

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

*In the Matter of*

UNLICENSED OPERATION IN THE TV BROADCAST  
BANDS

ET Docket No. 04-186

ADDITIONAL SPECTRUM FOR UNLICENSED  
DEVICES BELOW 900 MHz AND IN THE 3 GHz  
BAND

ET Docket No. 02-380

**COMMENTS OF THE WI-FI ALLIANCE**

The Wi-Fi Alliance (“WFA”) applauds the Commission’s continuous effort to explore more efficient spectrum use policies as well as its effort to resolve sharing issues through increasingly advanced technical solutions. The WFA welcomes this Notice of Proposed Rule Making (“NPRM”) and fully supports opening new frequency bands for license-exempt devices. If adopted, the Commission’s spectrum use proposal will greatly expand the availability of broadband service (particularly in rural areas) and will spur even greater innovation in wireless technology. At the same time, the WFA – like the Commission – is cognizant of the need to develop appropriate technical and operational means and test procedures that will ensure that new license-exempt devices do not cause harmful interference to incumbent licensed services.

The WFA was formed five years ago by some of the world’s leading technology companies as an international non-profit organization to promote and certify the interoperability of 802.11-based wireless products. Since its formation, the WFA has

grown from five founding companies to over 200 member companies.<sup>1</sup> In addition, since the inception of its certification program in 2000, The WFA has certified over 1500 Wi-Fi® products. It has been instrumental in promoting the use of interoperable “unlicensed” wireless devices globally, and is keenly interested in helping the Commission explore new spectrum sharing opportunities for license-exempt wireless devices, thereby benefiting businesses and consumers all across the country.

### **DISCUSSION**

The WFA believes it is in the public interest to expand the number and variety of interoperable license-exempt devices that are available to consumers. The WFA believes that as the availability of such devices increase, so too will broadband access increase. Thus the WFA also believes it is in the public interest for the Commission to make additional license-exempt spectrum available where possible, and to do so in a way that does not impede the introduction of interoperable technology.

#### **I. ACCESS TO TV BAND SPECTRUM WILL SPEED BROADBAND ROLLOUT**

Even with all of the Commission’s recent efforts to eliminate needlessly restrictive Part 15 rules, providing competitive broadband wireless services remains a challenge. Although many bands are available for license-exempt use, the technical restrictions on most of these bands render them unsuitable for providing broadband wireless services. Wisely, the Commission has adopted more liberal technical rules that permit higher power, new modulations and smart antennas in designated bands – which today are commonly called the “unlicensed bands.” The most popular of these, the 2.4 GHz and the 5 GHz bands, have spawned a new broadband wireless industry, largely populated by

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<sup>1</sup> A current member list is available at <http://www.wi-fi.org/OpenSection/members.asp?TID=2>.

Wi-Fi devices. Indeed, over the past few years, Wi-Fi has been the shining star of the telecom industry and became a billion dollar industry.

But more can be done – indeed more needs to be done – if wireless broadband is to live up to its potential as a third broadband platform. The 2.4 GHz and 5 GHz bands are not ideally suited for broadband access to the home. The biggest problem, of course, is propagation. Neither band allows the great range and easy access to consumers possible in the TV bands. Particularly in the case of lower density rural applications, the greater range achievable in the TV band can be critically important. In simplified terms, less equipment operating at lower frequencies and – possibly – at higher powers could equal lower infrastructure costs for Wireless Internet Service Providers (WISPs) and others.

## **II. LICENSE-EXEMPT OPERATIONS SHOULD BE ALLOWED IN TV BANDS**

The WFA is, of course, well aware that the TV bands are important to the public even in an era where most people receive TV signals over a cable or satellite connection. But the TV bands are only used in certain geographic areas and on certain frequencies. In other places, there are vast swaths of vacant spectrum that constitute a significant underused national resource. Moreover, this is not a strikingly new observation. The Commission has already permitted LPTV, television translator stations, land mobile stations, wireless microphones and medical equipment to use the TV bands. There is no reason why, with appropriate technical rules, fallow TV spectrum should not also be made available for license-exempt use.

## **III. ANY EFFECTIVE CHANNEL AVOIDANCE TECHNIQUE SHOULD BE PERMITTED**

In its NPRM, the Commission distinguishes between using “fixed/access” and “personal/portable” devices in the TV bands and suggests that these different types of

devices use different approaches for ensuring that license-exempt devices operate only on vacant TV channels. The Commission suggests, for example, that a “control signal” approach could be used for personal/portable devices and a “position determination” approach could be used for fixed/access devices.<sup>2</sup> The WFA believes that there are a variety of techniques available to keep license-exempt devices from operating on occupied television channels – including, for example, the “sensing,” or cognitive, technique discussed in the NPRM. The WFA believes that the techniques the Commission sets forth are certainly options, but they should not be the only options.

WFA member companies are already using or developing channel avoidance techniques far more complex than those needed to avoid the relatively static TV channel assignments. As the Commission well knows, WFA members are working on dynamic frequency selection (“DFS”) techniques to avoid military radar signals with over a dozen technical parameters. Radar signals may appear anywhere and at any time on any of the 5 GHz frequencies available to Wi-Fi devices. This is a truly complex channel avoidance problem, but it is already close to resolution. The experience with this 5 GHz resolution process will provide valuable insight into developing solutions for TV broadcast signal avoidance. The WFA believes that the best approach here would be for the Commission first to determine the appropriate protection criteria for the TV broadcast services operating in the TV bands. Having done so, the WFA is certain that its membership can take the Commission’s criteria and develop and produce devices that do not exceed interference thresholds and avoid completely co-channel operation.

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<sup>2</sup> The Commission also raises the possibility of cognitive radio as a means of ensuring proper license-exempt operation. See NPRM at ¶¶20 and 28. Certainly cognitive radio (also addressed in other Commission proceedings) holds promise for efficient spectrum use, but should be not a prerequisite for using television spectrum.

The Commission should continue to develop the mechanisms to ensure protection of the incumbent operations but should avoid mandating any one approach. Rather, it should take a cue from its past actions and provide flexibility for manufacturers to deploy the techniques which they find are best suited to their product – whether they are building fixed/access devices which may rely on a geographic database solution or personal/portable devices which may rely on spectrum sensing solution. This flexibility afforded to license-exempt operators will be critical for achieving low-cost competitive broadband roll out. If the Commission adopts this scheme, it will move this country much further along to a regulatory regime that will permit a new platform for broadband access to the home, the enterprise and to the community.

#### **CONCLUSION**

As the Commission knows, spectrum is a valuable resource. It is valuable because members of the public can use it for a variety of services – both commercial and non-commercial – that are important to them: broadband access, entertainment, conversation, emergency communications, and more. But there is no value at all in spectrum that is unused.

The WFA is eager to work with the Commission and other interested parties in solving the technical issues raised by this proceeding, and in devising technical solutions for sharing the TV broadcast bands. The WFA urges the Commission to move expeditiously to resolve the technical and policy issues raised in the NPRM so that unused TV spectrum can be made available for flexible, license-exempt use.

Respectfully Submitted,

**WI-FI ALLIANCE**

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