



3925 W. Braker Lane • Austin, TX 78759 USA

+1.512.305.0790 off

+1.512.305.0791 fax

www.wi-fi.org

September 15, 2010

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, SW  
Room TWA325  
Washington, DC 20554

On the matter of:  
**Unlicensed Operation in the TV White Space Bands (ET Docket No. 04-186)**

Dear Ms. Dortch:

The Wi-Fi Alliance applauds the efforts of the FCC to open up vacant television band spectrum ("white spaces") for unlicensed broadband use. We share the Commission's enthusiasm about the potential use of white spaces for operation of Wi-Fi devices.

In anticipation of favorable rulings from the FCC for the use of the TV White Space Bands, the Wi-Fi Alliance has initiated a multi-vendor effort to create a certification program for Wi-Fi devices operating in the TV White Spaces. This certification program is based on the emerging IEEE 802.11af standard.

For your reference, a copy of the Wi-Fi Alliance Petition for Reconsideration in ET Docket No. 04-186 "Unlicensed Operation in the TV Broadcast Bands", initially filed March 17, 2009, is attached. It describes the primary changes the Wi-Fi Alliance feels are necessary to enable the successful development of Wi-Fi products for this band:

- The database system plan and operation should allow online, realtime operation
- TVWS devices should be relieved of sensing obligations where the device has contact with the database
- The emission mask of 15.709(c)(1) needs clarification

We are confident that favorable final rules and the availability of TV Band spectrum will create significant new product opportunities in the marketplace.

Thank you for your consideration,



Edgar Figueroa

CEO Wi-Fi Alliance

## **Attachment A – WFA Petition for Reconsideration (November 2009)**

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of )  
 ) ET Docket No. 04-186  
Unlicensed Operation in the TV Broadcast Bands )

### **WI-FI ALLIANCE PETITION FOR RECONSIDERATION**

The Wi-Fi Alliance hereby respectfully submits its Petition for Reconsideration of the Commission’s November 4, 2008, decision in the above-captioned rulemaking relating to Part 15 devices operating on vacant TV channels (“white spaces”). We appreciate the opportunity to express our concerns and seek clarifications and/or modifications to some of the rules adopted by the Commission for this proceeding.

### **INTRODUCTION**

On November 4, 2008, the Commission adopted a Second Report and Order (Second R&O) that establishes rules to allow wireless devices to operate in broadcast television spectrum on a unlicensed basis at locations where that spectrum is available. (This unused TV spectrum is now commonly referred to as television “white spaces”). We view this as a significant opportunity for the Wireless LAN industry to participate in developing new technology and applications for wireless services.

**A FEW CHANGES IN THE COMMISSION'S ADOPTED RULES WOULD GREATLY INCREASE THE FEASIBILITY OF IEEE 802.11 COMPLIANT DEVICES OPERATING IN THE WHITE SPACES**

Working with the IEEE 802.18 group (the Radio Regulatory Technical Advisory Group), many of our members participated in an earlier filing to the Commission.<sup>1</sup> IEEE 802.18 supported the Commission's first Report and Order findings that the protection of incumbent operations in the TV bands is a much more tractable problem when devices are limited to fixed operation. Fixed point to multipoint systems with a master/client relationship between base stations and user terminals, geolocation/database techniques, and transmitter power control, can provide a viable means of bringing broadband fixed access services to less densely populated rural areas and other unserved/underserved areas where spectrum is available.

In the case of personal/portable devices, where power sources must be portable and sustain operation for reasonable time period between charges, the sensing requirements represent a significant challenge to the usability of such devices. We have studied this issue and believe there are alternate approaches for these devices that meet both the intent of this instant proceeding and the functionality requirements. Therefore we believe the Commission needs to clarify or consider modifying their rules on issues and/or topics listed below so as to allow for the most efficient and economical use for operation in this band.

**A – THE DATABASE SYSTEM PLAN AND OPERATION SHOULD BE AUGMENTED TO ALLOW ONLINE, REALTIME OPERATION**

The database system plan and operation (204-207) is specified for day-to-day contact and operation, but many Internet transaction systems operate continuously, with redundant elements and very high reliability. One consequence of the day-to-day contact rule is that constant sensing by all devices is imperative to protect others during the interval between updates from the TV

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<sup>1</sup> (reference the IEEE 802.18 January 2007 Comments)

bands database. Constant sensing costs energy and would be prohibitive for client devices operating on battery or other portable power source.

One alternative to required daily contact is to allow each master device receive a certificate of time-limited operation from the TV bands database. When the certificate expires the master must renew it or cease operation. The time-limit would be variable, based on the location of operation and activities of others. For example, the certificate in Pasadena might end four hours before the start of the Rose Bowl Parade. The wireless microphone database has specific months, days and times when and where the microphones are used, and time-limited certificates would increase the time available for TVBDs to operate in the neighborhood of scheduled wireless microphone operation. In this alternative, the requirement for daily contact with the TV bands database is replaced by the requirement to cease operation when the certificate's time limit is reached.

Another alternative is to have each master mode device provide an Internet contact address, and the TV bands database push changes in channel availability to affected master devices. In this alternative, the requirement for daily contact with the TV bands database is replaced by the requirement for master mode devices to verify their Internet connectivity hourly or cease operation. There are a broad range of standards-based paging and messaging technologies available that the TV bands database could use to push channel availability messages to master mode devices.

**B- TVWS DEVICES SHOULD BE RELIEVED OF SENSING OBLIGATIONS WHERE THE DEVICE HAS FREQUENT CONTACT WITH THE DATABASE**

The DFS rules for the 5GHz band allow a master radar sensing device for all stations that operate under its control – the sensor may be mounted on the roof and communicates with all RLANs in the building. The same approach should be allowed for devices that are in a network and receive messaging from the TV bands database. Where the device itself, or its master device, has registered to receive changes in channel availability from the TV bands database, all the devices in the network benefit from current information. The rules for TVWS devices should be changed to remove sensing requirements.

**C – EMISSIONS MASK OF 15.709(c)(1) NEEDS CLARIFICATION**

Emissions masks in paragraph 15.709(c)(1) should be clarified to indicate that the 55 dB in channels adjacent to the operating channel refers to the average total power over the operating bandwidth:

- (1) On adjacent channels to the TVBD, its emissions in a 100 kHz measurement shall be at least 39 dB below the average total power over the operating bandwidth.

**CONCLUSION**

The Wi-Fi Alliance recognizes that permitting operation of unlicensed devices in the TV band is a complex issue, and that great care has been taken in devising the rules in order to avoid interference with licensed systems. Our intention in this petition is to provide the Commission with our best engineering and technical assessment of the required changes in the current rules to allow for the most efficient and economical operation of fixed and personal/portable TVBDs, while enabling our industry to develop devices that are commercially feasible and protective of the licensed users of this spectrum.

Respectfully submitted,

Rich Kennedy

/s/

Rich Kennedy

Chair, Wi-Fi Alliance Regulatory Task Group

7305 Napier Trail

Austin, TX 78729

(512) 961-7017

[rich.kennedy@oaktreewireless.com](mailto:rich.kennedy@oaktreewireless.com)