

---

**IEEE P802.11  
Wireless LANs**

---

**Some 802.11 Comments on 802.19 PAR and 5C**

**Date:** 2009-11-12

**Author(s):**

<b>Name</b>	<b>Affiliation</b>	<b>Address</b>	<b>Phone</b>	<b>email</b>
Peter Ecclesine	Cisco Systems	170 W. Tasman Dr., San Jose, CA 95134-1706	+1-408-527-0815	petere@cisco.com

**Abstract**

Some 802.11 comments on the 802.19 PAR 19-09/0078r0 and 5C, 802.19-09/0081r1, inserted in their entirety here.

This project should be for a Recommended Practice, given the absence of any earlier, similar, coexistence mechanisms among independently operated systems successfully used in unlicensed bands.

The 0081r1 5C does not address the Project in terms used in the 0078r0 PAR Scope and Additional Notes. Because this PAR addresses TV white space internationally, it should include mechanisms both for unlicensed operation, such as US Part 15 Subpart H, and licensed operation, such as Canadian WISP practice.

Personal/portable devices are size and energy constrained, and their constraints should be reflected in the feasibility criteria if their operation use mechanisms of the project.

The concept of "A Logical Mechanism for Promoting Coexistence" does not exist in other unlicensed bands, nor is the Technical Feasibility nor Economic Feasibility of any mechanism addressed in the 0081r1 5 Criteria.

# P802.19.1

---

**Submitter Email:** shellhammer@ieee.org

**Type of Project:** New IEEE Standard 

**PAR Request Date:** 10-Oct-2009

**PAR Approval Date:**

**PAR Expiration Date:**

**Status:** Unapproved PAR, PAR for a New IEEE Standard

---

**1.1 Project Number:** P802.19.1

**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: TV White Space Coexistence Mechanisms

---

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

**Contact Information for Working Group Chair**

**Name:** Stephen Shellhammer

**Email Address:** shellhammer@ieee.org

**Phone:** (858) 658-1874

**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

**Email Address:** p.nikolich@ieee.org

**Phone:** 857.205.0050

**Contact Information for Standards Representative**

None

---


**4.1 Type of Ballot:** Individual

**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:** 12/2012

**4.3 Projected Completion Date for Submittal to RevCom:** 12/2013


---

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

**5.2 Scope:** The standard ifies mechanisms for coexistence among dissimilar or independently operated TV Band Device (TVBD) networks and dissimilar TV Band Devices.

**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 TV White Space by providing standard coexistence mechanisms among dissimilar or independently operated TVBD networks and dissimilar TVBDs. This standard addresses coexistence for IEEE 802 networks and devices and will also be useful for non IEEE 802 networks and TVBDs.

**5.5 Need for the Project:** Existing IEEE 802 standards groups are developing standards and amendments, to comply with the regulatory rules for use of TV white space. Other non-IEEE 802 wireless standards for use of the TV White Space are also in development. In order for these various dissimilar TVBD networks and devices to effectively coexist in the TVWS spectrum, fair and efficient spectrum sharing is needed. Fair and efficient spectrum sharing among dissimilar TVBD networks and devices  require the coexistence mechanisms provided in this standard. In order to enhance utilization of the TV White Space bands standardized coexistence mechanisms are needed. Mechanisms such as those discussed in the explanatory notes may be considered.

**5.6 Stakeholders for the Standard:** Designers of TVWS MAC/PHY standards and implementations.

---

**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 P1900.4a is a standards project which addresses dynamic spectrum access.

IEEE P802.22 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 **and answer the following**

**Sponsor Organization:** IEEE / IECMA / ECMA International

**Project/Standard Number:** P1900.4a / P802.22 / TC48-TG1

**Project/Standard Date:** 30-Dec-2012

**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 / Draft Standard for Wireless Regional Area Networks Part 22: Cognitive Wireless RAN Medium Access Control (MAC) and Physical Layer (PHY) specifications: Policies and procedures for operation in the TV Bands / Wireless Communications using Television White Spaces (TVWS)

## 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 5.2 (Scope)

The term **dissimilar** used in this document refers to the networks and devices, which use different radio technologies adapted for TV White Space Frequency Bands.

### Section 5.2 (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 TV White Space Frequency 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 5.2 (Scope):


The term "TVBD" is the FCC term for TV Band Device which refers to any device which complies with FCC rules to allow unlicensed radio transmitters to operate in the broadcast television spectrum at locations where that spectrum is not being used by licensed services. A TV band device (TVBD) is a low power transmitter that operates on an unoccupied TV channel in the range of channels 2-51, excluding channels 3-4 and 37.


### Sec. 5.5 (Need):

The radio technology independent coexistence mechanisms 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 White Space frequency range in the same location. 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 in White Space, must periodically check for new entrants and a new entrant must check before entering.

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

A Logical Mechanism for Promoting Coexistence  mechanism 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 FCC TV White Space Rules and may address the TV White Space rules of other regulatory domains. During the project lifetime, the draft standard may be modified to address any new or changing regulatory White Space Rules.

---

**IEEE P802.19**

---

**5 Criteria Document for 802.19 TVWS****Date:** October 14, 2009**Author(s):**

<b>Company</b>	<b>Company</b>	<b>Address</b>	<b>Phone</b>	<b>Email</b>
Alex Reznik	InterDigital	781 Third Ave., King of Prussia, PA 19406, USA	610-878-5784	<a href="mailto:alexr.at.ieee@gmail.com">alexr.at.ieee@gmail.com</a>

**Abstract**

This document contains 5C's with text agreed on by the SG.

**Notice:** This document has been prepared to assist IEEE 802.19. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.

## **Five Criteria**

### **17.5.1 Broad Market Potential**

**A standards project authorized by IEEE 802 shall have a broad market potential.**

**Specifically, it shall have the potential for:**

**a) Broad sets of applicability.** *The need for a coexistence standard is demonstrated by the past and ongoing work in IEEE 802.11, IEEE 802.22, IEEE 802 ECSCG on TVWS and the IEEE 802.19 TVWS SG as well as new TVWS PARs.*

**b) Multiple vendors and numerous users.** *Current wireless ISP services use the 900MHz, 2.45 GHz and 5GHz bands, operating under part 15 rules using multiple and dissimilar MAC/PHY standards or air interfaces. There are many vendors of IEEE 802 wireless equipment for indoor and outdoor operation, and it is expected that there will be several offering equipment for the TVWS band.*

**c) Balanced costs (LAN versus attached stations).**

*Current technology enables manufacturers to balance costs for coexistence mechanisms.*

### **17.5.2 Compatibility**

**IEEE 802 defines a family of standards. All standards shall be in conformance with the IEEE 802.1 Architecture, Management, and Interworking documents as follows: 802. Overview and Architecture, 802.1D, 802.1Q, and parts of 802.1f. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with 802. Each standard in the IEEE 802 family of standards shall include a definition of managed objects that are compatible with systems management standards.**

*This standard will not require changes to any existing 802 MAC SAP definitions, ensuring that all LLC and MAC interfaces are compatible to and in conformance with the IEEE 802.1 architecture, management and internetworking standards.*

### **17.5.3 Distinct Identity**

**Each IEEE 802 standard shall have a distinct identity. To achieve this, each authorized project shall be:**

**a) Substantially different from other IEEE 802 standards.**

*There is no other standard among IEEE 802 standards, which specifies mechanisms for coexistence among dissimilar wireless networks operating in the TV White Space Bands.*

**b) One unique solution per problem (not two solutions to a problem).**

**Comment [PE1]:** The 0081r1 5C does not address the Project in terms used in the 0078r0 PAR Scope and Additional Notes. Because this PAR addresses TV white space internationally, it should include mechanisms both for unlicensed operation, such as US Part 15 Subpart H, and licensed operation, such as Canadian WISP practice.

There is no other standard which specifies mechanisms for collaborative coexistence among dissimilar wireless networks operating in the TV White Space Bands.

**c) Easy for the document reader to select the relevant specification.**

The project will explain clearly its purpose and scope in the introduction section.

**17.5.4 Technical Feasibility**

**For a project to be authorized, it shall be able to show its technical feasibility. At a minimum, the proposed project shall show:**

**a) Demonstrated system feasibility.** *Within the IEEE 802.19 TV White Space Study Group there have been a number of contributions indicating a number of technically feasible solutions. These contributions include multiple presentations to the 802.19 TVWS SG as available on Mentor <https://mentor.ieee.org/802.19/documents>.*

**b) Proven technology, reasonable testing.** *Extensive existing knowledge of coexistence techniques will be applied to develop the TVWS coexistence standard.*

**c) Confidence in reliability.**

*Current communication technologies are mature enough to support coexistence in TVWS band.*

**17.5.4.1 Coexistence of 802 wireless standards specifying devices for unlicensed operation**

**A working group proposing a wireless project is required to demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable. The Working Group will create a CA document as part of the WG balloting process. If the Working Group elects not to create a CA document, it will explain to the EC the reason the CA document is not applicable.**

This standard will enhance coexistence in the TVWS. Evaluation of the effectiveness of coexistence will be done during standard development

**17.5.5 Economic Feasibility**

**For a project to be authorized, it shall be able to show economic feasibility (so far as can reasonably be estimated) for its intended applications. At a minimum, the proposed project shall show:**

**a) Known cost factors, reliable data.** Throughout the ongoing work of the IEEE 802.19 TVWS SG as well the past work of the IEEE 802 ECSG on TVWS there have been no objections raised as to the economic feasibility of coexistence solution in the TVWS.

**b) Reasonable cost for performance.**

It is expected that reasonable cost for performance will not increase and may decrease.

**c) Consideration of installation costs.**

This standard will not introduce additional installation cost.

**Comment [PE2]:** There are no demonstrated solution in unlicensed bands. Personal/portable devices are size and energy constrained, and their constraints should be reflected in the feasibility criteria if their operation use mechanisms of the project.

**Comment [PE3]:** This project should be a Recommended Practice because there is No Proven Technology, nor Reasonable Testing in unlicensed bands

**Comment [PE4]:** There are no demonstrated solutions in unlicensed bands, so we do not know what they cost in energy and time. Personal/portable devices are size and energy constrained, and their constraints should be reflected in the feasibility criteria if their operation use mechanisms of the project.

References:

