

P802.3dm

Type of Project: Amendment to IEEE Standard 802.3-2022

Project Request Type: Initiation / Amendment

PAR Request Date: 25 Jan 2024

PAR Approval Date:

PAR Expiration Date:

PAR Status: Submitted

Root Project: 802.3-2022

1.1 Project Number: P802.3dm

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Project Title: IEEE Standard for Ethernet Amendment: Physical Layer Specifications and Management Parameters for Asymmetrical Electrical Automotive Ethernet

3.1 Working Group: Ethernet Working Group(C/LAN/MAN/802.3 WG)

3.1.1 Contact Information for Working Group Chair:

Name: David Law

Email Address: david_law@ieee.org

3.1.2 Contact Information for Working Group Vice Chair:

Name: Adam Healey

Email Address: adam.healey@broadcom.com

3.2 Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee(C/LAN/MAN)

3.2.1 Contact Information for Standards Committee Chair:

Name: Paul Nikolich

Email Address: p.nikolich@ieee.org

3.2.2 Contact Information for Standards Committee Vice Chair:

Name: James Gilb

Email Address: gilb@ieee.org

3.2.3 Contact Information for Standards Representative:

Name: James Gilb

Email Address: gilb@ieee.org

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot:

Nov 2025

4.3 Projected Completion Date for Submittal to RevCom: Nov 2026

5.1 Approximate number of people expected to be actively involved in the development of this project: 70

5.2.a Scope of the complete standard: This standard defines Ethernet local area, access and metropolitan area networks. Ethernet is specified at selected speeds of operation; and uses a common media access control (MAC) specification and management information base (MIB). The Carrier Sense Multiple Access with Collision Detection (CSMA/CD) MAC protocol specifies shared medium (half duplex) operation, as well as full duplex operation. Speed specific Media Independent Interfaces (MIIs) provide an architectural and optional implementation interface to selected Physical Layer entities (PHY). The Physical Layer encodes frames for transmission and decodes received frames with the modulation specified for the speed of operation, transmission medium and supported link length. Other specified capabilities include: control and management protocols, and the provision of power over selected twisted pair PHY types.

5.2.b Scope of the project: The scope of this project is to specify additions to and appropriate modifications of IEEE Std 802.3 to add Physical Layer specifications and management parameters for electrical media and operating conditions that are optimized for automotive end-node camera links for operation up to 10 Gb/s in one direction and with a lower data rate in the other direction.

5.3 Is the completion of this standard contingent upon the completion of another standard? No

5.4 Purpose: This document will not include a purpose clause.

5.5 Need for the Project: Automotive in-vehicle networks are transitioning to Ethernet. High-bandwidth links such as imaging sensors at end-nodes of the network where the backchannel is low bandwidth are important parts of this transition. These end-nodes are highly constrained on complexity and power

consumption and converting them to Ethernet will require solutions specified for their operating conditions.

5.6 Stakeholders for the Standard: End-users, automotive Original Equipment Manufacturers (car makers) and Tier x automotive suppliers, system integrators, and providers of systems and components (e.g., cameras, sensors, actuators, artificial intelligence (AI) processors, instruments, controllers, network infrastructure, user interfaces, and servers) for automotive and other transportation, building and industrial automation, and biomedical applications.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?

No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project?

No

7.1 Are there other standards or projects with a similar scope? Yes

Explanation: There are no other IEEE standards or projects with a completely similar scope.

IEEE Std 2977-2021, MIPI Alliance—MIPI A PHY Specification Version 1.0, partially overlaps the physical layer part of the scope. The scope of this standard states: "The standard provides an asymmetric data link in a point-to-point or daisy-chain topology, with high-speed unidirectional data, embedded bidirectional control data and optional power delivery over a single cable. In this way, it reduces wiring, cost and weight, as high-speed data, control data and optional power share the same physical wiring. For integration with existing network backbones, it complements Ethernet, Controller Area Network (CAN), FlexRay and other interfaces."

Additionally, individuals associated with the project have reported one other industry effort outside of IEEE 802 that may at least partially overlap the physical layer part of the scope of the proposed project: The Automotive SerDes Alliance (ASA) Motion Link Ethernet (MLE) 2.0 specification. This specification has not been liaised to the IEEE 802.3 Working Group and is not publicly available. ASA has liaised an earlier version of the specification to IEEE 802.3.

Stakeholders for the proposed IEEE 802 project have expressed the desire for the effort proposed in this PAR to define the MAC parameters, physical layer specifications, and management parameters that are consistent and completely integrated with existing IEEE 802.3 Ethernet specifications.

7.1.1 Standards Committee Organization: IEEE

Project/Standard Number: IEEE Std 2977-2021

Project/Standard Date: 16 Jun 2021

Project/Standard Title: IEEE Standard for Adoption of MIPI Alliance Specification for A-PHY Interface (A-PHY) Version 1.0

7.1.2 Standards Committee Organization: Automotive SerDes Alliance

Project/Standard Number: ASA 2.0

Project/Standard Date:

Project/Standard Title: ASA-MLE

7.2 Is it the intent to develop this document jointly with another organization? No

8.1 Additional Explanatory Notes: Item 5.6: Tier x refers to the various levels of suppliers to Original Equipment Manufacturers (e.g., car manufacturer). A Tier 1 supplier for example supplies components or subsystems directly to the Original Equipment Manufacturer.