Project	**IEEE 802.16j Mobile Multihop Relay Task Group**
Title	**Comments on "Harmonized definitions and terminology for 802.16j Mobile Multihop Relay"(802.16j-06/014)**
Date:	**2006-09-19**

Source(s)	David Comstock	Aimin Zhang, Zheng Shang, John Lee
	Huawei Technologies 10180 Telesis Ct, Suite 365 Voice: +1 858 882 0337 Fax: +1 858 882 0350 E-mail:dcomstock@huawei.com	Huawei Technologies No. 98, Lane 91, Ershan Road, Pudong, Shanghai, P.R. China Voice: +86-21-68644808-24825 Fax: +86-21-50898375 E-mail: {zam, shang_zheng, john_lee}@huawei.com

Re:	Response to a call for comments for the MMR TG
Abstract	This contribution gives some comments on the harmonized terminology document for 802.16j MMR.
Purpose	To further clarify some terms defined in 802.16j-06/014.
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>.

Comments on "Harmonized definitions and terminology for Mobile Multihop Relay"

Huawei Technologies

Introduction

This contribution presents definitions and terminology for use within the IEEE 802.16j Task Group on Mobile Multihop Relay. This contribution includes only definitions that have been agreed to within the Definitions and Terminology Ad Hoc and is therefore a living document that will be revised regularly. It is expected that these definitions will be imported to the IEEE 802.16j amendment as needed.

Definitions

Acronyms and terms used in these definitions and not defined herein are defined in paragraph 3 of IEEE Standard 802.16-2004 or IEEE Standard 802.16e-2005 or in the IEEE Dictionary of Standards Terms. These definitions are in alphabetical order and may depend upon later definitions.

1.1 **access link**: An 802.16 radio link that originates or terminates at an MS. The access link is either an uplink or downlink as defined in IEEE 802.16-2004.

1.2 **access station:** ~~The~~ A station at the point of direct access into the network for a given MS ~~or RS~~. An access station can be a BS, RS, or MMR-BS.

Informative Note: An MS may have more than one access stations when cooperative relay is implemented~~An intermediate RS acts as an access station for another RS~~.

1.3 **access traffic**: Traffic traveling over an access link.

1.4 **active station:** A station that is informed of the necessary MS or RS MAC/PHY information to enable it to provide access to the MS or RS in the context of macro diversity.

Informative Note: For macro diversity handover the MS or RS transmits/receives data to/from all active stations in the MMR diversity set.

1.5 **anchor station:** ~~The active~~A station where the ~~mobile station~~MS or RS is synchronized, performs ranging and monitors the downlink for control information. The anchor station can be RS, BS, or MMR-BS.

Informative note: In FASS, the anchor station is the one designated to transmit/receive data to/from the MS in a given frame.

1.6 **candidate station**: A station offering a potential point of direct access into the network for a given MS during the next handover. A candidate station can be an RS, BS, or MRS-BS.

1.7 **cell:** The radio coverage area of a particular station (e.g. BS, MMR-BS, or RS) where an MS can be serviced via access links.

1.8 **cooperative relay**: Transmitting information over multiple relayed paths and estimating the transmitted information at the receiver by combining or selecting the signals received from multiple paths where at least one path is relayed.

1.9 **downstream traffic:** Data flowing from the MMR-BS to the destination MS.

1.10 **fast access station switching (FASS):** Method by which an MS can change its access station from frame to frame depending on the station selection mechanism. The access station can be an RS, BS, or MMR-BS. The MS is transmitting/receiving data to/from one of the active stations (the anchor station) during any given frame.

Informative notes: Fast BS switching (FBSS) was defined in IEEE Std 802.16e-2005 section 3.77 and the terminology is modified here to allow switching between any type of access station (RS, BS, or MMR-BS). Switching can occur between the same type or different types of access stations.

1.11 **fixed relay station (FRS)**: A relay station that is permanently installed at a fixed location.

Informative notes: A connection to a power source is assumed. A backup power source may be provided.

1.12 **inband relay:** MMR using the *same* RF channels on relay (i.e. MMR-BS-to-RS or RS-to-RS) and access links (i.e. MMR-BS-to-MS or RS-to-MS)

1.13 **inter-MMR-BS handove**r: MS or RS handover between two RSs controlled by different MMR-BSs or between an MMR-BS and an RS controlled by a different MMR-BS.

Informative notes: The MS or RS that is being handed over is in a different MMR-cell before and after the handover.

1.14 **intermediate RS**: Any *k*-hop RS along an *m*-hop relay path where *k*<*m.*

Informative notes: The endpoints of a relay path are the MMR-BS and the RS that has direct access to the MS. An *m*-hop relay path consists of *m* hops between these endpoints.

1.15 **intra MMR-BS handover**: MS or RS handover between two RSs controlled by the same MMR-BS or between an MMR-BS and one of its subordinate RSs.

Informative notes: The MS or RS that is being handed over is in the same MMR-cell both before and after the handover.

1.16 **k-hop**: an adjective meaning k consecutive links.

1.17 **MMR base station (MMR-BS)**: A base station that is compliant with amendment IEEE Std 802.16j to IEEE Std 802.16, which has extended functionality to support MMR.

Informative Notes: An MMR-BS is fully compliant with IEEE Std 802.16e-2005 and has been enhanced by amendment IEEE Std 802.16j to support mobile multihop relay. Mobile multihop relay is supported only for the OFDMA mode of IEEE Std 802.16e-2005. Relay stations that support a particular MMR-BS are managed by that MMR-BS.

1.18 **MMR-cell**: The radio coverage area of an MMR-BS cell and all of its subordinate RS cells.

Informative Notes: All communications resources within an MMR-cell are managed by the MMR-BS either through centralized or decentralized control. The MMR-cell contains all MSs connected to the

MMR-BS using one-hop links and all MSs connected to any of the RSs managed by the MMR-BS. Resource management and control of MSs within an MMR-cell may be via direct radio links (i.e. not relayed) or via relayed messages.

1.19 **MMR diversity set**: The list of active stations of a given MS. This set is applicable to macro diversity handover, cooperative relay, and fast access station switching.

Informative Note: The term “diversity set” is defined in IEEE Std 802.16e-2005 section 3.75.

1.20 **mobile multihop relay (MMR)**: The concept of relaying user data and possibly control information between an MMR base station and an IEEE Standard 802.16 compliant mobile station through one or more relay stations.

Informative Notes: Licensed spectrum is used for relay. The purpose of enabling relay is to enhance coverage, range, throughput, and capacity of an MMR–BS, and to enable very low power devices to participate in the network. The adjective “mobile” used here refers to the fact that both mobile subscriber stations and mobile relay stations are supported. It may be possible to establish multiple communication paths between an MMR-BS and an MS and communicate the same user data and/or control information through both paths to improve performance.

1.21 **mobile relay station (MRS):** A relay station that is intended to function while in motion.

Informative notes: MRS mobility is constrained by the same limits as an MS in IEEE Std 802.16e-2005. An MRS may be installed in a bus or train for use by IEEE Std 802.16e-2005 subscribers.

1.22 **neighbor station:** For any MS or RS, a neighbor station is a station (other than the anchor station) whose downlink transmission can be received by the MS or RS. A neighbor station can be a RS, BS, or MMR-BS.

Informative notes: This definition is similar to the definition of neighbor BS defined in IEEE Std 802.16e-2005 section 3.

1.23 **out-of-band relay**: MMR using *different* RF channels on relay (i.e. MMR-BS-to-RS or RS-to-RS) and access links (i.e. MMR-BS-to-MS or RS-to-MS).

1.24 **relay downlink (R-DL):** Down link to a particular RS for downstream relay.

1.25 **relay link (R-Link)**: An 802.16j radio link between an MMR-BS and an RS or between a pair of RSs. This can be a relay uplink or downlink.

1.26 **relay path:** Concatenation of k consecutive relay links (k >= 1) between the MMR-BS and the designated access RS.

1.27 **relay station (RS):** A station that conforms to IEEE Std 802.16j and whose functions are 1) to relay user data and possibly control information between other stations, and 2) to execute processes that indirectly support mobile multihop relay.

Informative notes: All RSs are managed by an MMR-BS, but they may have some control of relay functions within their neighborhood.

1.28 **relay traffic**: Traffic traveling over a relay link.

1.29 **relay uplink (R-UL):** Uplink from a particular RS for upstream relay.

1.30 **serving base station**: For any MS, the serving base station is the station with which the MS has most recently completed registration at initial entry or during a handover. ~~A serving station can be a BS or MMR-BS.~~

Informative Note: The term serving BS is defined in IEEE Std 802.16e-2005 section 3.5.2. The serving base station is not necessarily the access station although this is possible.

1.31 **target access station**: A station which is the primary candidate for MS network access following a handover. The target access station can be an RS, BS, or MMR-BS.

1.32 **target anchor station**: For any MS or RS, the station which is the primary candidate to be the anchor station following a handover. A target anchor station can be a RS, BS or MMR-BS.

1.33 **target ~~serving~~ base station**: A station which is the primary candidate for MS registration following a handover. ~~The target serving~~ station ~~can be a BS or MMR-BS.~~

Informative notes: Target BS was defined in IEEE Std 802.16e-2005 section 3.5.3

1.34 **upstream traffic:** Data flowing from the MS to the destination MMR-BS.