transmissions arrive at the BS at the desired power. When subchannelization is employed, the subscriber shall interpret the power offset adjustment as a required change to the transmitted power density.	OFDMA
Offset Frequency Adjust	TBA.3	4	Tx frequency offset adjustment (signed 32-bit, Hz units). Specifies the relative change in transmission frequency that the SS is to make in order to better match the BS. (This is fine-frequency adjustment within a channel, not reassignment to a different channel.)	OFDMA

Ranging Status	TBA.4	1	Used to indicate whether uplink messages are received within acceptable limits by BS. 1 = continue, 2 = abort, 3 = success	OFDMA
Ranging code attributes	TBA.5	4	Bits 31:22 – Used to indicate the OFDM time symbol reference that was used to transmit the ranging code. Bits 21:16 – Used to indicate the OFDMA subchannel reference that was used to transmit the ranging code. Bits 15:8 – Used to indicate the ranging code index that was sent by the SS. Bits 7:0 – The 8 least significant bits of the frame number of the OFDMA frame where the SS sent the ranging code.	OFDMA