

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of)
)
Request to Amend Sections 47 C.F.R 15.711(b)) RM-11745
and 15.717 Regarding Changes to Certain Rules)
for Unlicensed Operations in the Television Bands,)
Repurposed 600 MHz Band, 600 MHz Guard)
Bands and Duplex Gap and Channel 37)

To: The Commission

**OPPOSITION OF
CARLSON WIRELESS TECHNOLOGIES, INC., 6HARMONICS, KTS WIRELESS,
INC., and MELD TECHNOLOGY, INC.**

Carlson Wireless Technologies, Inc., 6Harmonics, KTS Wireless, Inc., and Meld Technology, Inc. (the “White Spaces Manufacturers”) hereby oppose in the strongest terms the Emergency Motion for Suspension of Operations and Petition for Rulemaking (“Petition”) filed March 19, 2015 by the National Association of Broadcasters (“NAB”).¹ Our small but growing companies comprise the world’s leading manufacturers and research and development companies that are making the incredible promise of dynamic spectrum sharing in the TV White Spaces band a reality.

Unfortunately, the NAB Petition is grounded in misinformation. Of particular importance, NAB asserts that: (i) the inclusion of GPS technology used by commercial wireless operators in all white spaces devices would ensure the accuracy of location data in the white spaces databases better than the professional installer approach; and (ii) such GPS technology

¹ See *Public Notice*, Report No. 3016 (rel. April 1, 2015).

could be ubiquitously and affordably incorporated into white spaces devices at a “cost [of] no more than a few dollars.” NAB Petition at 3, 14. Both assertions are unsupported and false.

First, deployment of the GPS technologies used by commercial wireless operators would not be capable of populating the white spaces databases in many fixed applications, such as indoor devices where the signal cannot penetrate the building walls and outdoor devices used for agricultural and industrial machine-to-machine operations that are housed in thick, water-tight exteriors to ensure reliability and quality of service in harsh weather conditions.² For these devices, professional installation is the only practical solution. A GPS solution using current commercial wireless standards also would be unacceptable because mobile GPS standards are governed by the FCC’s CMRS E911 rules, which permit accuracy measurements to vary by +/- 50 meters *for just 67 percent* of calls for GPS-based solutions.³ Using GPS technology that meets that standard would populate the white spaces databases with location information that would not effectively ensure non-interference with TV broadcasters’ operations, and that would not meet the FCC’s white spaces rule requiring location accuracy within +/- 50 meters *for 100 percent* of all white spaces devices.⁴

Moreover, professional installation of white spaces devices does not expose the databases to tampering. Our customers are a mixture of the railroad industry, public safety institutions, WISPs, the Oil and Gas industry, educational and anchor institutions, and government

² For these reasons, the commercial mobile industry also employs cell tower triangulation techniques which, again, would be unavailable to the white spaces customers and, in any event, would produce location accuracy data that would be unacceptably inaccurate under current FCC TV White Spaces rules.

³ 47 C.F.R. § 20.18(h)(2)(i).

⁴ *Id.*, at §15.713(f) & (g).

institutions. These organizations employ professional installers to perform the tasks of installing base stations and receive equipment (typically fixed) in a manner that ensures accuracy and long term reliability are crucial. They go about their tasks as if their job depends on it, because literally it does. An installation of white spaces equipment where an installer reports erroneous data into the white spaces databases risks a claim of potential or actual harmful interference from a very vigilant broadcast TV industry, which would be a liability issue and waste of time and resources for the organization, and a very bad career decision for the professional installer.

Second, NAB's assertion that including GPS capability in the white spaces devices would "cost no more than a few dollars" is flatly wrong. Given current sales volumes, we estimate that implementation of GPS technology into the white spaces equipment would cost an additional \$50.00 for both the receive equipment (costing \$400 today and trending to \$100 per unit) and an additional \$50.00 for the base station equipment. The redesign of white spaces equipment would also cost at least an additional \$125,000 for each manufacturer, and significantly delay the market deployment of white spaces equipment. Moreover, the industry and organizations deploying white spaces equipment demand both indoor and outdoor locations; for indoor applications, the customer would have to install a separate outdoor antenna and feed line solely for the purpose of determining location and that would raise the cost of the white spaces product by 30 to 50 percent.

NAB also claims that the white spaces database contains erroneous data because "more than 80 devices listed 'Meld test' as the contact name." NAB Petition at 10. This simply reflects that Meld Technology tests its equipment at a single facility with the Spectrum Bridge database in order to ensure that the device is fully able to communicate with the white spaces database

before it is shipped to the customer. Spectrum Bridge, in turn, filters out Meld's unit testing for a more representative database. If NAB had contacted Meld, it would have explained this matter and even NAB would have seen that Meld's practice of pre-testing equipment coordination with the white spaces databases prior to market deployment is designed to protect, not potentially harm, the spectrum rights of broadcasters.

Moreover, the NAB Petition rests on a groundless fear that enhanced use of white spaces spectrum for a myriad of purposes will inevitably cause TV broadcasters harmful interference. The Whitespace Manufacturers working in conjunction with companies like Google and Microsoft, WISPs in the United States and around the world, leading agricultural companies, government and industrial organizations, and many others have deployed white spaces networks throughout the world, including the United States, Canada, Singapore, China, Philippines, South Africa, United Kingdom, Uruguay, Rwanda, Malawi, Vietnam and Ghana. All of these deployments rely on the same basic "database/professional installer" process to ensure that white spaces spectrum sharing does not interfere with licensed spectrum users a few countries not mentioned are using light licensed, *e.g.*, Nigeria, but will most likely change. Moreover, after rigorous governmental examination, regulators in Canada and the United Kingdom have likewise adopted the "database/professional installer" approach.⁵ And yet, of all of these deployments and tests in the United States and around the world, the NAB Petition failed to cite even a single instance of harmful interference to a licensed user of the spectrum.

⁵ Industry Canada established white spaces technical rules on February 5, 2015. <http://news.gc.ca/web/article-en.do?nid=928659>. The United Kingdom's Ofcom established white spaces technical rules on February 12, 2015. <http://stakeholders.ofcom.org.uk/binaries/consultations/white-space-coexistence/statement/tvws-statement.pdf>.

Finally, instead of opposing the “database/professional installer” process for white spaces, TV broadcasters should consider how they, too, could harness the tremendous potential of dynamic spectrum sharing. Broadcasters hold unique commercial and public market opportunities, in addition to traditional one-way TV broadcast services, given their valuable low-band spectrum rights directly contiguous to the TV white spaces spectrum. Broadcasters could leverage that unique position to offer an array of services for the changing needs of U.S. consumers, educational and government institutions, and employers.

For these reasons, the White Spaces Manufacturers respectfully ask the Commission to deny the NAB Petition. The Commission should continue its leadership in RF spectral efficiency through dynamic spectrum sharing by finalizing the White Spaces FCC Rules as expeditiously as possible.

Respectfully submitted,

/s/

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