

**Before the
Federal Communications Commission
Washington, D.C. 20554**

))
Revision of Part 15 of the Commission’s Rules to))
Permit Unlicensed National Information))
Infrastructure (U-NII) Devices in the 5 GHz Band)) ET Docket No. 13-49
))

**REPLY COMMENTS OF THE
NATIONAL ASSOCIATION OF BROADCASTERS**

I. INTRODUCTION AND SUMMARY

The National Association of Broadcasters (NAB)¹ hereby replies to comments filed in response to the Commission’s Public Notice seeking to refresh the record in the above-captioned proceeding.² While NAB takes no position with regard to the appropriateness of sharing in the 5.85-5.925 GHz (U-NII-4) band, the Commission should exercise caution in authorizing further spectrum sharing based on its experience with existing spectrum sharing regimes, including TV White Spaces (TVWS) operation. If the Commission does move forward with sharing in the U-NII-4 band, it should ensure that the rules it adopts to prevent harmful interference to licensed operations are both practical and enforceable. The Commission should ensure that devices authorized for unlicensed operation in the U-NII-4 band cannot

¹ The National Association of Broadcasters is a nonprofit trade association that advocates on behalf of free local radio and television stations and broadcast networks before Congress, the Federal Communications Commission and other federal agencies, and the courts.

² *The Commission Seeks to Update and Refresh the Record in the “Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band” Proceeding*, Public Notice, ET Docket No. 13-49, FCC 16-68 (June 1, 2016) (Refresh Notice).

circumvent the interference protection regime the Commission imposes and take prompt enforcement action against non-compliant operations.

II. THE COMMISSION'S PRIORITY MUST BE PREVENTING HARMFUL INTERFERENCE TO LICENSED OPERATIONS

The Commission's proposal would allow spectrum sharing between U-NII devices and Dedicated Short Range Communications (DSRC) operations in the U-NII-4 band. U-NII devices support high-speed unlicensed networks that can be either short-range (e.g., Wi-Fi in the home) or longer-range (e.g., Wireless Internet Service Provider services). DSRC supports short-range data connections between different vehicles, and between vehicles and nearby roadside systems.

Sharing the same frequency at the same time and location leads to the possibility of interference, which the Commission must manage in developing rules and policies for shared use. In its request to update the record, the Commission states that unlicensed operations are not entitled to any protection from interference, and that "any interference received from the operation of an authorized radio service must be accepted."³ NAB strongly agrees with this longstanding Commission policy, which makes it all the more confusing that the Commission has proposed to abandon this policy to give unlicensed TVWS operations priority over licensed television services.

As the Commission states, the Institute of Electrical and Electronics Engineers (IEEE) examined two techniques for sharing in the U-NII-4 band. The "detect and avoid" approach would require unlicensed devices to monitor DSRC channels. If DSRC signals are detected, unlicensed devices would be prohibited from using the entire band for a period of ten

³ *Id.* at 11.

seconds.⁴ The “re-channelization” approach, on the other hand, would split the band into two portions, one exclusively for safety-related DSRC purposes, and one shared between DSRC and unlicensed services, with unlicensed devices required to “listen” for open channels before transmitting.⁵ Notably, despite 18 months of meetings and presentations, the IEEE Tiger Team was unable to reach a consensus on either method; an unsurprising outcome given that both techniques have serious practical limitations and will raise enforcement problems.⁶

While some commenters support the “detect and avoid” approach to prevent harmful interference, that approach has proven problematic in practice.⁷ In 2003, the Commission made the 5.47-5.725 GHz (U-NII-2C) band available for U-NII,⁸ a band shared with Federal and non-Federal radar systems, such as weather radar used by the FAA to detect weather hazards to the safe navigation of aircraft and by broadcasters to detect and alert the public to significant weather hazards such as tornadoes. U-NII operation in portions of the U-NII-2C band require the use of “Dynamic Frequency Selection” (DFS), a sharing technique that is designed to detect radar operations and avoid them by shifting the operating frequency of the U-NII device. Thus, conceptually, the “detect and avoid” technique being considered for use in the U-NII-4 band is similar to the DFS technique presently being used in the U-NII-2C band.

⁴ *Id.* at 6. See also IEEE P802.11 (Wireless LANs), *Final Report of the DSRC Coexistence Tiger Team*, 6 (March 9, 2015) available at: <https://mentor.ieee.org/802.11/dcn/15/11-15-0347-00-Oreg-final-report-of-dsrc-coexistence-tiger-team-clean.pdf> (IEEE Tiger Team Report).

⁵ Refresh Notice at 6.

⁶ IEEE Tiger Team Report at 8.

⁷ Further Comments of Cisco Systems, Inc. at 3-7, ET Docket No. 13-49 (July 7, 2016).

⁸ *Revision of Parts 2 and 15 of the Commission’s Rules to Permit Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz Band*, Report and Order, 18 FCC Rcd 24484 (2003).

Unfortunately, in practice, modification of U-NII devices to defeat DFS and illegal importation of non-DFS devices has resulted in widespread interference problems in the U-NII-2C band. The Commission is already aware of numerous interference situations to radar systems in the U-NII-2C band from these improperly-functioning or illegal U-NII devices. These interference problems are resource-intensive to investigate and resolve, and the Commission's actions to date – 13 years after DFS was first authorized – have failed to prevent life-threatening interference. Lack of effective interdiction and real-time enforcement has allowed this interference to proliferate. For example, as the Commission is aware, the Oklahoma Association of Broadcasters recently submitted a complaint regarding interference to its member's weather radar systems at the beginning of tornado season.

Other commenters favor the re-channelization approach as more workable than the “detect and avoid” approach, and assert that re-channelization can protect licensed users while still expanding unlicensed opportunities.⁹ Re-channelization amounts to disallowing sharing in a portion of the U-NII-4 spectrum, while establishing a listen-before-talk (LBT) sensing protocol for the remaining spectrum. Thus, the shared portion of the re-channelized U-NII-4 band would allow “spectrum sensing” in much the same way as the TV White Space rules. Significantly, while the TVWS rules allow for spectrum sensing, no sensing-capable devices have ever been approved for use by the FCC, and the sensing-capable devices submitted to the FCC Laboratory for evaluation were found to be unable to reliably detect whether a channel was in use.

⁹ See, e.g., Comments of Open Technology Institute at New America, Public Knowledge, Engine, Common Cause, and Next Century Cities at 30, ET Docket No. 13-49 (July 7, 2016); Comments of the National Cable & Telecommunications Association at 17, ET Docket No. 13-49 (July 7, 2016).

Whichever approach the Commission ultimately endorses, it is critical that the Commission apply lessons learned from the TVWS experiment, in particular the demonstrable and ongoing failure of the spectrum sharing regime the Commission established for TVWS operations.¹⁰ First, the Commission should ensure that the devices it authorizes cannot be modified to disable those functions. Second, the Commission should re-double its efforts to work with U.S. Customs to better ensure that unauthorized devices capable of transmitting without regard to “detect and avoid” requirements are not imported into the country. Finally, the Commission should promptly investigate and shut down devices found to be operating improperly and assess monetary penalties against the operator, seller, or importer as appropriate.

III. CONCLUSION

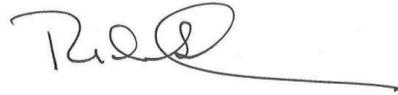
NAB does not oppose spectrum sharing in the U-NII-4 band. However, based on its experience with the Commission’s rules intended to prevent interference to licensed television services from unlicensed TVWS devices, NAB cautions that theoretical interference regimes such as detect and avoid and listen before talk may prove challenging to implement. The Commission should only allow unlicensed operation in the U-NII-4 band if it is satisfied that unlicensed operations can and will comply with its interference protection rules.

¹⁰ See Letter from Patrick McFadden to Marlene H. Dortch, ET Docket No. 16-56 (July 15, 2016).

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Rick Kaplan", with a long horizontal line extending to the right.

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July 22, 2016