P1904.3

Submitter Email: glen.kramer@ieee.org
Type of Project: Modify Existing Approved PAR
PAR Request Date: 06-May-2016
PAR Approval Date: 30-Jun-2016
PAR Expiration Date: 31-Dec-2018
Status: Modification to a Previously Approved PAR
Root PAR: P1904.3 **Approved on:** 10-Dec-2014

1.1 Project Number: P1904.3
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for Radio Over Ethernet Encapsulations and Mappings

---

3.1 Working Group: Next Generation Fronthaul Interface (COM/SDB/NGFI)
Contact Information for Working Group Chair
Name: Jinri Huang
Email Address: huangjinri@chinamobile.com
Phone: 008613910490429
Contact Information for Working Group Vice-Chair
None

3.2 Sponsoring Society and Committee: IEEE Communications Society/Standards Development Board (COM/SDB)
Contact Information for Sponsor Chair
Name: Mehmet Ulema
Email Address: m.ulema@ieee.org
Phone: +1 732 957-0924
Contact Information for Standards Representative
Name: Mehmet Ulema
Email Address: m.ulema@ieee.org
Phone: +1 732 957-0924

4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 03/2017
4.3 Projected Completion Date for Submittal to RevCom
Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 10/2017

5.1 Approximate number of people expected to be actively involved in the development of this project: 30
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: The Radio-over-Ethernet project is being transferred from the IEEE 1904 Access Networks Working Group (COM/SDB/1904_WG) to IEEE 1914 Next Generation Fronthaul Interface Working Group (COM/SDB/NGFI). The following is the list of changes to the PAR:

1) PAR number changed from P1904.3 to P1914.3
2) Item 3.1 Working Group is changed from "Access Networks Working Group (COM/SDB/1904_WG)" to "Next Generation Fronthaul Interface (COM/SDB/NGFI)"
3) Item 4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot is changed from 11/2016 to 03/2017 to reflect a more accurate project timeline.
4) Item 4.3 Projected Completion Date for Submittal to RevCom is changed from 05/2017 to 10/2017 to reflect a more accurate project timeline
5) Item 5.1 Approximate number of people expected to be actively involved in the development of this project is changed from 20 to 30 to reflect the impact of the synergy between this project and current and future NGFI projects.

CPRI specifications are available at http://www.cpri.info/spec.html