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FCC Mail Room

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Julius Genachowski  
Chairman  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, D.C. 20554

**ORIGINAL**

**Re: White Spaces/Sensing/Geolocation Database  
ET Docket Nos. 04-186, 02-380, 08-260**

Dear Chairman Genachowski:

In response to requests from various Commission officials, Innovative Algorithms (IA) respectfully suggests that the FCC maintain the spectrum-sensing requirement in the Commission's rules for unlicensed devices in the TV Band<sup>1</sup>.

We urge the Commission to adhere to its decision that spectrum sensing is a necessary companion to the geolocation/database requirement<sup>2</sup>. The two together are essential to achieving the Commission's stated goal of avoiding harmful interference to the public's television service. This is so because (1) sensing serves as an important backstop to compensate for the inevitable database creation and access errors; (2) sensing at least limits interfering TVBD operations to a short period of time; and (3), in the case of licensed microphones used for newsgathering and other valued mobile uses, geolocation protection is not even possible through the use of databases.

Innovative Algorithms is the sole proprietorship of Dr. Chad M. Spooner, who is also an employee of NorthWest Research Associates. Dr. Spooner has been involved in the research and *prototype development* of spectrum-sensing systems for the past 25 years. This involvement includes development of advanced signal processing algorithms for automatic detection and classification of weak communication signals. Dr. Spooner has made many contributions to reputed technical journals, international conferences, technical books, and standards related to the topic of spectrum sensing. (please see the attached list of references). Dr. Spooner is also an

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<sup>1</sup> See *Unlicensed Operation in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, ET Docket Nos. 04-186 and 02-380, 08-260.

<sup>2</sup> MSTV, NAB, Shure, Shared Spectrum, Philips, and others have supported retaining the sensing requirement. See, e.g., Ex Parte Comments of MSTV, ET Docket Nos. 04-186 and 02-380 (July 16, 2010).

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Adjunct Research Professor at Virginia Tech and collaborates with graduate students around the country on cognitive radio topics.

Dr. Spooner has developed several automatic spectrum-sensing prototype systems through a combination of internal funding and government research and development contracts. One such system is currently deployed and operational. In fact, IA believes that such a system is capable of sensing the recommended signal types reliably at *and below* the thresholds as specified in the FCC proposed rules (FCC Docket # 08-260). Hence, counter to the belief that it is difficult to reliably meet the spectrum-sensing thresholds as proposed by the FCC's proposed rules and such devices will be expensive (FCC Docket # 08-260)<sup>3</sup>, IA believes that such a technology exists today and can reliably meet the suggested spectrum-sensing thresholds.

As suggested by Commissioner Meredith Baker, spectrum sensing has the potential to help maximize our use of available spectrum and make possible applications and devices that are not feasible with the database alone<sup>4</sup>.

A regulatory push to include spectrum-sensing technologies in TV Whitespaces *will spur innovation* and create new jobs in this arena while ensuring adequate protection to the licensed incumbent users.

Hence, we urge the FCC to maintain the spectrum-sensing requirements as proposed in the Document FCC Docket # 08-260.

Respectfully submitted,



Dr. Chad Spooner  
Innovative Algorithms  
NorthWest Research Associates

cc: Commissioner Michael J. Copps  
Commissioner Robert M. McDowell  
Commissioner Mignon Clyburn  
Commissioner Meredith Atwell Baker  
Julius Knapp

<sup>3</sup> Supporters of eliminating sensing have offered no evidence or support for their position except to state that such devices would be cheaper to produce.

<sup>4</sup> [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-298832A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-298832A1.pdf)

Bill Lake

Jennifer Flynn

John Giusti and Joshua Citelli

Angela Giancarlo

Brad Gillen and Charles Mathias

Eloise Gore and Louis Peraertz

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