Baseline Document for Draft Standard for
Local and Metropolitan Area Networks

Part 16: Air Interface for Fixed and Mobile Broadband Wireless Access Systems

Multihop Relay Specification

Sponsor
LAN-MAN Standards Committee
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IEEE Computer Society

Prepared by the Relay Task Group of IEEE 802.16

Abstract: This document specifies OFDMA physical layer and medium access control layer enhancements to IEEE Std. 802.16 for licensed bands to enable the operation of relay stations.

Keywords:
Introduction

(This introduction is not part of the IEEE P802.16j, Draft amendment to IEEE Standard for Local and Metropolitan Networks Part 16: Air Interface for Fixed and Mobile Broadband Wireless Access Systems - Multihop Relay Specifications).

Participants

This document was developed by the IEEE802.16 Working Group on Broadband Wireless Access, which develops the WirelessMAN™ Standard for Wireless Metropolitan Area Networks.

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Primary development was carried out by the Working Group’s Relay Task Group.

TG Officers

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Part 16: Air Interface for Fixed and
Mobile Broadband Wireless Access
Systems

Multihop Relay Specification

NOTE-The editing instructions contained in this amendment define how to merge the material contained
herein into the existing base standard and its amendments to form a comprehensive standard.

The editing instructions are shown bold italic. Four editing instructions are used: change, delete, insert, and
replace. Change is used to make small corrections in existing text or tables. The editing instruction specifies
the location of the change and describes what is being changed by either by using strikethrough (to remove
old material) or underscore (to add new material). Delete removes existing material. Insert adds new
material without disturbing the existing material. Insertions may require renumbering. If so, renumbering
instructions are given in the editing instruction. Replace is used to make large changes in existing text,
subclauses, tables, or figures by removing existing material and replacing it with new material. Editorial
notes will not be carried over into future editions because the changes will be incorporated into the base
standard.
1. Overview

1.1 Scope

This document specifies OFDMA physical layer and medium access control layer enhancements to IEEE Std 802.16 for licensed bands to enable the operation of relay stations. Subscriber station specifications are not changed.

1.2 Purpose

The purpose of this amendment is to enhance coverage, throughput and system capacity of 802.16 networks by specifying 802.16 multihop relay capabilities and functionalities of interoperable relay stations and base stations.

1.3 Frequency bands

1.3.4 Air interface nomenclature and PHY compliance

1.4 Reference model

Insert new subclause 1.4.2:

1.4.2 Relaying reference model

2. References

3. Definitions

4. Abbreviations and acronyms

6. MAC common part sublayer

6.1 PMP

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6.1.1 Relaying extension

6.3 Data/Control plane

6.3.1 Addressing and connections

Insert new subclause 6.3.1.3:
6.3.1.3 Addressing and connections for relay support

6.3.2 MAC PDU formats

6.3.2.1 MAC header formats

6.3.2.2 MAC subheaders and special payloads

6.3.2.3 MAC management messages

6.3.3 Construction and transmission of MAC PDUs

6.3.4 ARQ mechanism

6.3.4.6 ARQ operation

Insert new subclause 6.3.4.6.4:

6.3.4.6.4 ARQ modifications for relaying

6.3.5 Scheduling services

6.3.6 Bandwidth allocation and request mechanisms

Insert new subclause 6.3.6.7:

6.3.6.7 Relaying support for scheduling

Insert new subclause 6.3.6.7.1:

6.3.6.7.1 Distributed scheduling

Insert new subclause 6.3.6.7.2:

6.3.6.7.2 Centralized scheduling

6.3.7 MAC support of PHY

Insert new subclause 6.3.7.7:

6.3.7.7 Optional MAC support of the PHY for relaying

6.3.8 Contention resolution

6.3.9 Network entry and initialization

Insert new subclause 6.3.9.16:
6.3.9.16 Support for network entry and initialization in relay mode

6.3.10 Ranging

6.3.10.3 OFDMA based ranging

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6.3.11 Update of channel descriptors

6.3.12 Assigning SSs to multicast groups

6.3.13 Establishment of multicast and broadcast transport connections

6.3.14 QoS

6.3.17 MAC support for HARQ

6.3.18 DL CINR report operation

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6.3.19 optional Band AMC operations using 6-bit CQICH encoding

6.3.21 Sleep mode for mobility-supporting MS

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6.3.23 Multicast and broadcast services (MBS)

6.3.23.1 Single-BS access

6.3.23.2 Multi-BS access

6.3.24 MS Idle Mode (optional)

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6.3.25 Relay path management and routing

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7. Security sublayer

7.1 Architecture

7.2 PKM protocol

7.3 Dynamic SA creation and mapping

7.4 Key usage

7.5 Cryptographic methods

7.6 Certification profile

7.7 Pre-Authentication

7.8 PKMv2

8. PHY

8.4 WirelessMAN-OFDMA PHY layer

8.4.1 Introduction

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Insert new subclause 8.4.4.8:
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8.4.5 Map message fields and IEs
8.4.7 OFDMA ranging
8.4.8 Space-Time Coding (optional)
8.4.9 Channel coding
8.4.10 Control mechanisms
8.4.11 Channel quality measurements
8.4.12 Transmitter requirements
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8.4.14 Frequency control requirements
8.4.15 Optional HARQ support

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Insert new subclause 9.3:

9.3 MR-BS configuration

Insert new subclause 9.4:

9.4 RS configuration

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10.4 Well-known addresses and identifiers

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