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| Project | **IEEE 802.16 Broadband Wireless Access Working Group <**<http://ieee802.org/16>**>** |
| Title | ***IEEE Std 802.16 Amendment for*** ***Small Cell Backhaul (SCB) Applications:*** ***Proposed PAR*** |
| Date Submitted | **2012-09-12** |
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| Re: | HetNet Study Group’s *Call for Contributions: Small-Cell Backhaul (SCB) Enhancements to WirelessMAN-OFDMA* (IEEE 802.16-12-0509-02-Gdoc) for IEEE 802.16’s Session #81 of 17-20 September 2012 |
| Abstract | This document proposes the PAR for a project to amend IEEE Std 802.16 for Small Cell Backhaul (SCB) Applications. |
| Purpose | This proposal requests that the HetNet Study Group review the proposal and incorporate it in a draft PAR submission. |
| Notice | *This document does not represent the agreed views of the IEEE 802.16 Working Group or any of its subgroups*. It represents only the views of the participants listed in the “Source(s)” field above. It is offered as a basis for discussion. It is not binding on the contributor(s), who reserve(s) the right to add, amend or withdraw material contained herein. |
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IEEE Std 802.16 Amendment for Small Cell Backhaul (SCB) Applications:

Proposed PAR

Roger B. Marks

Consensii LLC; Airspan Networks Inc.

# Abstract

This document proposes the PAR for a project to amend IEEE Std 802.16 for Small Cell Backhaul (SCB) Applications.

# Proposal

This contribution requests that the HetNet Study Group review the proposal and incorporate it in a draft PAR submission.

**Annex: Proposed DRAFT PAR**

P802.16r

Submitter Email: r.b.marks@ieee.org

Type of Project: Amendment to IEEE Standard 802.16-2012

PAR Request Date: 15-Oct-2012

PAR Approval Date:

PAR Expiration Date:

Status: Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

1.1 Project Number: P802.16r

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Standard for Air Interface for Broadband Wireless Access Systems Amendment for Small Cell Backhaul (SCB) Applications

3.1 Working Group: Broadband Wireless Access Working Group (C/LM/WG802.16)

Contact Information for Working Group Chair

Name: Roger Marks

Email Address: r.b.marks@ieee.org

Phone:

Contact Information for Working Group Vice-Chair

None

3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM) Contact Information for Sponsor Chair Name: Paul Nikolich

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3.3 Joint Sponsor: IEEE Microwave Theory and Techniques Society/Standards Coordinating Committee (MTT/SCC) Contact Information for Sponsor Chair Name: Michael Janezic

Email Address: janezic@boulder.nist.gov

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Contact Information for Standards Representative

Name: Michael Janezic

Email Address: janezic@boulder.nist.gov

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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: 07/2013

4.3 Projected Completion Date for Submittal to RevCom: 05/2014

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

5.2.a. Scope of the complete standard: This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services, including backhaul. The MAC is structured to support the WirelessMAN-SC, WirelessMAN-OFDM, and WirelessMAN-OFDMA PHY specifications, each suited to a particular operational environment.

5.2.b. Scope of the project: This project will develop an amendment specifying enhancements to the WirelessMAN-OFDMA air interface for effective use in fixed small cell backhaul applications, providing core network services to radio access networks. It will focus on backhaul operating in licensed bands below 11 GHz, particularly below 6 GHz, in which the backhaul radio operates far enough outside the band of the small cells that interference is negligible. It will add 256QAM, 512QAM, and 1024 QAM options in both uplink and downlink, with 4x4 MIMO in both directions. Significant latency improvements will be attained. Enhancements to the Convergence Sublayer specifications will be incorporated as necessary for support of Carrier Ethernet backhaul requirements.

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

5.4 Purpose: [no change] This standard enables rapid worldwide deployment of innovative, cost-effective, and interoperable multivendor broadband wireless access products, facilitates competition in broadband access by providing alternatives to wireline broadband access, encourages consistent worldwide spectrum allocation, and accelerates the commercialization of broadband wireless access systems.

5.5 Need for the Project: As the spectral efficiency of wireless links approaches its theoretical limits, and with the data traffic requirements continuing to grow rapidly, cell density and cooperation among base stations must increase in order to further improve network capacity and efficiently manage radio resources. Multi-tier access network architecture consisting of macrocells and a variety of overlaid smaller cells provides an approach towards solving the problem, allowing low cost per bit and efficiently utilizing all spectral resources in the system. Some such systems will be deployed using radio access technology outside the realm of IEEE 802.16. In such cases, IEEE Std 802.16, as enhanced, can provide out-of-band wireless backhaul to the small cells, allowing those cells them to be positioned for optimal performance without regard to the local availability of high-capacity wired backhaul. The resulting system design will offer improvements in spectral efficiency needed to support the rapidly expanding demand for mobile broadband access.

5.6 Stakeholders for the Standard: Wireless network operators and potential operators, manufacturers of small cells, manufacturers of fixed wireless products, the WiMAX Forum, the Metro Ethernet Forum, the Small Cell Forum, the NGMN Alliance, and ITU-R Working Party 5D.

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?: No

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):