

P1904.3

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Type of Project: New IEEE Standard

PAR Request Date: 19-Oct-2014

PAR Approval Date:

PAR Expiration Date:

Status: Unapproved PAR, PAR for a New IEEE Standard

1.1 Project Number: P1904.3

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Radio over Ethernet encapsulations and mappings.

3.1 Working Group: Access Networks Working Group (COM/SDB/1904_WG)

Contact Information for Working Group Chair

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None

3.2 Sponsoring Society and Committee: IEEE Communications Society/Standards Development Board (COM/SDB)

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4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 11/2016

4.3 Projected Completion Date for Submittal to RevCom: 05/2017

5.1 Approximate number of people expected to be actively involved in the development of this project: 20

5.2 Scope: This standard specifies:

- 1) The encapsulation of digitized radio In-phase Quadrature (IQ) payload, possible vendor specific and control data channels/flows into an encapsulating Ethernet frame payload field.
- 2) The header format for both structure-aware and structure-agnostic encapsulation of existing digitized radio transport formats. The structure-aware encapsulation has detailed knowledge of the encapsulated digitized radio transport format content. The structure-agnostic encapsulation is only a container for the encapsulated digitized radio transport frames.
- 3) A structure-aware mapper for Common Public Radio Interface (CPRI) frames and payloads to/from Ethernet encapsulated frames. The structure-agnostic encapsulation is not restricted to CPRI.

5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: This standard enables the transfer of In-phase Quadrature (IQ) user-plane data, vendor specific data, and control and management (C&M) information channels across an Ethernet-based packet-switched network. The standard fosters interoperability among implementations by defining framing, the encapsulation of the information, and a common Ethernet Type for Radio over Ethernet (RoE) purposes.

5.5 Need for the Project: It has been projected that next generation cellular base stations will have uplink speeds around 10Gbps or more, serving 6 or more sectors with channel bandwidths beyond 200MHz. The anticipated cellular network architectures that include a very large number (>100) of antennas per sector drive the strong demand for an increased uplink channel capacity. Today's platforms cannot scale to meet these requirements. A networked solution is required to enable:

- * Load balancing / resource pooling.
 - * Cooperative-mode operation (multiple antenna systems, beam-steering)
 - * Dynamic power management
 - * Flexible mapping of the Radio over Ethernet (RoE) traffic between baseband unit (BBU) pools and remote radio unit
- Ethernet technology has demonstrated steady, cost efficient speed and capacity growth driven by the enterprise connectivity, access, and data-center markets. The Radio over Ethernet (RoE) project aims to take advantage of the Ethernet developments and specify a scalable and streamlined solution that complements, for example, the existing CPRI radio transport specification based on fixed time division-multiplexing.

5.6 Stakeholders for the Standard: Stakeholders include cellular operators, telecommunication carries, cellular and telecommunication system vendors, and component vendors.

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: Yes

If yes please explain: Ethernet Type code(s) may be required for RoE purposes.

7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

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

8.1 Additional Explanatory Notes (Item Number and Explanation): CPRI specifications are available at <http://www.cpri.info/spec.html>