**BEFORE THE**
**FEDERAL COMMUNICATIONS COMMISSION**
**WASHINGTON, D.C. 20554**

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| In the Matter of<br><br>Unlicensed Operation in the TV Broadcast Bands | ET Docket No. 04-186 |

## REPLY COMMENTS OF THE WHITE SPACE COALITION

The initial measurements of test devices set forth in the OET Report[1] provided information that will help form the foundation for final rules governing personal/portable devices operating in the white spaces. As all stakeholders are aware, these preliminary results are part of an ongoing scientific process that will assist in establishing operating parameters for white space devices. Indeed, as OET has noted, its tests did not examine a number of proposed interference mitigation features, and future test devices "may exhibit improved performance."[2] The Commission, therefore, should continue with its process, reject calls to the contrary, and adopt final rules allowing personal/portable devices to use the white spaces in an interference-free manner. The White Space Coalition[3] stands ready to assist the Commission in obtaining additional information it might require to accomplish this goal.

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1 *Initial Evaluation of the Performance of Prototype TV-Band White Space Devices*, FCC/OET 07-TR-1006, (Jul. 31, 2007) ( "OET Report").

2 OET Report at vi, x.

3 The White Space Coalition's members include Dell, Inc., EarthLink, Inc., Google, Inc., Hewlett-Packard Co., Intel Corp., Microsoft Corp., and Philips Electronics North America Corp.

## I. FUTURE EFFORTS IN THIS PROCEEDING SHOULD FOCUS ON ESTABLISHING APPROPRIATE OPERATING PARAMETERS FOR WHITE SPACE DEVICES.

As the Coalition and New America Foundation *et al*. have explained, establishing the technical feasibility of personal/portable devices is not simply a matter of demonstrating spectrum sensing (though there should be little doubt at this point that detection of incumbents at the levels proposed by the Coalition is achievable), but also of considering—and adjusting if necessary—technical and operational parameters for the devices.[4] The Coalition has set forth a number of technical and operating parameters, particularly with respect to transmissions, and it appears that the test results will require little in the way of changes to these parameters.

### A. Detection Threshold for TV Signals.

The Prototype B device successfully demonstrated in lab testing that reliable (*i.e*. 100 percent) accuracy for detection is achievable at -114 dBm.[5] Thus, the primary question for the Commission is now whether -114 dBm is the appropriate level at which to sense.[6] For example, NAF, which has undertaken substantial testing in connection with the University of Kansas, noted that the OET lab tests "establish[] that even with today's sensing technology, devices can identify incoming signals at strength levels well

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4 Comments of the White Space Coalition (Aug. 15, 2007) at 6 ("Coalition Comments"); Comments of the New America Foundation et al., (Aug. 15, 2007) at 2-4 ("NAF Comments").

5 Coalition Comments at 3-4; Comments of Philips Electronics North America (Aug. 15, 2007) at 3 ("Philips Comments").

6 The detection threshold initially proposed by the Commission was -116 dBm. *See Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, First Report and Order and Further Notice of Proposed Rule Making, 21 FCC Rcd. 12266 (¶37) (2006) ("Further Notice"). As the Coalition previously has explained, determining the appropriate detection threshold necessarily involves a cost-benefit determination with respect to white space use: while a detection threshold that is too high will not provide adequate protection for incumbents, setting the threshold too low so as to accommodate every hypothetical edge case for over-the-air interference will render the white spaces unusable, sacrificing substantial benefit with little or nothing to show in return. *See* Comments of the White Space Coalition (Jan. 31, 2007) at 5-6.

below what is necessary to protect television reception."[7] Although the Coalition proposed the -114 dBm value to ensure a conservative approach to protecting incumbents, it agrees with NAF that "[i]t is critical to distinguish between the technical ability to sense a DTV signal at -114 dBm and the practical policy wisdom of prohibiting constructive use of spectrum when the signal is this low, particularly where the typical DTV cannot display the signal, or where the signal is originating from a non-local TV market."[8]

**B. Wireless Microphones.**

As several parties have observed, the performance of the Philips prototype with respect to wireless microphones was very promising.[9] Thus, it is simply not accurate to say, as one commenter has, that the Philips prototype fared "only slightly better" in detecting wireless microphone signals than the damaged Microsoft prototype.[10] Indeed, Philips already has addressed the two primary concerns noted in the OET Report with respect to wireless microphone detection—potential signals residing 50 kHz from the low band edge and the number of incidents of false positives. As Philips has explained, these results are artifacts of developing an early test device, and can easily be accommodated via minor changes while maintaining full detection capabilities.[11] Similarly, although some parties have taken issue with test device scan time, particularly with respect to the Microsoft device, performance can be improved for production devices. Again, the task

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7 NAF Comments at 3.

8 *Id.*

9 *See* Coalition Comments at 3; Philips Comments at 3-4; *see also* NAF Comments at 2.

10 Comments of the Microphone Interests Coalition (Aug. 15, 2007) at 4.

11 Philips Comments at 5.

before the Commission should be to determine appropriate parameters, and require production devices to meet those parameters.

### C. Transmissions.

The Coalition has proposed a number of rules designed to minimize the potential of interference for white space transmissions, including a transmit mask.[12] Thus, arguments based on results that do not use that mask, or that completely fail to take into account other interference-mitigating parameters such as Transmission Power Control, are largely irrelevant, as they object to a device that no one plans to build. Indeed, the primary objection to the adjacent channel interference test results that take into account the transmission mask by using the supplied band pass filter are not that the results themselves are unfavorable, but that such a filter would be uneconomical to deploy on each channel.[13] But the Coalition already has committed to meeting that mask; if the Commission determines that it provides sufficient protection, that should be the end of the inquiry. FCC Certification testing of a commercial device before it is sold will verify the Coalition's claims in this respect.

## II. THE COMMISSION SHOULD CONTINUE TO EVALUATE DIRECT PICKUP INTERFERENCE ISSUES.

While the direct pickup interference testing performed by OET was "not intended to constitute a complete basis for defining criteria necessary to protect cable TV viewers" from interference by white space devices,[14] the Coalition agrees with Motorola and others

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12 Reply Comments of the White Space Coalition (Mar. 31, 2007) at 6 ("Coalition Reply Comments").

13 Comments of the Association for Maximum Service Television and the National Association of Broadcasters (Aug. 15, 2007) at 5-6 ("MSTV Comments"); Comments of Shure, Inc. (Aug. 15, 2007) at 7.

14 *Direct-Pickup Interference Tests of Three Consumer Digital Cable Television Receivers Available in 2005*, FCC/OET 07-TR-1005, (July 31, 2007) at iii ("Direct Pickup Test Report").

that the issue warrants further examination.[15] Here again, the Coalition notes that DTV converter boxes are required to have minimum performance standards similar to the ATSC Recommended Guidelines for television receivers,[16] and might well exhibit better interference rejection capability.

Moreover, the Commission should examine with greater precision those specific components that exhibit interference susceptibility (*e.g.*, the television set itself, the cabling used) in order to isolate potential problems and work toward solutions. Information regarding the susceptibility of various components could also indicate the extent of any potential direct pickup interference issue. In addition, the Coalition asks that any additional Commission analysis take into account, to the extent possible, the parameters under which the Coalition has proposed to deploy personal/portable devices.

Finally, it is important to note that direct pickup interference is not an issue unique to personal/portable devices, nor is it one that can be solved by abandoning spectrum sensing in favor of an interference-avoidance approach based on geography. Indeed, the issue is not unique even to this proceeding, as devices using spectrum in the upcoming 700 MHz auction will transmit on frequencies that will still correspond to cable channels at the end of the DTV transition.[17] Moreover, the fixed devices the Commission already has proposed to authorize will operate at substantially greater power, potentially creating a substantially more significant risk of direct pickup

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15 *See, e.g.*, Comments of Motorola, Inc. at 7-8; Comments of the National Cable & Telecommunications Association (Aug. 15, 2007) at 5.

16 Reply Comments of the White Spaces Coalition on the OET DTV Interference Report (May 15, 2007) at 2.

17 *See* 47 C.F.R. § 76.602 (incorporating by reference CEA-542-B: CEA Standard: Cable Television Channel Identification Plan); ARRLWeb, TV Channel, CATV and FM Broadcast Frequencies, available at http://www.arrl.org/tis/info/catv-ch.html (last visited Aug. 23, 2007).

interference than personal/portable devices—particularly since fixed installations would communicate with devices located at residences. Almost without exception, parties in this proceeding have agreed that the white spaces should be used in some fashion, and it is in everyone's interest to determine the extent of the problem, as well as the most efficient means of mitigating those risks that are present.

## III. THE INITIAL OET MEASUREMENTS ARE PART OF AN ONGOING PROCESS.

The testing undertaken by OET is just one step the rulemaking process, and the Commission should reject any requests that a subset of results be the sole determinant of the outcome this proceeding. As the OET Report explains, the reported test device measurements were made "in support of the [Commission's] ongoing proceeding to consider rules" for permitting the operation of unlicensed white space devices.[18] In other words, the Report results are not an end unto themselves, but part of a larger process to establish technical and operating parameters that will ensure effective use of the white spaces while providing incumbents with the protection to which they are entitled. Thus, while favorable test results (such as the demonstration of reliable sensing at -114 dBm) obviously provide useful information in achieving this goal, so do "mixed" results, such as a test device's detection of wireless microphone signals 50 kHz from the channel band edge, which help identify ways in which device performance can be improved.[19]

A number of commenters correctly have observed that the OET measurements are part of a larger process to fashion appropriate rules for personal/portable devices.[20] However, some parties also have sought to use certain OET Report results to attempt to

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[18] OET Report at 1.

[19] *See, e.g.*, Philips Comments at 4.

[20] *See, e.g.*, Coalition Comments at 6; NAF Comments at 2-4; Philips Comments at 5.

prematurely end the Commission's inquiry into personal/portable devices. For example, in their joint comments, the Association for Maximum Service Television and the National Association of Broadcasters suggest repeatedly that the performance of the initial test devices provided to OET will somehow be *better* than that of production personal/portable devices that would ultimately be available in the marketplace.[21] This makes no sense, and displays an unfortunate ignorance of modern chip design techniques. Today's manufacturing processes lead to high quality, stable, and reproducible products which will be better than breadboard/prototype designs. In addition, unlike DTV receivers, production white space devices will operate under finalized rules and be subject to certification to ensure compliance with required operating parameters. In any event, OET, not surprisingly, does not share MSTV/NAB's view.[22]

Because some commenters have also used the OET Report as a forum to rehash prior policy arguments in opposition to unlicensed personal/portable devices, it bears repeating that the core objective of this proceeding is not *solely* to protect incumbents from harmful interference, but to "benefit the public by allowing the development of new and innovative types of devices and services for businesses and consumers, without disrupting television and other authorized services."[23] Claims that the OET Report supports relegating white space use to limited fixed WISP deployments,[24] or perhaps

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[21] MSTV/NAB Comments at 4-6, 11.

[22] OET Report at vi ("We recognize, however, that the devices we have tested represent an initial effort, and do not necessarily represent the full capabilities that might be developed with sufficient time and resources"). *See also* Paul Kirby, *Despite Test Results, Martin Still Supportive of Unlicensed Devices In TV "White Spaces"* TR Daily (Aug. 7, 2007)("Our engineers have actually opened up the process. They're trying to bring in engineers both from the broadcasters and from the technology companies to identify ways in which to improve those devices.").

[23] Further Notice at ¶1.

[24] MSTV Comments at 11.

backhaul for other wireless networks[25] ignore valid data gathered by OET, the fundamental goals of this proceeding, and the unique potential of white space spectrum.

As the Coalition and others previously have observed, personal/portable devices using spectrum sensing hold the greatest promise for providing innovative services, as well as for making broadband truly ubiquitous and affordable.[26] Thus, while incumbents can, and should, highlight areas of concern to ensure that they receive the protection to which they are entitled, it does a disservice to the proceeding and the Commission's goals to isolate certain report results in a premature attempt to declare personal/portable devices a failure. Rather, all stakeholders should proceed to determine those operating parameters that will provide adequate protection while still enabling innovative new products and services.

## IV. CONCLUSION.

The Coalition again expresses its appreciation to the Commission for the substantial efforts it has undertaken to date, including evaluation of test devices, to determine how best to bring the substantial benefits of white space use to the American public. Going forward, the Coalition is ready to assist the Commission in providing it with the information it requires to establish final rules for personal/portable devices, ensuring that incumbents receive the protection to which they are entitled and that the Commission's goals of facilitating widespread broadband access and innovative new services are realized.

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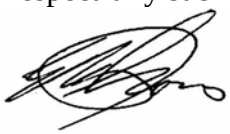
[25] Comments of Sprint Nextel Corporation (Aug. 15, 2007) at 4.

[26] *See, e.g.*, Comments of the White Space Coalition (Jan. 31, 2007) at 3-9; Comments of the New America Foundation (Jan. 31, 2007) at 65-57; Coalition Reply Comments at 3-15.

Respectfully submitted,



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