

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

In the Matter of	)	
	)	
Expanding Flexible Use in Mid-Band	)	GN Docket No. 17-183
Spectrum Between 3.7 and 24 GHz	)	

**NOTICE OF INQUIRY**

**COMMENTS OF THE STATE OF MARYLAND**

**OCTOBER 2, 2017**

## **Comments of the State of Maryland**

The State of Maryland (“State” or “Maryland”) thanks the Federal Communications Commission (“FCC or Commission”) for issuing this important Notice of Inquiry (“NOI”) related to utilization of those mid-band frequencies found between 3.7 and 24 gigahertz (“GHz”) in the furtherance of wireless broadband communications. While the NOI addresses many important issues, Maryland wishes to limit its comments to the frequency bands 5.925 – 6.425 and 6.425 – 7.125 GHz and the use of fixed service (“FS”) microwave stations supporting public safety and other critical infrastructure purposes.<sup>1</sup>

The Commission’s Universal Licensing System (“ULS”) database notes that, within the State, there are two hundred and eighty-one active FS licenses in the 5.925 – 6.425 GHz band and four hundred and thirty-four licenses in the 6.425 – 7.125 GHz frequency band. The vast majority of these seven hundred and fifteen FS microwave licenses are being used by the State and its local governments for backhaul public safety communications systems. As such, we agree with the Commission that it is in the public interest to examine carefully any reuse of this spectrum to ensure that critical first responder communications systems are not disrupted.

Notwithstanding the State’s great desire to protect public safety microwave paths, it is recognized that the spectrum between 5.925 and 7.125 GHz is significant and in many potential rural and underserved broadband areas, wireless communications represent an economical approach to extend high-speed broadband data access to millions of Americans. To that end, the State supports the Commission’s efforts to identify available spectrum that may be used to deliver wireless broadband in rural and underserved areas.

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<sup>1</sup> See FCC 17-104 ¶ 2 “We ask commenters to identify other bands, allocated for exclusive non-federal use or shared federal and non-federal use, that might be suitable candidates for expanded flexible wireless broadband use so that we can understand any other interest in these mid-band frequencies and make more informed proposals to explore such bands in future proceedings, if appropriate.”

As is noted in the NOI, one contemplated approach is to expand the spectrum available to devices designed to operate in the Unlicensed National Information Infrastructure (“U-NII”) band.<sup>2</sup> Maryland believes that this concept has merit with respect to low power devices<sup>3</sup> commonly found in businesses and homes. Due to the scale of manufacturer production, these devices have become reasonably low priced and support wireless broadband throughout the world. The only reservation of the State relative to the expanded use of frequencies made available to U-NII devices is the adherence of non-interference to current and future public safety microwave systems.

The Commission has instructive experience in solving the problem of spectrum identification and determining on an ad hoc basis those frequencies in use and those available for unlicensed low power use pursuant to the provisions of Part 15. The problem of identifying available spectrum was addressed in the Commission’s innovative “Whitespace” initiative. In the Whitespace proceedings, the Commission examined multiple strategies for the ad hoc identification of vacant spectrum and focused on two approaches, geo-location/database and spectrum sensing. In that matter, the Commission stated:

“We find that the geo-location/database and spectrum sensing methods offer the most practical solutions for identifying unused TV channels and are therefore incorporating both of these methods into the rules for unlicensed TVBDs. Both of these approaches can be implemented using relatively cost effective technologies, although we do recognize that the database/system could involve an ongoing

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<sup>2</sup> See FCC 17-104 at ¶ 26 where the Commission stated;

“We seek comment on the potential for additional flexible wireless broadband use in the 5.925-6.425 GHz band, taking into consideration existing and future incumbent uses as well as compatibility with adjacent band services. Specifically, since the 5.925-6.425 GHz band is close to spectrum that we have designated for Unlicensed National Information Infrastructure (U-NII) use, it may be possible and technically beneficial for U-NII devices to operate in both this band and the existing U-NII spectrum. This would allow the devices to operate with wider channel bandwidths and higher data rates as well as with increased flexibility for all types of unlicensed operations.”

<sup>3</sup> Devices designed pursuant to the IEEE 802.11 standards supporting a set of media access control (MAC) and physical layer (PHY) specifications for implementing wireless local area network (WLAN) computer communication.

cost for users of unlicensed TVBDs. We also find that spectrum sensing, as currently presented in our measurement studies of prototype devices, is not sufficient by itself to enable unlicensed devices to reliably determine the TV channels that are available for use at a location. However, we believe that spectrum sensing offers significant potential for use in detecting the signals of protected services and therefore should be included as part of the required means for identifying available channels.”<sup>4</sup>

Obviously there are significant technical transmission and modulation differences in the characteristics of a diffuse six megahertz (“MHz”) television channel and a microwave path that may occupy significantly more spectrum, but on a highly focused basis. As such, the database approach taken in the “Whitespace” docket may not be needed for the expansion of low power Part 15 U-NII devices, with their extremely limited broadcast area, and the protection of microwave paths. However, Maryland suggests that the Commission, as it did at the inception of the “Whitespace” proceeding, consult the Institute of Electrical and Electronic Engineers (“IEEE”) regarding a determination as to whether spectrum sensing standards could be developed for inclusion in U-NII devices designed to operate in spectrum now used for FS and other authorized stations. As noted by the Commission, the IEEE played an important role in the “Whitespace” proceeding.<sup>5</sup>

Maryland believes that the spectrum sensing approach merits technical and regulatory consideration as regarding the expansion of U-NII frequency devices so as to ensure that devices will not affect public safety and other critical infrastructure microwave paths. While this approach could be helpful in expanding U-NII band capacity, spectrum sensing does not provide discrete public safety protection relative to broadcasting wireless broadband transmissions to wide area rural and underserved areas as signal levels would significantly exceed typical Part 15 limits. To

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<sup>4</sup> See *Second Report and Order and Memorandum Opinion and Order*, ET Docket No. 04-186 and ET Docket No. 02-380 ¶71.

<sup>5</sup> See *First Report and Order and Further Notice of Proposed Rulemaking*, 71 FR 66876, released November 17, 2007 at ¶33 (“We note that IEEE committee 802.22 is developing a draft standard for using sensing and other techniques to obtain access to the TV spectrum. We encourage the IEEE to continue its work”).

make large swaths of spectrum available for wireless transmissions over extended areas in rural and underserved environments, the database approach ultimately adopted for Whitespace operations could be useful. The Commission's ULS system identifies the physical paths of licensed microwave stations and while the volume of data would be significantly larger than with television stations, Maryland suggests that the Commission investigate the issues associated with an expanded database that identifies the exact geolocations of microwave signals and delimits operations of wireless broadband transceivers in a manner that protects microwave path integrity.

Expanding the use of the 5.925 – 7.125 GHz frequencies also provokes the question of primary or secondary operations for affected stations. Maryland believes that FS stations should always be considered as primary users of spectrum in the 5.925 – 7.125 GHz bands. Conversely, any new transceiver technology employed to expand wireless broadband in rural and underserved areas should operate on a secondary basis meaning that wireless broadband may not cause interference to public safety microwave paths and if interference is received by a wireless broadband station, it must accept it without remedy from the Commission.

The final issue to be considered relates to current and future use of FS frequencies by public safety. Maryland believes that any future wireless broadband use in the 5.925 – 7.125 GHz band clearly indicate that new microwave license applications should be granted by the Commission as a primary operating station. With over 1,000 MHz of spectrum in the bands, wireless broadband stations should be able to identify without significant difficulty, other spectrum available for use with business or home transceivers and protect FS stations used by first responders. Protection of our public safety microwave paths, both existing and future paths must be guaranteed to be free of interference from other authorized users.

## **Conclusion**

Maryland welcomes the Commission's desire to make additional "mid-band" spectrum available for carriers, manufacturers, and others delivering broadband to rural and underserved areas. We believe that this critical examination of spectrum is in the public interest. However, we also believe that preserving the integrity of public safety microwave communications is also in the public interest and the safety of first responders is more important than the expansion of wireless broadband without technological protections.

The State believes that there are technological approaches that facilitate the expansion of the U-NII band and wireless broadband transceivers through the development of standards, that can allow public safety and commercial sharing of spectrum to occur without harm to first responder operations. These protections must exist to protect current and future public safety microwave paths. To that end, Maryland would welcome the opportunity to work with the Commission and industry in the furtherance of this NOI.

Respectfully submitted,

/s/

Colonel William M. Pallozzi  
Chairman  
Statewide Interoperability Executive Committee