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Source(s)	Ray-Guang Cheng National Taiwan University of Science and Technology 43, Sec. 4, Keelung Rd. Taipei, TAIWAN Email: crg@mail.ntust.edu.tw Voice: +886-2-27376371 Fang-Ching Ren, Chie-Ming Chou, Kun-Ying Hsieh ITRI, TAIWAN Email: frank_ren@itri.org.tw David Comstock, John Lee, Zheng Shang, Jingning Zhu Huawei Technologies No.98, Lane91, Eshan Road, Shanghai, P.R.C Email: dcomstock@huawei.com Voice: +1 858 735 9382 Gang Shen, Kaibin Zhang, Shan Jin Alcatel-Lucent, Research & Innovation 388#, Ningqiao Road, Shanghai, P. R. C. Email: gang.a.shen@alcatel-sbell.com.cn Voice: 86-21-50551240-8194 Fax: 86-21-50554554 Mo-Han Fong, Gamini Senarath, Peiying Zhu, Wen Tong Nortel 3500 Carling Avenue Ottawa, Ontario, Canada K2H 8E9 Email: mhfong@nortel.com Voice: +1 613 7658983
Re:	IEEE 802.16j-07/007r2:“Call for Technical Comments and Contributions regarding IEEE Project 802.16j”
Abstract	This document provides the handover procedure and corresponding MAC management messages over relay links so that a legacy IEEE 802.16e MS can handover seamlessly within an IEEE 802.16j network.
Purpose	This contribution is provided as input for the IEEE 802.16j amendment.
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Procedures supporting MS movement among access stations with same preamble/FCH/MAP

1. Introduction

In this proposal, we propose text regarding to the MS centralized HO procedure for MS Movement among access stations with same preamble/FCH/MAP in an MR network.

2. Proposed texts

----------Start of text proposal----------

6.3.22.5.2 MS Movement among access stations with same preamble/FCH/MAP

In this case, MS is not aware of the HO. Therefore, RS and MR-BS shall perform measurement of MS signal quality to assist MS movement among stations (RS, MR-BS) that share the same preamble/FCH/MAP.

[Insert the following subclause and text into the end of the first paragraph]

The stations (RS or MR-BS) which share the same preamble/FCH/MAP form a virtual group (VG). All stations (RSs and MR-BS) in the VG shall measure the signal quality (RSSI, CINR) and the Timing Adjust (TA) for all active MSs served by this VG to support MS mobility within the VG. All RSs shall use MOB_RSSCN-REP to provide MR-BS with the selected report metrics (RSSI and/or CINR and TA).

Either one of the following two reporting modes shall be used.

<Section note: the configuration of the reporting mode is specified by MR-BS during RS initiation. This is TBD.>

6.3.22.2.5.2.1 Mode 1

In Mode 1, the access RS shall automatically report its measurement result to MR-BS in an event-triggered or periodic way.

- For event-triggered reporting, the access RS shall report its measurement results if the power or timing requirement for the specific MS is not satisfied. The access RS may use the RS bandwidth request and allocation mechanism defined in section 6.3.6.7 to request uplink resource for sending MOB_RSSCN-REP.
- For periodic reporting, the access RS shall send MOB_RSSCN-REP every REP_INT and the MR-BS shall periodically allocate uplink resource for the access RS to report the latest measurement results for sub-ordinate MSs.

<Section note: REP_INT is the reporting interval specified in the RS configuration. This is TBD.>

In Mode 1, non-access RSs shall report their measurement results if MOB_RSSCN-RSP message is received. The MR-BS shall send MOB_RSSCN-RSP message to request all or part of RSs in the same VG to report their measurement results. The MR-BS shall allocate uplink resource for the selected non-access RSs to send their MOB_RSSCN-REPs at the frame specified in MOB_RSSCN-RSP.

6.3.22.2.5.1.2 Mode 2

In Mode 2, all RSs shall automatically report the measurement results to MR-BS in an event-triggered way. Each RS shall send an MOB_RSSCN-REP to MR-BS if the measured RSSI/CINR going-up cross T_ADD[i] (i=0,…,max), or going-down cross the T_DEL[i] (i=0,…,max), or the difference between the current measured TA and the previous reported TA exceeds TA_DIFF. The RS may use the RS bandwidth request and allocation mechanism defined in section 6.3.6.7 to request uplink resource for sending their MOB_RSSCN-REP. The MR-BS shall maintain the measurement report and use those information to speedup optimal target access station selection.

<Section note: T_ADD[i], T_DEL[i] (i=0,…,max), and TA_DIFF are threshold values specified in the

configuration of the reporting mode during RS initiation. This is TBD.>.

MR-BS may select a new target RS based on the measurement results and use MOB_RNG-RSP to adjust the timing and the power level of the MS, in order to fulfill the handover procedure.

6.3.2.3 MAC management messages

[Add the columns into Table 14 as indicated.]

Table 14—MAC Management messages

Type	Message name	Message description	Connection
69	MOB_RSSCN-REP	RS scanning report	Basic
70	MOB_RSSCN-RSP	Intra-VG HO trigger message	Basic

[Insert the following subclause and text into this section]

6.3.2.3.62 MOB_RSSCN-REP message

RS in VG may use MOB_RSSCN-REP message to report the measurement results to MR-BS. The message shall be transmitted on the Basic Management CID of the RS.

The format of the MOB_RSSCN-REP message is depicted in Table A.

Table A-MOB_RSSCN-REP message format

MOB_RSSCN-REP_Message_format(){	--	--
Management Message Type=69	8 bits	--
N_CID	8 bits	Number of CIDs to be reported
Report metric	3 bits	Bitmap indicating presence of certain metrics: Bit 0: MS RSSI mean Bit 1: MS CINR mean Bit 2: Timing Adjust
Padding	5 bits	--
For (j=0; j<N_CID; j++){	--	--
Basic CID	16 bits	Basic CID of measured MS
If (Report metric [Bit 0]==1)		
MS RSSI mean	8 bits	The value shall be interpreted as an unsigned byte with units of 0.25 dB, such that 0x00 is interpreted as –103.75 dBm, an RS shall be able to report values in the range –103.75 dBm to –40 dBm.
If (Report metric [Bit 1]==1)	--	--
MS CINR mean	8 bits	The range and value encoding of CINR is TBD
If (Report metric [Bit 2]==1)	--	--
Timing Adjust	32 bits	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 MR-BS or RS. Units are PHY specific (see 10.3).
}	--	--
}	--	--

6.3.2.3.63 MOB_RSSCN-RSP message

If the reporting Mode 2 is used, an MR-BS shall transmit MOB_RSSCN-RSP message to request all

or part of RSs in the same VG for reporting their measurement results.

The format of the MOB_RSSCN-RSP message is depicted in Table B.

Table B-MOB_RSSCN-RSP message format

MOB_RSSCN-RSP_Message_format(){	--	--
Management Message Type=70	8 bits	--
N_CID	8 bits	Number of CIDs that the corresponding MSs to be scanned
Report metric	3 bits	Bitmap indicating presence of certain metrics: Bit 0: MS RSSI mean Bit 1: MS CINR mean Bit 2: Timing Adjust
Report Frame	5 bits	The measurement result is reported from the frame in which this message was received. A value of zero means that MOB_RSSCN-REP is sent in the next frame.
For (j=0; j<N_CID; j++){	--	--
Basic CID	16 bits	Basic CID of the selected MSs
}		
}	--	--

----------End of text proposal----------