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

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

COMMENTS OF THE WHITE SPACE COALITION ON THE OET WHITE SPACE DEVICE PROTOTYPE TESTING REPORT

I. INTRODUCTION.

The Office of Engineering and Technology's initial evaluation of prototype TV-band devices submitted by the White Space Coalition at the Commission's request makes several things clear.[1] Most significantly, the OET Report confirms that white space devices can effectively detect both digital television and wireless microphone signals. It also validates several of the fundamental claims made by the Coalition in this proceeding, including that spectrum sensing is feasible at -114 dBm for TV and wireless microphones. Finally, the Report indicates that direct co-channel interference is measured at ranges on the order of meters rather than the many kilometers suggested by the opponents of personal/portable devices, and that devices can successfully mitigate out-of-band emissions. These results provide a useful basis from which the Commission can begin to craft final rules for the operation of personal/portable devices in the TV white spaces.

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

The device submitted by Philips Electronics North America Corp. (Prototype B) once and for all demonstrated the technical feasibility of spectrum sensing. Unfortunately, as Microsoft explained in a recent *ex parte* letter, testing by Microsoft in the presence of FCC engineers revealed that the Prototype A device submitted by Microsoft and used by the Commission for DTV signal testing had a malfunctioning scanner.[2] Accordingly, the sensing test results from the Prototype A device (as well as the interference results from tests conducted without the band pass filter) should not be used in crafting the rules applicable to personal/portable white space devices.

Although Chairman Martin has observed that the OET Report reflects some concerns with the performance of the prototype devices, he has indicated that he plans to move this proceeding forward,[3] and the Coalition applauds him for continuing the momentum on this issue. This goal can best be accomplished if the Commission works quickly to review and resolve open questions. In particular, the Commission should evaluate the risk of interference posed by white space devices in the context of the technical parameters proposed by the Coalition and others in response to the *Further Notice of Proposed Rulemaking*. In so doing, the technical information obtained by the Commission can inform its decisions, and allow it to quickly determine the appropriate rules for personal/portable devices.

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[2] *See* Letter of Edmond Thomas to Marlene H. Dortch, Secretary, Doc No. 04-186, dated August 13, 2007 ("Microsoft Ex Parte").

[3] *See* Paul Kirby, *Despite Test Results, Martin Still Supportive of Unlicensed Devices In TV "White Spaces"* TR Daily (Aug. 7, 2007).

II. TEST RESULTS FROM THE WORKING PROTOTYPE CONFIRM THAT RELIABLE SPECTRUM SENSING CAN BE SUCCESSFULLY IMPLEMENTED.

A. The Performance of Prototype B Demonstrates the Feasibility of Spectrum Sensing Using the Coalition's Proposed Parameters.

As Commission testing demonstrates, the Prototype B device provided by Philips Electronics functioned as intended, confirming the feasibility of many of the operating parameters proposed by the Coalition. Indeed, the OET Report recognizes that Prototype B "reliably detect[s] DTV signals at -115 dBm in single channel tests and at -114 dBm in the two-channel tests."[4] These results should put to rest lingering claims in this proceeding by some parties about the ability to detect signals as low as -114 dBm as proposed by the Coalition.

Similarly, the Commission's Report found that Prototype B was capable of successfully sensing "wireless microphone signals located in the center of a TV channel in all scans at signal levels as low as -120 dBm."[5] In other words, personal/portable devices will be more than capable of protecting wireless microphones from harmful interference. Although OET also tested some wireless microphone signals that were centered 50 kHz from the low end of an adjacent channel and found that the Prototype B performance needs improvement with respect to these signals,[6] this scenario is quite literally an edge case that, to the extent necessary, can be easily remedied.[7] In short, Commission testing of the Prototype B device now confirms that spectrum sensing

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4 OET Report at viii.

5 *Id.* at viii-ix.

6 *Id.* at 64.

7 *See* Comments of Philips Electronics North America Corp. (filed Aug. 15, 2007).

works, and the question before the Commission should no longer be whether to allow spectrum sensing, but which specific rules should be in place to implement it.

B. The Prototype A Sensing Results Were Based on a Damaged Device, and Must be Disregarded.

Unfortunately, the Commission's sensing test results found that the Prototype A device it tested did not perform according to its specifications. Specifically, as representatives from Microsoft recently confirmed in an *ex parte* visit to the FCC Laboratory, the device's scanner was severely damaged, making the Commission's ultimate determination that the device it tested could not detect incumbent signals using the specified detection threshold a foregone conclusion.[8] As a result, these sensing test results must be set aside. It belabors the obvious to say that any reliance on sensing data from a prototype with damaged sensing capabilities to establish the final operating rules for later, functional devices makes little sense, and could be arbitrary and capricious.[9]

The Coalition remains optimistic that, to the extent necessary, it will be able to assist the Commission in obtaining the data that it might need to finalize its rules. Indeed, the spare Prototype A device previously provided to the Commission, which Microsoft engineers also tested during the recent *ex parte*, did detect signals at the proposed detection threshold of -114 dBm[10] and may still be used to help achieve this goal. Although the Commission did not contact Microsoft during the testing, to the extent the Commission does any additional testing of a Coalition test device, the

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[8] *See* Microsoft Ex Parte at 2.

[9] 5 U. S. C. § 706 (2)(A) (reviewing court must hold unlawful any agency action, findings, or conclusions that are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."). *See also Bangor Hydro-Electric Co. v. FERC*, 78 F.3d 659, 663 n.3 (D.C. Cir. 1996) (agency's policy choice must be supported by "substantial evidence" where "there is a rational connection between the facts and the choice made.").

[10] *See* Microsoft Ex Parte at 2.

Coalition asks that the process be an open and collaborative one in order to avoid any delays and to ensure the devices function properly.

III. WHITE SPACE DEVICES USING APPROPRIATE TRANSMISSION RULES POSE NO THREAT TO OVER THE AIR SIGNALS.

Commission transmission test results support the Coalition's contention that white space devices transmitting under its proposed rules pose little risk to over-the-air signals. Indeed, the OET Report indicates that even if the white space device were to completely fail to detect a DTV signal and begin transmitting on the very same channel used by a television broadcaster, the co-channel interference distance would be only 87 meters.[11] While the Commission tested a relatively strong DTV signal (20 dB above TOV) at the FCC Laboratory, it also assumed the worst possible theoretical deployment for a white space device: placed at the same height as a rooftop antenna, with the antenna aimed directly at the device, and with nothing but free space in between the two.[12]

Test results with respect to transmissions on first adjacent channels are even more compelling, as the Commission determined that the potential for interference was a *maximum* of only two meters when the white space device transmissions conformed to the Coalition's proposed mask.[13] In other words, while the Commission correctly concluded that certain out-of-band emissions from the device could pose an interference risk to incumbents, the Coalition's operating parameters include a transmission mask that eliminates this possibility.

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[11] OET Report at 55.

[12] *Id.* at 49.

[13] *Id.* at x.

IV. FUTURE COMMISSION TESTS SHOULD ADDRESS PROPOSED OPERATING PARAMETERS FOR WHITE SPACE DEVICES.

In its *Further Notice of Proposed Rulemaking*, the Commission encouraged entities undertaking their own tests to "design the tests to be consistent with the proposals in the Further Notice."[14] The Coalition believes that this approach will also yield the most meaningful results for future testing and/or analysis by the Commission. While specific test devices are useful tools for the Commission to assess the potential for harmful interference, merely testing the test device itself does not provide the complete picture. Rather, such tests should be undertaken only in the larger context of determining the appropriate operating parameters the Commission will require.[15] Accordingly, the Coalition urges the Commission to consider and evaluate its tests in light of the operating parameters proposed by the Coalition and others for personal/portable devices.

V. CONCLUSION.

The Coalition is committed to working with the Commission to help it obtain the data required to make a final decision as to the appropriate operating parameters for personal/portable white space devices. The Coalition has every confidence that personal/portable devices can utilize the white spaces without causing interference to incumbent licensed users. Such findings will allow the Commission to adopt final rules for these devices, unlocking the potential of this spectrum and providing substantial benefit to Americans.

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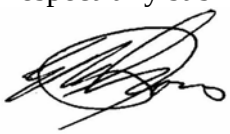
[14] Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, First Report and Order and Further Notice of Proposed Rulemaking, 21 FCC Rcd. 12266, 12273 (2006) ("Further Notice").

[15] *See Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416 (1971) (agency decisions must be based on consideration of relevant factors).

Respectfully submitted,



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