**IEEE P802.19**

**Wireless Coexistence**

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| Project | IEEE P802.19 Wireless Coexistence WG |
| Title | **Draft CUB PAR** |
| Date Submitted | May 13, 2015 |
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| Re: | [] |
| Abstract | [] |
| Purpose | [] |
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Type of Project: Amendment to IEEE Standard 802.19.1-2014

PAR Request Date: xx-xxx-2015

PAR Approval: xx-xxx-2015

PAR Expiration Date: xx-xxx-2017

Status: PAR for an Amendment to an existing IEEE Standard

1.1 Project Number: P802.19.1a

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Standard for Information Technology - Telecommunications and Information Exchange Between Systems - Local and Metropolitan Area Networks - Specific Requirements - Part 19: Coexistence Methods for geo-location capable devices operating under general authorization

3.1 Working Group: Coexistence TAG (C/LM/WG802.19)

Contact Information for Working Group Chair Name: Stephen Shellhammer

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Contact Information for Working Group Vice-Chair

None

3.2 Sponsoring Society and Committee: IEEE Computer Society/Local and Metropolitan Area Networks (C/LM)

Contact Information for Sponsor Chair Name: Paul Nikolich

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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: 12/2016

4.3 Projected Completion Date for Submittal to RevCom: 10/2017

5.1 Approximate number of people expected to be actively involved in the development of this project: 30

5.2.a. Scope of the complete standard: This standard specifies radio technology independent methods for coexistence among dissimilar or independently operated networks of unlicensed devices and dissimilar unlicensed devices.

Changes in scope: This standard specifies radio technology independent methods for network-based coexistence among dissimilar or independently operated networks of unlicensed devices and dissimilar unlicensed devices. The standard is defined for geo-location capable devices operating under general authorization such as the TV band White Spaces, the 5GHz license-exempt bands and the general authorized access in 3.5GHz bands.

5.2.b. Scope of the project: This amendment to IEEE 802.19.1-2014 defines the network-based coexistence information exchange among networks and devices to enable network-based coexistence management. It specifies

- Procedures and protocols for collection and exchanging coexistence information of heterogeneous networks.

- Spectrum resource measurements and network performance metrics, such as packet error ratio, delay, etc,

- Information elements and data structures to capture coexistence information,

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

5.4 Purpose: The purpose of the standard is to enable the family of IEEE 802 Wireless Standards to most effectively use, under general authorization, frequency bands such as TV band White Spaces, the5GHz license-exempt bands and the general authorized access in 3.5GHz bands by providing standard network-based coexistence methods among dissimilar or independently operated networks of unlicensed devices and dissimilar unlicensed devices with geo-location capability. This standard addresses coexistence for IEEE 802 networks and devices and will also be useful for non IEEE 802 networks and devices.

5.5 Need for the Project: Existing IEEE 802 standards groups are developing standards and amendments, to comply with the regulatory rules for general authorization such as the TV band white spaces, the 5GHz license-exempt bands and the general authorized access in 3.5GHz bands. Other non-IEEE 802 wireless standards under general authorization such as the TV band White Spaces, the 5GHz license-exempt bands and the general authorized access in 3.5GHz bands are also in development. In order for these various dissimilar networks of unlicensed devices and unlicensed devices to effectively coexist in these bands, fair and efficient spectrum sharing is needed. Fair and efficient spectrum sharing among dissimilar networks of unlicensed devices and unlicensed devices may require the coexistence methods provided in this standard. In order to enhance utilization of these bands standardized coexistence methods are needed. Methods such as those discussed in the explanatory notes may be considered.

5.6 Stakeholders for the Standard: Designers of MAC/PHY standards and implementations in the TV band white spaces, the 5GHz license-exempt bands and the general authorized access in 3.5GHz bands.

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?: Yes

If Yes please explain: IEEE 1900.4a is a standards project which addresses dynamic spectrum access.

IEEE 802.22 is a MAC/PHY standards project for operation in the TVWS which includes coexistence mechanisms.

Ecma International TC48-TG1 is a MAC/PHY standards project for operation in the TVWS which includes coexistence mechanisms

IEEE 802.11af is a Wireless LAN MAC/PHY standard for TV White Spaces Operation.

IEEE 802.15.4m is a Low Rate Wireless Personal Area Networks for TV White Space PHY. and answer the following

Sponsor Organization: IEEE / IEEE / ECMA International Project/Standard Number: IEEE 1900.4a-2011 / IEEE 802.22-2011 / TC48-TG1/ IEEE 802.11af-2013/ IEEE 802.15.4m-2014

Project/Standard Date:

Project/Standard Title: Standard for Architectural Building Blocks Enabling Network-Device Distributed Decision Making for Optimized Radio Resource Usage in Heterogeneous Wireless Access Networks - Amendment: Architecture and Interfaces for Dynamic Spectrum Access Networks in White Space Frequency Bands / Standard for Information Technology - Local and Metropolitan Area Networks - Specific Requirements - Part 22: Cognitive Radio Wireless Regional Area Networks (WRAN) Medium Access Control (MAC) and Physical Layer (PHY) Specifications: Policies and Procedures for Operation in the Bands that Allow Spectrum Sharing where the Communications Devices may Opportunistically Operate in the Spectrum of the Primary Service/ Wireless Communications using Television White Spaces (TVWS) / Standard for 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: TV White Spaces Operation / Standard for Local and Metropolitan Area Networks Part 15.4: Low Rate Wireless Personal Area Networks (LR-WPANs) Amendment: TV White Space Between 54 MHz and 862 MHz Physical Layer

7.2 International Activities

a. Adoption

Is there potential for this standard (in part or in whole) to be adopted by another national, regional or international organization?: No

b. Joint Development

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

c. Harmonization

Are you aware of another organization that may be interested in portions of this document in their standardization development efforts?: Do Not Know

Organization:

Technical Committee Name: Technical Committee Number: Contact Name:

Phone: Email:

8.1 Additional Explanatory Notes (Item Number and Explanation):

Section 5.2a (Scope) Coexistence Method - Consists of the following components,

 A means of communication between nodes

 A protocol for exchanging information

 A set of coexistence parameters providing information about the interference environment and the set of MAC/PHY capabilities

 Algorithms for adapting MAC/PHY parameters to enhancing coexistence between networks

The communication between the nodes is based on other standards, either wired or wireless, and is not part of this standard.

Section 5.2a (Scope)

The term "radio technology independent" means that the methods work with a variety of MAC/PHY standards, which support some or all of a set of typically implemented MAC/PHY capabilities.

Section 5.2a (Scope)

The term dissimilar used in this document refers to the networks and devices, which use different radio technologies adapted for operating under general authorization such as the TV band white spaces, the 5GHz license-exempt bands and the general authorized access in 3.5GHz bands.

Section 5.2a (Scope)

The term “network-based” means that the information for coexistence among heterogeneous networks is exchanged over IP-based network.

Section 5.2a (Scope)

The term independently operated used in this document refers to networks which may or may not use the same radio technology but are operated by independent entities which do not necessarily have a business relationship for coordinating their use of the TV band White Spaces, the 5GHz license-exempt bands and the general authorized access in 3.5GHz bands; furthermore, such similar radio access technologies may not have an otherwise available means of coexistence. For example, this differentiates independently operated from a situation in which a single administrative authority manages the coexistence between dissimilar technologies deployed in a composite network.

Section 5.2a (Scope)

The term “geo-location capable” means the capability of identifying geographical coordinate with certain accuracy.

Section 5.2a (Scope)

The term “devices operating under general authorization” means that devices would be entitled to use the spectrum with no individual frequency planning/coordination (not be entitled to interference protection from the others) and includes that the devices are specified in Part 15, Title 47 of the Code of Federal Regulations such as TV bands, 900MHz, 2.4GHz, and 5GHz bands and Part 96, Title 47 of the Code of Federal Regulations such as general authorized access in 3.5GHz bands.

Sec. 5.5 (Need):

The radio technology independent coexistence methods that are standardized may address the following and related areas:

Discovery is the process of determining that there are two or more dissimilar and independently operated wireless networks or devices attempting to use the same frequency range in the same location operating under general authorization. This can occur in two ways. The two networks or devices may attempt to enter at the same time or one may be present and a second seek to enter. In the second case, a network operating under general authorization, must periodically check for new entrants and a new entrant must check before entering.

A Connection for coexistence may be useful for two dissimilar and independently operated wireless networks or devices to exchange information in order to share spectrum.

A Logical Method for Promoting Coexistence is a method that involves the exchange of information between different dissimilar or independently operated networks or devices and may also involve algorithms seeking to maximize the quality of service for all participants.

This standard project addresses USA Rules and may address the rules of other regulatory domains in the TV band white spaces, the 5GHz license-exempt bands and the general authorized access in 3.5GHz bands. During the project lifetime, the draft standard may be modified to address any new or changing regulatory rule in the TV band white spaces, the 5GHz license-exempt bands and the 3.5GHz bands.

Reference:

19-09/0078r5: TVWS Coexistence PAR