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Re:	This is a comment contribution on 802.16j-06/017
Abstract	Updated ToC of task group working document
Purpose	For discussion during session #45
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Table of Contents of Task Group Working Document

Mike Hart & JungJe Son
Relay TG Editors

Introduction

This document is provided in response to the authorization of the TG editors through a motion passed by the Relay TG at session #44 to draft an initial Table of Contents of the Task Group working document.

As this is an editorial task, the number of sections taken from the existing standards documents (IEEE Std. 802.16-2004, IEEE Std. 802.16e-2005, IEEE Std. 802.16-2004/Cor1-2005) is kept to those that can be considered as obvious. These are sections that already exist where at a minimum clarification would be required to explain the impact of the introduction of a relaying mechanism and/or a relaying entity (i.e. relay station) on the existing features.

~~It is the view of the editors that determining whether or not further sections should be added requires some technical decisions to be made. Furthermore, as the editors were specifically instructed to create the ToC based on the existing standard, it is outside of their power to propose new sections at this time.~~

~~Consequently, an extensive list of sections is not provided at this point in time and it is left to the Task Group through comments and contributions in Session #45 to build on this basic list to work towards developing an initial Table of Contents for the Project 802.16j Baseline Task Group Document.~~

Comments on this contribution propose new subclauses whenever an MMR revision/insertion is anticipated. *However, it is understood that during the course of standards development, some of these new sections may be deemed unnecessary, in which case they will be deleted. Similarly, new sections may be added if deemed necessary. Editorial remarks are shown in* ***bold italic****. Note that editorial remarks are meant to be informative only.*

Table of Contents

1.6 Frequency Bands

1.6.1 Air interface nomenclature and PHY compliance

Insert discussion of MMR air interface.

1.7 Reference Model

Insert the following new subclause into 1.4.

1.7.7 MMR reference model

This subclause should include a figure to illustrate the MMR reference model. It should define the MMR network elements including the MMR-BS, RS, and MS, and define the network interfaces between them.

2 References

Insert the following references:

IEEE Std 802.16-2004, IEEE Standard for local and metropolitan area networks: Part 16: Air Interface for Fixed Broadband Wireless Access Systems.

IEEE Std 802.16e/IEEE Std 802.16-2004/Cor 1-2005, Amendment 2 and Corrigendum 1 to IEEE Std 802.16-2004, IEEE Standard for Local and metropolitan area networks: Part 16: Air Interface for Fixed and Mobile Broadband Wireless Access system, Amendment 2: Physical and Medium Access Control Layers for Combined Fixed and Mobile Operation in Licensed Bands and Corrigendum 1.

3 Definitions

Insert new definitions for MMR at the end of this section.

4 Abbreviations and Acronyms

Insert the following abbreviations:

MMR – mobile multi-hop relay;
MMR-BS – MMR enabled base station;
RS – relay station;

1 MAC Common Part Sublayer

1.4 PMP

Insert the following subclause at the end of 6.1:

1.4.7 Mobile Multihop Relay (MMR)

This section provides an overview of the MMR MAC, including MMR-BS to RS connections, RS to RS connections, and MMR-BS/RS to SS connections.

1.5 Data/Control plane

1.5.1 Addressing and connections

Insert the following new subclause at the end of 6.3.1:

1.5.1.1 MMR addressing and connections

This section contains two separate subclauses; one that defines the addressing scheme for MMR and another that defines the connection identification numbering required to support MMR. .

1.5.2 MAC PDU formats

1.5.2.1 MAC header formats

Insert subclauses (i.e. a new subclause for each new header format) at the end of 6.3.2.1 to define MAC header formats for PDUs on relay links.

1.5.2.2 MAC subheaders and special payloads

Insert subclauses (i.e. a new subclause for each new subheader and special payload) into 6.3.2.2 to define MAC subheaders and special payloads for PDUs on relay links.

1.5.2.3 MAC management messages

Insert subclauses (i.e. a new subclause for each new management message) at the end of 6.3.2.3 to define MAC management messages on relay links.

1.5.3 Construction and transmission of MAC PDUs

Insert text that defines MAC PDUs within MMR mode.

1.5.4 ARQ mechanism

Insert a new subclause at the end of 6.3.4 to define ARQ mechanisms in MMR mode.

1.5.4.1 MMR ARQ mechanism

This section defines ARQ in the context of MMR. It addresses ARQ performed between the MMR-BS and MS or per hop.

1.5.1 Bandwidth allocation and request mechanisms

Insert a new subclause at the end of 6.3.6 to define bandwidth allocation and request in MMR mode.

1.5.1.1 MMR bandwidth allocation and request mechanisms

This section defines bandwidth request and allocation for MMR. It should cover the required protocols for both centralized and distributed control.

1.5.2 MAC support of PHY

Insert a new subclause at the end of 6.3.7 to define MAC support of PHY in MMR mode.

1.5.2.1 MMR MAC support of PHY

This section defines MAC constructs to support the PHY in MMR mode. In particular, constructs for relay links should be included here.

1.5.3 Contention resolution

1.5.4 Network entry and initialization

Insert a new subclause at the end of 6.3.9 to define network entry and initialization in MMR mode.

82.4.7.1MMR network entry and initialization

This section contains one subclause outlining the MS network entry and initialization process in the context of MMR and another subclause outlining the RS network entry and initialization process.

1.5.5 Ranging

6.3.10.3OFDMA based ranging

Insert the following subclause at the end of 6.3.10.3:

6.3.10.3.4 MMR support for OFDMA based ranging

This section defines signaling and protocols that support ranging on the relay links.

1.5.6 Update of channel descriptors

Insert a discussion on updating the channel descriptors for relay links.

1.5.7 Assigning SSs to multicast groups

Insert the following subclause at the end of 6.3.12:

1.5.7.1 MMR assignment of SSs to multicast groups

This subclause contains text describing the behavior of the MMR-BS and the RS and the signaling between them when an MS is added to a multicast polling group.

1.5.8 Establishment of multicast and broadcast transport connections

Insert the following subclause at the end of 6.3.13:

1.5.8.1 MMR establishment of multicast and broadcast transport connections

This section is expanded to contain text describing the behavior of the MMR-BS and the RS to support multicast and broadcast transport connections.

1.5.9 QoS

Insert text that defines MMR support for QoS.

1.8849.7MAC support for HARQ

Insert text that defines MMR support for HARQ.

1.5.10 DL CINR report operation

Insert a subclause at the end of 6.3.18 to define DL CINR report operation in MMR mode.

6.3.10.3MMR DL CINR report operation

This section defines constructs required to support DL CINR report operation in MMR mode. In particular, signaling required for distributed and centralized control should be included here.

1.5.11 Optional Band AMC operations using 6-bit CQICH encoding

6.3.21 Sleep mode for mobility-supporting MS

Insert a subclause at the end of 6.3.21 to define sleep mode in the context of MMR.

6.3.21.7MMR support for sleep mode

This section defines constructs required to support sleep mode operation in MMR mode. In particular, signaling required for distributed and centralized control should be included here.

1.5.12 MAC layer handover procedures

Insert the following new subclauses at the end of 6.3.22 to indicate MAC constructs required to support MS and RS handover in MMR mode.

6.3.22.4MMR support for handover

This section includes one subclause that defines MAC constructs and signaling required for MS handover in MMR mode and another subclause that defines MRS (mobile relay station) handover. Much of MS handover will be similar to subclauses 6.3.22.1 – 6.3.22.3 except for some additional procedures and signaling required for the RSs. However, MRS handover will require extensive discussion. MS and MRS handovers can occur inter-RS, RS to MMR-BS, or MMR-BS to RS.

1.5.13 Multicast and broadcast services (MBS)

Insert a subclause at the end of 6.3.23 to define multicast and broadcast services in the context of MMR.

6.3.18.3MMR multicast and broadcast services

This section defines constructs required to support multicast and broadcast service in MMR mode. In particular, signaling and procedures carried out by the RSs should be included here.

1.5.14 MS Idle Mode (optional)

Insert a subclause at the end of 6.3.24 to define idle mode in the context of MMR.

6.3.24.10MMR support for MS idle mode

This section defines constructs required to support idle mode operation in MMR mode. In particular, signaling required for distributed and centralized control should be included here.

Insert the following subclauses at the end of 6.3:

1.5.15 MMR path management and routing

This section defines the protocols and signaling required in order to support path management and routing in MMR mode.

1.5.16 MMR neighborhood discovery

This section defines the signaling and protocols for RS neighborhood discovery.

1.5.17 MMR scheduling mechanism

This section defines the signaling and protocols that support scheduling in MMR.

2 Security sublayer

Insert text to enable MMR security support.

3 PHY

8.4 WirelessMAN-OFDMA PHY

6.3.1 Introduction

8.4.4 Frame structure

Insert the following new subclause to the end of section 8.4.4:

8.4.4.8 MMR frame structure

This section defines several possible frame structures for MMR operation.

3.4.7 Map message fields and IEs

Insert subclauses to parts of section 8.4.5 to specify new MAPs and IEs required to implement MMR.

8.4.7 OFDMA ranging PHY transmission

Insert a definition of new ranging codes for RSs and the type of ranging the relay links will support.

3.4.8 Space-Time Coding (optional)

3.4.9 Channel coding

3.4.10 Control mechanisms

3.4.11 Channel quality measurements

3.4.12 Transmitter requirements

3.4.13 Receiver requirements

3.4.14 Frequency control requirements

3.4.15 Optional HARQ support

4 Configuration

Insert the following new section at the end of clause 9:

9.3 MMR-BS configuration

This section defines configuration procedures for MMR-BSs.

9.4 RS configuration

This section defines configuration procedures, such as frequency assignment, for RSs.

5 Parameters and constants

10.1 Global values

Insert values related to MMR at the end of the Table 342.

5.4 PKM parameter values

Insert values related to MMR at the end of the Table 343.

5.5 PHY-specific values

Update tables in 10.3 that are affected by MMR. Insert the following new subclause at the end of 10.3:

1.3.5 MMR PHY parameters and definitions

This section includes PHY parameters and definitions specific to MMR.

5.6 Well-known addresses and identifiers

Insert values related to MMR at the end of the Table 345.

6 TLV Encodings

From 11.1-11.19, new TLV encodings related to MMR can be added into each legacy message type where appropriate. Insert new subclauses at the end of clause 11 for new message types introduced by MMR.