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Re:	Response to a call for contributions.
Abstract	Discuss the terminology for MMR
Purpose	To propose vocabulary for IEEE 802.16j
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Vocabulary for MMR

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1 Introduction

This contribution aims to present a set of definitions of terminology used in MMR discussion for IEEE 802.16j Task Group. The objective is to construct and to clarify the basic vocabularies that will enable the discussion and standardization of the MMR amendment to IEEE 802.16. Emphasis is laid on the minimum vocabulary required and the *consistency* with respect to the IEEE 802.16-2004 and IEEE 802.16e-2005.

2 Proposed Amendments to Harmonized Vocabulary

The following track changes are with respect to Document IEEE C802.16j-06/041.

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

2.2. **active MMR-BS**: An MMR-BS ~~which~~ that is informed of the ~~MS~~MS's capabilities, security parameters, service flows, and full ~~MAP~~MAC context information. For macro diversity handover the MS transmits/receives data to/from all active MMR-BSs in the MMR diversity set.

Informative notes: Active BS ~~was~~ is defined in IEEE Std 802.16e-2005 Section 3.5.4.

2.3. [**active RS**: An RS which is informed of a *subset* of the MS capabilities, security parameters, service flows, and MAP context information. For macro diversity handover the MS transmits/receives data to/from all active RSs in the MMR diversity set.] *Proposed for Deletion*

2.4. **anchor MMR-BS**: In the context of Macro Diversity Handover (MDHO), cooperative relay, and Fast Serving Station Switching (FSSS), this is the MMR-BS that ~~transmit~~sends registration, ranging, synchronization, and other control information to the MS.

Informative notes: Anchor BS ~~was~~ is defined in IEEE Std 802.16e-2005 Section 3.72.

2.5. [**anchor RS**: In the context of Macro Diversity Handover (MDHO), cooperative relay, and Fast Serving Station Switching (FSSS), this is the RS that transmits a *subset* of registration, ranging, synchronization, and other control information to the MS.] *Proposed for Deletion*

2.6. **cel**l: The radio coverage~~geographic~~ area ~~containing all locations that can access the network via~~for a particular access station (e.g. BS, MMR-BS, or RS) ~~using one-hop radio links~~.

Informative notes: A cell is the total direct-access area supported by a given access station. This includes coverage areas of all sectored antennas but excludes coverage areas of relay stations that may be managed by a MMR-BS station. Depending on the type of station, there are MMR-BS cells, RS cells, and BS cells.

2.7. **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

2.8. **fast serving station switching (FSSS)**: Serving station switching with which an MS can change its serving station from frame to frame depending on the serving station selection mechanism. A serving station can be an RS, BS, or MMR-BS.

Informative notes: Fast BS switching (FBSS) was defined in 802.16e and the terminology is modified to allow switching between any types of serving stations (RS, BS, or MMR-BS). Switching can be either between same type of serving stations or between different types of serving stations.

2.9. **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.

2.10. **inband relay:** MMR using the *same* RF ~~channel for the RS to~~channels on relay (i.e. MMR-BS~~,~~-to-RS or RS-to--RS~~;)~~ and ~~RS to MS radio~~access links (i.e. MMR-BS-to-MS or RS-to-MS).

2.11. **inter-MMR-BS handover**: MS or RS handover between two ~~RS~~RSs controlled by different MMR-BSs or between ~~a~~ an MMR-BS and an RS ~~where two~~controlled by a different MMR-~~BS are involved in the handover~~BSs.

Informative notes: (1) The MS or RS that is being handed over is in a different MMR-cell before and after the handover. (2) An inter-MMR-BS handover is a handover between two virtual base stations.

2.12. **intra-MMR-BS handover**: MS or RS handover between two RSs controlled by the same MMR-BS or between an MMR-BS and ~~an RS where all stations involved in the handover are controlled by the same MMR-BS~~one of its subordinate RSs.

Informative notes: (1) The MS or RS that is being handed over is in the same MMR-cell both before and after the handover. (2) An inter-MMR-BS handover is a handover within a virtual base station.

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

2.14. **MMR base station (MMR-BS)**: A base station that is compliant with amendments IEEE Std 802.16j ~~through~~ to IEEE Std 802.16~~e-2005~~, which has extended functionality to support MMR ~~as defined in 802.16j~~.

Informative Notes: An MMR-BS is fully compliant with IEEE ~~Standard~~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 ~~Standard~~Std 802.16e-2005. Relay stations that support a particular MMR-BS are managed by that MMR-BS.

2.15. **MMR-cell**: The radio coverage~~geographic~~ area ~~composed~~ of ~~the~~ a MMR-BS cell and all of its subordinate RS cells.

Informative Notes: (1) 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-~~RS.~~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. (2) An MMR-cell is the radio coverage area of a virtual base station.

2.16. **MMR diversity set**: List of ~~active~~ RSs, BSs, and/or MMR-BSs ~~of~~ associated with an MS. This set is applicable to macro diversity handover, cooperative relay, and fast serving station switching.

2.17. **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, ~~and~~ throughput, and ~~possibly~~ 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 ~~is~~may be possible to establish multiple communications paths between ~~the~~ an MMR-BS and an MS and ~~to~~ communicate the same user data and/or control~~/management~~ information through both paths to improve ~~communications reliability~~performance.

2.18. **relay 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.

3 Proposed Additional Terms and Definitions

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

3.2. **Downstream Traffic:** data flow to be relayed from MMR-BS to targeting MS.

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

3.4. **MMR-Frame:** The frame support the links between MMR-BS and RS and between RSs.

3.5. **Relay downlink (R-DL):** Down link between the MMR-BS and RS nodes or between RS nodes downstream relay.

3.6. **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 an R-DL or R-UL.

3.7. **Relay Uplink (R-UL):** Uplink between the MMR-BS and RS nodes or between RS nodes for upstream relay.

3.8. **R-MAC:** MAC sub-layer to support multi-hop relay.

3.9. **R-MAP:** The MAP dedicated to the R-zone resource allocation.

3.10. **R-PHY:** Physical sub-layer to support multi-hop relay.

3.11. **R-Zone:** The OFDMA resource dedicated to the links between MMR-BS and RS and between RSs communications.

3.12. **Upstream Traffic:** data flow to be relayed from MS to targeting MMR-BS

3.13. **Virtual Base Station (VBS):** VBS consists of a serving MMR-BS and a subset of RSs along the selected relay path between MMR-BS and the designated access RS. VBS provides relay functions including data forwarding, mobility management, connectivity, security and QOS, with central coordination from BS.