
**Information technology —
Telecommunications and information
exchange between systems — High rate
60 GHz PHY, MAC and PALs**

*Technologies de l'information — Téléinformatique — PHY, MAC et
PALs 60 GHz à haut débit*

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 13156 was prepared by Ecma International (as ECMA-387) and was adopted, under a special "fast-track procedure", by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

This second edition cancels and replaces the first edition (ISO/IEC 13156:2009), which has been technically revised.

Introduction

This International Standard specifies PHY, MAC and PALs for flexible and heterogeneous multi-Gigabit Wireless Personal Area networks. The heterogeneous network consists of two types of devices (Types A and B) that can fully coexist and interoperate but at the same time are able to operate independently. As a result this standard enables a wide range of different implementations and applications ranging from simple and low-power data transfer at short ranges, suitable for handheld devices, to high-rate multimedia streaming at longer distances, when adaptive antenna arrays are employed. Applications include Sync-and-Go, Access points, Wireless desktops and docking stations and uncompressed video streaming.

The Type A device is designed to be the high-end, high-performance device and provides many features including high data rate, longer range, robustness against multipath, support for adaptive antenna arrays and multi-level QoS. On the other hand, Type B devices, designed for handheld devices, are simpler, low power and low cost, while offering high data rates.

Type A and Type B devices offer data rates up to 6,350 Gbps and 3,175 Gbps in a single channel, respectively. This International Standard defines four frequency channels with separation of 2,160 GHz, which may be bonded to each other to increase the data rates by a factor of 2, 3 or 4.

This International Standard defines a single decentralized MAC protocol for both device types, which provides interoperability and coexistence for the device types and features high bandwidth efficiency, QoS provisions, and spatial reuse capability (Figure 1).

Multiple PALs can reside on top of the MAC layer, which interact with the MAC layer through a multiplexing sublayer (MUX). This edition of ISO/IEC 13156 provides an HDMI¹ PAL as well as information regarding IP and USB PALs.

1. HDMI is the registered trademark of the HDMI LLC.

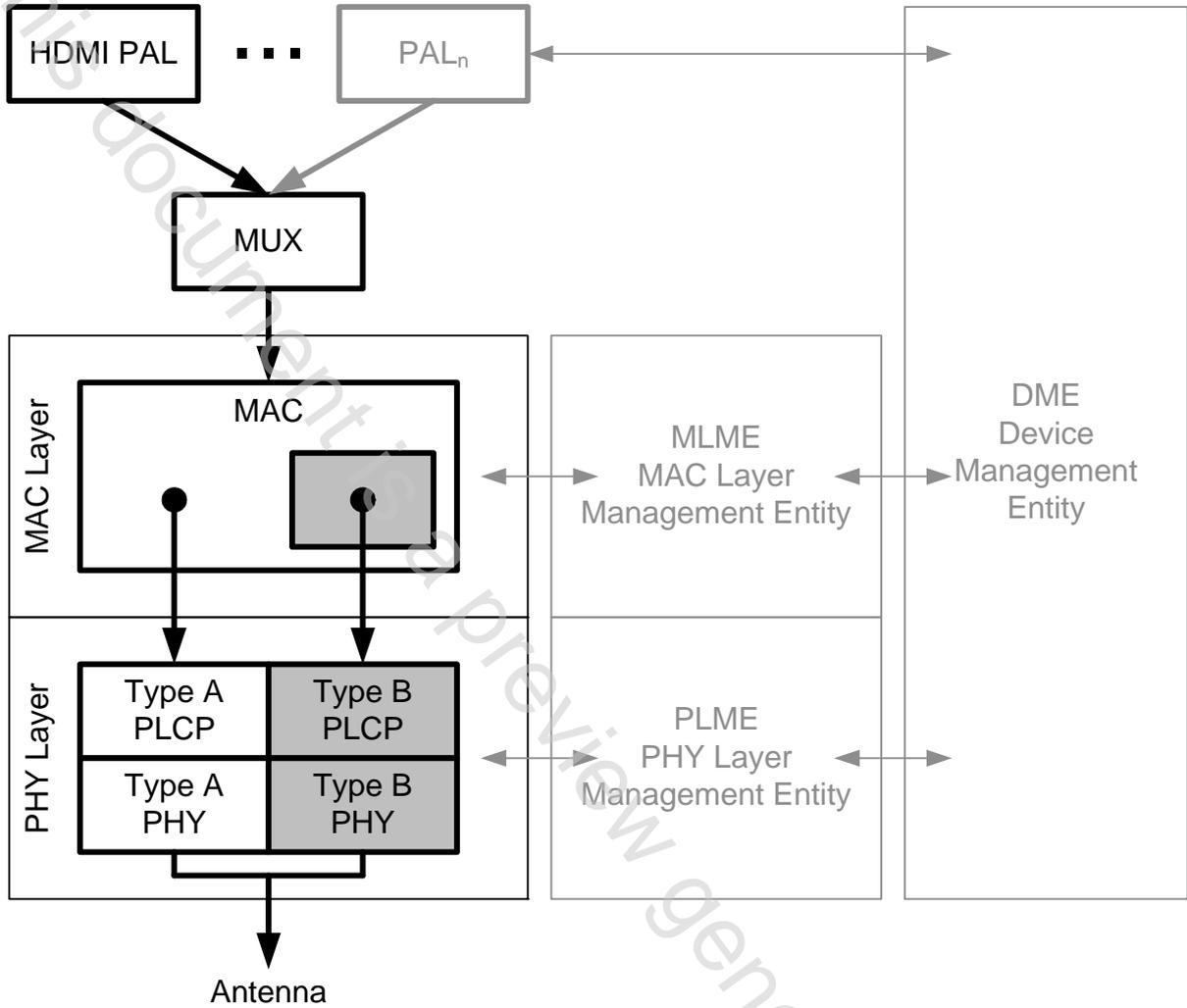


Figure 1 - Protocol structure

NOTE The DME, MLME, PLME, and PALs (except the HDMI PAL) are outside the scope of this International Standard and all references to these are informative.

Information technology — Telecommunications and information exchange between systems — High rate 60 GHz PHY, MAC and PALs

1 Scope

This International Standard specifies a physical layer (PHY), distributed medium access control (MAC) sublayer, and an HDMI protocol adaptation layer (PAL) for 60 GHz wireless networks.

2 Conformance

Conforming devices of Type A, B or C shall implement the MAC sublayer and the PHY layer and may implement the HDMI PAL as specified herein.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 8802-11:2005/Amd.6, *Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements — Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications — Amendment 6: Medium Access Control (MAC) Security Enhancements*

IEEE 100, *The Authoritative Dictionary of IEEE Standards Terms*, Seventh Edition

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply. For terms and definitions not defined in this Clause, the term and definitions given in IEEE 100, *The Authoritative Dictionary of IEEE Standards Terms*, Seventh Edition apply.

4.1

Beacon Group

BG

set of devices from which a device receives beacons that identify the same beacon period start time (BPST) as the device

4.2

Beacon Period

BP

period of time declared by a device during which it sends or listens for beacons

4.3

Beacon Period Start Time

BPST

start of the beacon period

4.4

channel

medium over which cooperating entities exchange information