

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
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Date	2007-01-18	
Submitted		
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Re:	IEEE 802.16j-06/034: "Call for Technical Proposals regarding IEEE Project P802.16j"	
Abstract	This contribution proposes procedures for unsolicited RNG-RSP with transparent RS	
Purpose	Text proposal for 802.16j Baseline Document	
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Unsolicited RNG-RSP with Transparent RS

Introduction

This contribution describes MS unsolicited RNG-RSP with transparent RS 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-06/026r1 are listed below.

Text Proposal

6.3.10 Ranging

6.3.10.3 OFDMA based ranging

6.3.10.3.4 Relaying support for OFDMA based ranging

6.3.10.3.4.5 Unsolicited RNG-RSP with Transparent RS

After RS received a bandwidth request CDMA ranging code, it should transmit an RNG-REQ message with the RS basic CID containing the CDMA ranging code to the serving MR-BS through the relay path with adjustment information of frequency, power, and timing corrections. When RS receives multiple codes in the ranging subchannel of a frame, the RNG-REQ message sent by the RS to serving MR-BS may contain information of multiple received codes.

When the MR-BS receives bandwidth request CDMA ranging code, it shall wait for RNG-REQ message containing the same code attribute from its subordinate RSs for T48 timer. Once T48 timer expired, the MR-BS could compare the measured signal information at each access station to decide the adjustment information of the code. Algorithms to decide adjustment information are out of scope of this specification. When it needs to do adjustment for the code, the MR-BS shall broadcast an RNG-RSP with associated code attribute.

When the offsets of frequency, power, and timing for any other data transmission from the MS are beyond the tolerance defined in this specification, RSs shall transmit a RNG-REQ message with the RS basic CID containing the MS basic CID to the serving MR-BS through the relay path.

Upon receiving the RNG-REQ message from a subordinate RS, the MR-BS may send an unsolicited RNG-RSP message with this MS basic CID to the MS.

The message sequence charts (Table xxx and Table yyy) and flow charts (Figure xxx and Figure yyy) define the unsolicited RNG-RSP process that shall be followed by compliant RSs and MR-BSs.

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

Table 364—RNG-REQ message encodings

	<u>Type</u> (1 byte)	<u>Length</u>	<u>Value</u> (Variable-length)	<u>PHY</u> <u>Scope</u>
<u>Received Ranging</u>	<u>TBA</u>	<u>Variable</u>	<u>Received Ranging Code Attributes is a</u>	<u>OFDMA</u>

<u>Codes</u>			<u>compound TLV value that indicates received code information.</u>	
<u>Timing Adjust</u>	<u>TBA.1</u>	<u>4</u>	<u>Tx timing offset adjustment (signed 32-bit). The amount of time required to adjust MS transmission so the bursts will arrive at the expected time instance at the RS. Units are PHY specific (see 10.3). The MS shall advance its burst transmission time if the value is negative and delay its burst transmission if the value is positive.</u>	<u>OFDMA</u>
<u>Power Level Adjust</u>	<u>TBA.2</u>	<u>1</u>	<u>Tx Power offset adjustment (signed 8-bit, 0.25 dB units) Specifies the relative change in transmission power level that the MS is to make in order that transmissions arrive at the RS 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.</u>	<u>OFDMA</u>
<u>Offset Frequency Adjust</u>	<u>TBA.3</u>	<u>4</u>	<u>Tx frequency offset adjustment (signed 32-bit, Hz units)</u> <u>Specifies the relative change in transmission frequency that the MS is to make in order to better match the RS. (This is fine-frequency adjustment within a channel, not reassignment to a different channel.). The MS shall increase its transmit frequency if the value is positive and decrease its transmit frequency if the value is negative.</u>	<u>OFDMA</u>
<u>Ranging Status</u>	<u>TBA.4</u>	<u>1</u>	<u>Used to indicate whether uplink messages are received within acceptable limits by RS.</u> <u>1 = continue, 2 = abort, 3 = success</u>	<u>OFDMA</u>
<u>Received Ranging</u>	<u>TBA.5</u>	<u>Variable</u>	<u>Bits 31:22 – Used to indicate the</u>	<u>OFDMA</u>

<u>Code Attributes</u>			<p><u>OFDM time symbol reference that was used to transmit the ranging code.</u></p> <p><u>Bits 21:16 – Used to indicate the OFDMA subchannel reference that was used to transmit the ranging code.</u></p> <p><u>Bits 15:8 – Used to indicate the ranging code index that was sent by the MS.</u></p> <p><u>Bits 7:0 – The 8 least significant bits of the frame number of the OFDMA frame where the MS sent the ranging code.</u></p>	
<u>MS CINR mean</u>	<u>TBA.6</u>	<u>1</u>	<p><u>The MS CINR mean parameter indicates the CINR measured by the RS from the MS. The value shall be interpreted as a signed byte with units of (TBD) dB. The measurement shall be performed on the CDMA ranging signal sent by the MS and averaged over the measurement period.</u></p>	<u>OFDMA</u>
<u>MS RSSI mean</u>	<u>TBA.7</u>	<u>1</u>	<p><u>The MS RSSI mean parameter indicates the Received Signal Strength measured by the RS from the MS. The value shall be interpreted as an unsigned byte with units of (TBD) dB, such that 0x00 is interpreted as (TBD) dBm, an RS shall be able to report values in the range (TBD) dBm to (TBD) dBm. The measurement shall be performed on the CDMA ranging signal sent by the MS and averaged over the measurement period</u></p>	<u>OFDMA</u>
<u>MS Basic CID</u>	<u>TBA</u>	<u>2</u>	<u>MS Basic CID</u>	<u>OFDMA</u>

Table xxx: Unsolicited RNG-RSP procedure triggered by CDMA BR ranging code in transparent RS systems

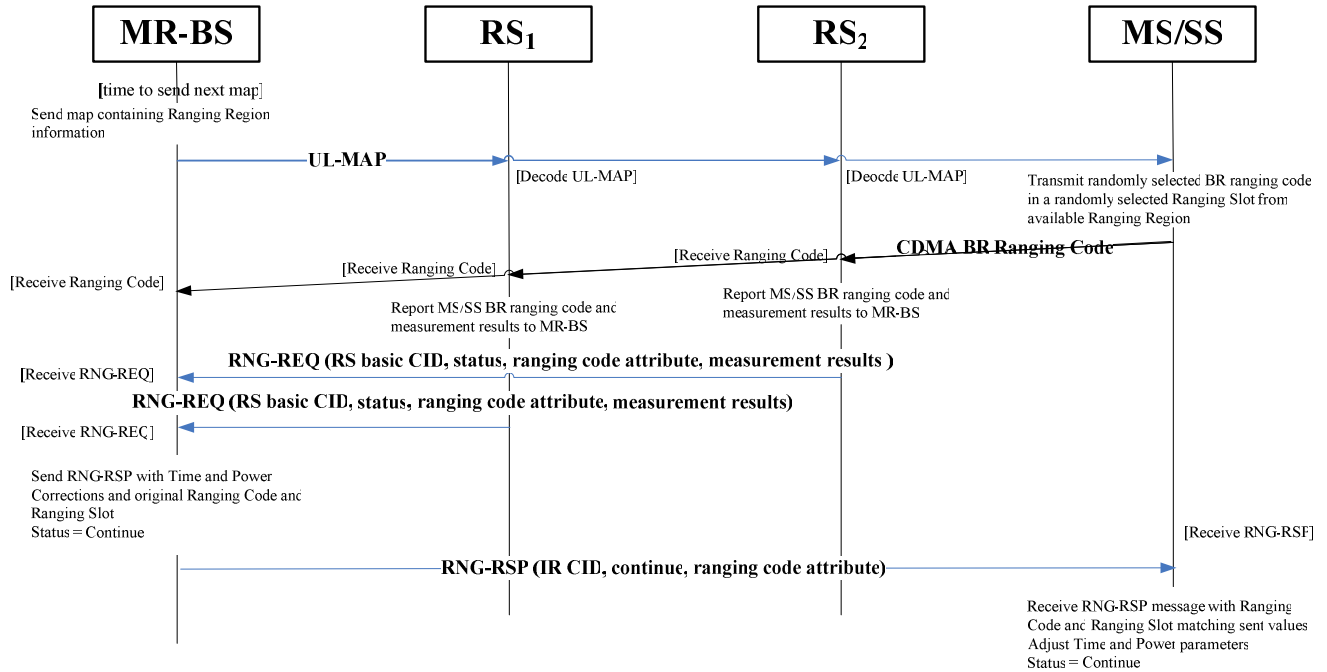
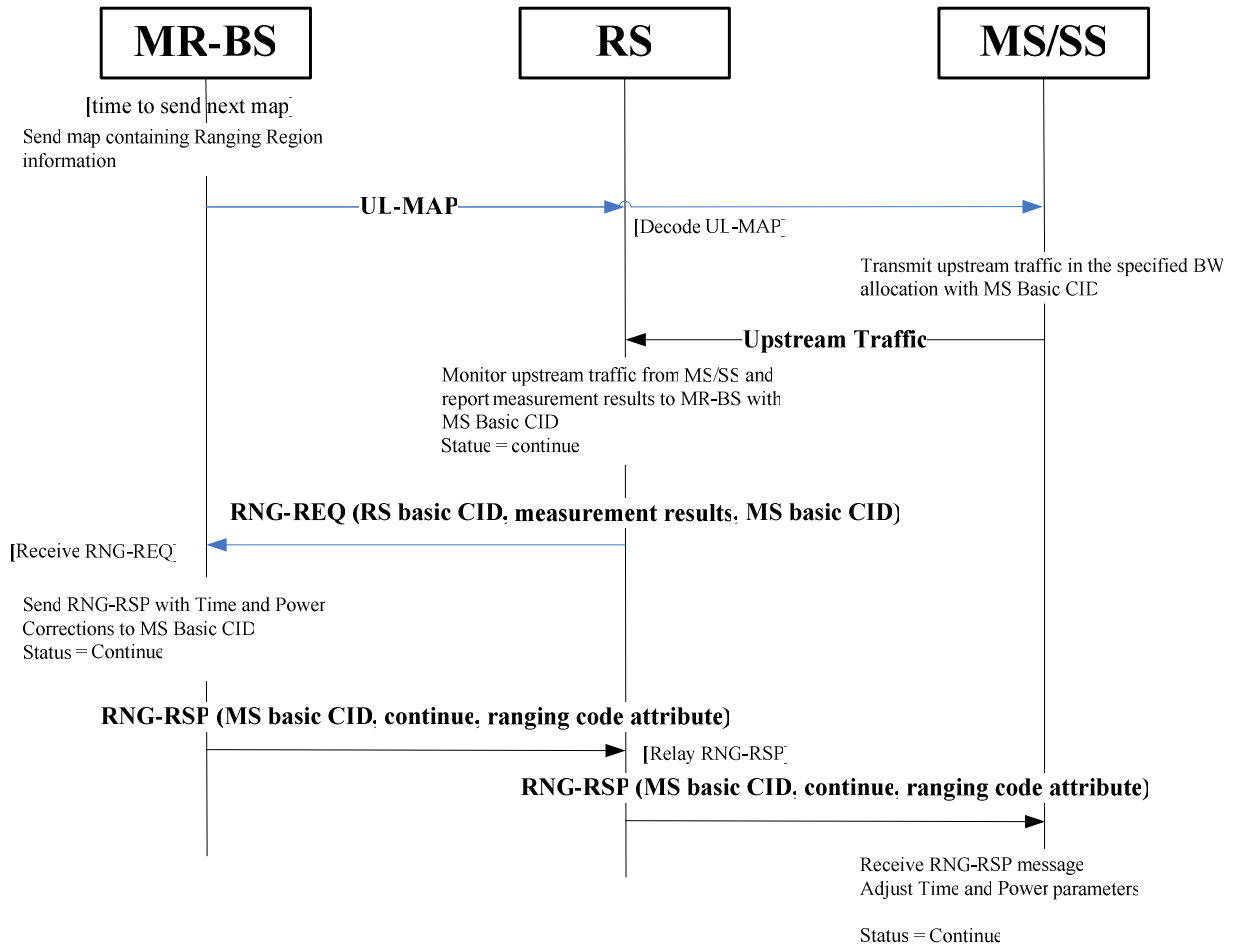


Table yyy: Unsolicited RNG-RSP triggered by upstream traffic in transparent RS systems



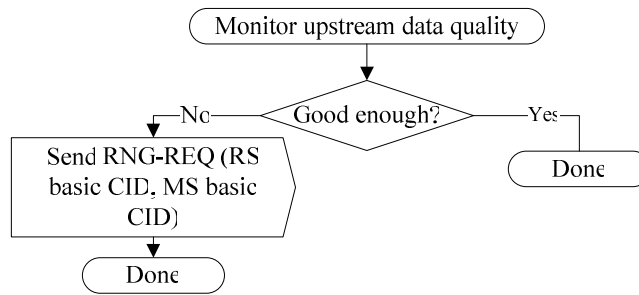


Figure xxx Unsolicited RNG-RSP – Transparent Access RS (part 1)

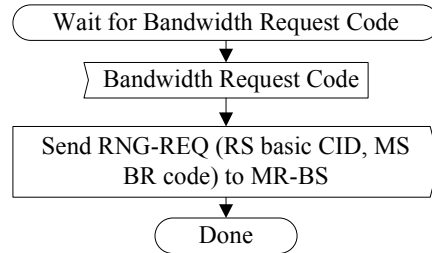


Figure xxx Unsolicited RNG-RSP – Transparent Access RS (part 2)

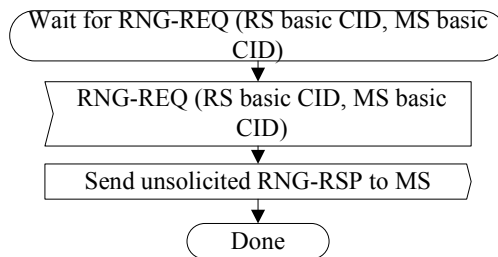


Figure yyy Unsolicited RNG-RSP with Transparent RS– MR-BS (part 1)

Note: T48 is the timer between the MR-BS sending an RNG-RSP to an MS and receiving a ranging code or RNG-REQ

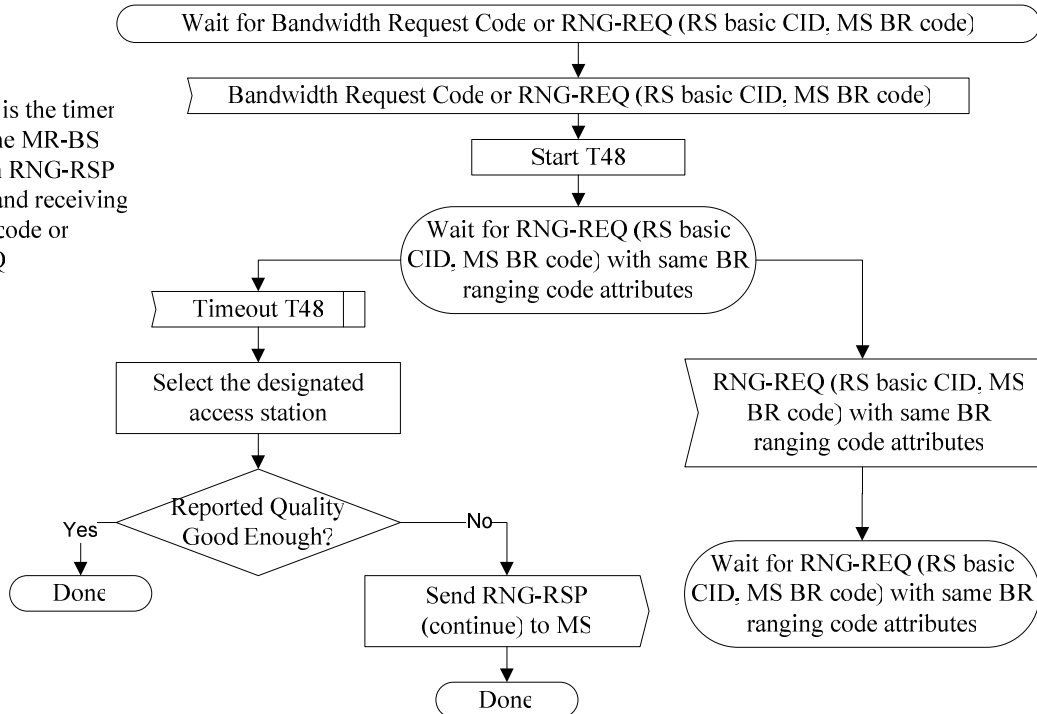


Figure yyy Unsolicited RNG-RSP with Transparent RS– MR-BS (part 2)