Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Revision of Association Mechanism for Mobility Enhancement**
Date Submitted	**2004-01-02**
Source(s)	Phillip Barber Voice: +1 (972) 365-6314 Broadband Mobile Technologies, Inc. Fax: +1 (925) 396-0269 8302 Sebastian Inlet [mailto:pbarber@BroadbandMobileTech.com] Frisco, Tx 75035
Re:	Response to IEEE 802.16-03/58 (Call for Contributions on IEEE 802.16e/07r5)
Abstract	Revision of Association Mechanism for Mobility Enhancement
Purpose	Stimulate discussion on a more completely defined, flexible model and mechanism for facilitating mobility functionality
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.
Patent Policy and Procedures	The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures <http://ieee802.org/16/ipr/patents/policy.html>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <mailto:chair@wirelessman.org> as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <http://ieee802.org/16/ipr/patents/notices>.

Revision of Association Mechanism for Mobility Enhancement

Phillip Barber
Broadband Mobile Technologies

Observations on Current IEEE 802.16e-03/07r5 Based on Criteria from Assumptions

1. **Association**

Problem:

I am not sure I see an important reason to keep Association as a distinct concept in the doc. The adoption of the changes to max power/initial power setting (this is a mandatory use item) in IEEE 802.16d/r2 6.2.9.5 provides a good shortcut method for curtailing lengthy Ranging negotiation--exactly Association's proposed function. Certainly, given that you would be using the IEEE 802.16d/r2 6.2.9.5 method during Ranging to get Association to begin with, IEEE 802.16d/r2 6.2.9.5 likely provides as good of a shortcut mechanism to minimize the Ranging negotiation interval during actual handover as Association is likely to provide.

Remedy:

Make 'Association' a passive function performed by MSS and attached to 6.4.9.5 Initial Ranging. Modify relevant section dedicated to Association. Eliminate MSS Association Channel ID TLV item for RNG-REQ. It serves no purpose since we have added Serving BS ID.

Remedy Action 1:

[Replace **1.4.1.2.1.3 Association Procedure** *in its entirety with:*]

'**1.4.1.2.1.3 Association**

Association is an optional initial ranging parameter negotiation and MSS table notation maintenance procedure occurring during Initial Ranging of a BS. The Association relationship function is to memorialize MSS successful Scanning and Ranging of a BS for the purpose of expediting a potential future hand-over of the MSS to the then Target BS. MSS may store successful Ranging information for Associated BS for the purpose of setting initial Ranging values in a future Ranging event, possibly associated with a hand-over, to the Associated BS.

Upon completion of a successful MSS initial-ranging of a BS as specified in *IEEE P802.16-REVd/D1-2003 "Part 16: Air Interface for Fixed Broadband Wireless Access Systems"* section **6.4.9.5 Initial ranging and automatic adjustments** with the extensions specified in **11.1.3 RNG-REQ message encodings**, **Table 289a— RNG-REQ message encodings**, and **11.1.4 RNG-RSP message encodings**, **Table 290a—RNG-RSP message encodings**, if the RNG-RSP message contains a Service Level Prediction parameter set to 2, the MSS may mark the BS as Associated in its MSS local Association table of identities, recording elements of the RNG-RSP to the MSS local Association table, and setting an appropriate aging timer (See **Table 264a—Parameters and**

Constants, ASC-AGING-TIMER). Association state in the MSS local Association table shall be aged-out after ASC-AGING-TIMER timeout and the Association entry removed.

While Association is current (aging timer has not expired), MSS may use recorded Associated Ranging values to set Initial Ranging values in a new initial Ranging event to the same Associated BS. An MSS may have several Associated BS in its local Association table concurrently and shall use the respective stored Associated Ranging values only with the related Associated BS.'

Remedy Action 3:

*[In IEEE P802.16-REVd/D1-2003 "Part 16: Air Interface for Fixed Broadband Wireless Access Systems" section **6.4.9.5 Initial ranging and automatic adjustments**, page 173, insert the following between lines 27 & 29:]*

'For MSS that are employing the optional Association procedure, and to which the MSS and BS are currently Associated, the MSS may use its un-expired, previously obtained and retained associated Ranging values to set initial ranging values including $P_{TX\_IR\_MAX}$ power levels.'