

**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	)	

**COMMENTS OF NETMOBY, INC.**

NetMoby, Inc. (“NetMoby”), respectfully submits these Comments in reply to the Notice of Inquiry released on August 3, 2017 by the Federal Communications Commission (“Commission” or “FCC”) in the above-referenced proceeding seeking input on potential opportunities for additional flexible access—particularly for wireless broadband services—in spectrum bands between 3.7 and 24 GHz (mid-band spectrum). In particular, the Commission seeks detailed comment on three specific bands: 3.7-4.2 GHz; 5.925-6.425 GHz; and 6.425-7.125 GHz. The Commission notes that three bands have already garnered interest from industry stakeholders—both domestically and internationally—for expanded flexible broadband use. NetMoby, as an industry stakeholder, has already submitted comments in one of the many proceedings, applications, and activities that relate to spectrum within the 3.7-24 GHz frequency range enumerated by the FCC in the Notice of Inquiry<sup>1 2</sup> and is acutely interested in the FCC’s stated mission to expand access opportunities in mid-band frequencies which will further the

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<sup>1</sup> See footnote 14 of the Notice of Inquiry.

<sup>2</sup> NetMoby filed Reply Comments on August 22, 2017, in the *Petition of Broadband Access Coalition for a Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission’s Rules to Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3700-4200 MHz Band*, RM-11791, Public Notice, Consumer and Governmental Affairs Bureau Reference Information Center Petition for Rulemaking Filed, Report No. 3080 (CGB, July 7, 2017). NetMoby’s Reply Comments, the text of which is not included pursuant to the instructions in footnote 15 of this Notice of Inquiry, fully support the proposal and efforts of the Broadband Access Coalition (“BAC”) to fully maximize the efficient use of the 3700-4200 MHz spectrum.

Commission’s goal of establishing comprehensive, sound, and flexible spectrum policies, enabling innovations and investment to keep pace with technological advances, and maintaining U.S. leadership in deployment of next-generation services in the long term. NetMoby fully supports the FCC’s efforts to create additional flexible access—particularly for wireless broadband services—in spectrum bands between 3.7 and 24 GHz (mid-band spectrum) and submits the following suggestions to assist the Commission in these efforts.

## **I. Introduction**

NetMoby is a Service-Disabled Veteran-Owned Small business (SDVOSB) incorporated under the laws of the District of Columbia, Washington, D.C. NetMoby is an emerging technology company with decades of collective experience in a myriad of technical areas most notably in all areas of wireless telecommunications. NetMoby is currently developing wireless broadband systems to rural and urban areas across the country to provide Wireless Broadband Internet Access Service (“WBA”) service to rural and under-served urban areas; hence its interest in submitting comments in this proceeding.

### **A. NetMoby Supports Additional Flexible Access, Particularly For Wireless Broadband Services, In The Mid-Band Spectrum.**

The Commission states in the Introduction to the Notice of Inquiry that

In this Notice of Inquiry, we seek input on potential opportunities for additional flexible access—particularly for wireless broadband services—in spectrum bands between 3.7 and 24 GHz (mid-band spectrum). In recent years, the Commission has made significant progress toward making spectrum available for next generation wireless broadband networks. These efforts, however, have primarily focused on the bands below 3.7 GHz and above 24 GHz. The Commission believes that exploring options to expand access opportunities in mid-band frequencies could further our goal of establishing comprehensive, sound, and flexible spectrum policies, enabling innovations and investment to keep pace with technological

advances, and maintaining U.S. leadership in deployment of next-generation services in the long term.

The Commission also focuses on spectrum efficiency. In fact, in some of the language in the Notice of Inquiry the Commission seems to conflate the two terms. Historically, flexibility and spectrum efficiency are two distinct terms. While NetMoby supports both flexibility and spectrum efficiency as proposed in the Notice of Inquiry, NetMoby feels it important to distinguish between the two for comment purposes.

The Federal Communications Commission Spectrum Policy Task Force (“Spectrum Task Force”), in its Report of the Spectrum Efficiency Working Group in November, 2002, explains flexibility thusly:

One solution to the inefficiencies associated with command-and-control regulation is to grant licensees greater authority to determine the highest valued use of their spectrum. (Footnote omitted.) In its *Spectrum Policy Statement*, issued in 1999, the Commission observed that, “(i)n the majority of cases, efficient spectrum markets will lead to use of spectrum for the highest value end use,” (Footnote omitted) and “[f]lexible allocations may result in more efficient spectrum markets.” (Footnote omitted) Rather than make judgments about spectrum use that are more regulatory than that required by the public interest and the international coordination process, the Commission has held that authorizing more flexible spectrum uses promises both immediate and future innovations without consuming additional spectrum resources. (Footnote omitted)

We agree that authorizing more flexible uses may increase the supply of new innovations and services. Furthermore, we find that increased flexibility will be a key component of any policy that successfully promotes the efficient use of spectrum. Accordingly, we recommend that the Commission grant spectrum users the maximum possible autonomy to determine the highest valued use of their spectrum, subject only to those rules that are necessary to afford reasonable opportunities for access for other spectrum users and to prevent or limit interference among multiple spectrum uses.<sup>3</sup>

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<sup>3</sup> US Federal Communications Commission Spectrum Policy Task Force, Report of the Spectrum Efficiency Working Group, ET Docket No. 02-135, Nov. 2002, p. 33  
[www.fcc.gov/sptf/files/SEWGFfinalReport\\_1.pdf](http://www.fcc.gov/sptf/files/SEWGFfinalReport_1.pdf)

Thus, flexibility is a component of spectrum efficiency.

As to spectrum efficiency, the Spectrum Task Force examined the Commission's spectrum policies and rules defining spectrum usage rights in relation to three general models. The advantages and disadvantages of each model, along with the factors that favor the application of one model over the others, are as follows:

- “Command-and-control” model. The traditional process of spectrum management in the United States, currently used for most spectrum within the Commission's jurisdiction, allocates and assigns frequencies to limited categories of spectrum users for specific government-defined uses. Service rules for the band specify eligibility and service restrictions, power limits, build-out requirements, and other rules.
- “Exclusive use” model. A licensing model in which a licensee has exclusive and transferable rights to the use of specified spectrum within a defined geographic area, with flexible use rights that are governed primarily by technical rules to protect spectrum users against interference. Under this model, exclusive rights resemble property rights in spectrum, but this model does not imply or require creation of “full” private property rights in spectrum.
- “Commons” or “open access” model. Allows unlimited numbers of unlicensed users to share frequencies, with usage rights that are governed by technical standards or etiquettes but with no right to protection from interference. Spectrum is available to all users that comply with established technical “etiquettes” or standards that set power limits and other criteria for operation of unlicensed devices to mitigate potential interference.

Report of the Spectrum Efficiency Working Group at 34.

The Spectrum Task Force concludes that

Granting – to the greatest degree possible and consistent with other policy goals – rights to exclusivity, flexibility and transferability may create significant incentives for efficient spectrum use. We recognize that these are the key components of the exclusive use model and thus believe this model may be particularly effective at creating these incentives for efficient use. At the same time, we note that the spectrum commons or command-and-control model may incorporate some of these rights as well.

In short, the Commission should look to strengthen the incentives for efficient use of spectrum across the board, a policy that often will be best promoted through strengthening the rights of licensees. Specifically, the Working Group recommends that the Commission apply the exclusive use model to much of the spectrum, particularly in bands where scarcity is high and transaction costs are low. These conditions primarily exist below 5 GHz, but may also occur in some higher frequency bands.

Ultimately, wherever spectrum scarcity exists, there will be competing claims to the resource, and the exclusive use model is most effective at balancing these claims. However, this observation does not preclude the introduction of unlicensed “underlays” in exclusive use bands, which may provide additional efficiency benefits.

Report of the Spectrum Efficiency Working Group at 35.

This policy has been adopted by the Commission since the publication of the Spectrum Policy Task Force Report in 2002, and is the underpinning of this Notice of Inquiry. It is also the foundation of the NetMoby proposals, which provide for the licensing of all the mid-band spectrum, which spectrum is the subject of this Notice of Inquiry.

## **II. NetMoby’s Specific Proposals In Response To The Notice Of Inquiry**

### **1. The 3.7-4.2 GHz Band**

With respect to the 3.7-4.2 GHz band, The Notice of Inquiry asks;

For 3.7-4.2 GHz, recognizing the existing uses of the band, we seek comment, generally, on the potential for more intensive use of the 3.7-4.2 GHz band for wireless broadband... We seek comment on how the service rules governing the 3.7-4.2 GHz band could be modified to encourage the efficient use of spectrum resources.

NetMoby in response proposes that the Commission:

- a. Designate each as new licensed, point-to-multipoint (“P2MP”) fixed wireless service spectrum.
- b. Permissible emissions for each band would include voice, video and data.

### **2. The 3.7-4.2 Ghz Band Should Not Be Used For Mobile Broadband**

NetMoby opposes the Commission’s inquiry concerning the use of the 3.7-4.2 GHz Band for Mobile Broadband.

In its Comments in In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199, timely filed on September 21, 2017, in which NetMoby vigorously opposed

the Commission's inquiry into strenuously objects to the Commission evaluating the deployment of fixed and mobile broadband combined together and not as separate and distinct ways to achieve advanced telecommunications capability for the American people. NetMoby stated:

For the Commission to evaluate the deployment of fixed and mobile broadband combined together, as opposed to measuring the deployment of the two types of services separately, is a measure that will aggravate rather than ameliorate the Digital Divide that separates and discriminates against those Americans who either have no access to broadband or cannot afford broadband, which is simply not acceptable in this 21<sup>st</sup>-century society... NetMoby applauds the FCC as it continues to explore ways in which it can accelerate the deployment of deployment of broadband as currently defined by the FCC to all Americans as swiftly as possible, for high-speed Internet access, to make real progress in the elimination of the Digital Divide. However, NetMoby urges that the FCC allow the provision of actual service and not statistical sleight of hand to eliminate the deleterious and discriminatory effect of the Digital Divide for all Americans.

Mobile broadband is no substitute for fixed wireless broadband. Since the need for fixed wireless broadband is so great for many Americans, as NetMoby demonstrated in its Comments in GN Docket No. 17-199, the Commission should determine that use of the 3.7-4.2 GHz band should not be permitted to be considered flexible use of the 3.7-4.2 GHz ecosystem.

### 3. The 5.925-6.425 GHz Band

With respect to the 5.925-6.425 GHz Band, the Commission states:

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.

NetMoby proposes that the Commission:

- a. Designate each as new licensed, point-to-multipoint ("P2MP") fixed wireless service spectrum.

- b. Permissible emissions for each band would include voice, video and data.

NetMoby generally agrees with the concept of wider channel bandwidth, so long as there no possibility of increased interference between the frequencies.

In addition, specifically, NetMoby proposes for the band 5.925-6.425 GHz that the Commission adopt the proposed changes to Part 101, Subparts A - F per the Petition of Broadband Access Coalition (BAC) for a Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission's Rules to Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3700-4200 MHz Band, RM-11791 (filed June 21, 2017) (BAC Petition), with the following exceptions or additions:

- a. As a means to enable two 2 Gigabit per second (Gbps) fixed wireless channels:
  - i. Designate one 320 MHz wide channel pair drawn from 5.925-6.245 and 6.425-6.745
  - ii. Eliminate any option for the use of omnidirectional antennas; all base station and client radios must employ direction antennas with beam widths in the horizontal or vertical planes of never greater than 95 degrees
- b. As a means to reduce contention and increase the probability of successful co-existence and interference-free operation with co-channel and adjacent channel operations of incumbents, limit maximum Effective Isotropic Radiated Power (EIRP) to 47 dBm for licensed P2MP operations for 5, 10, 20, 40, 80 and 160 MHz wide channels and limit maximum EIRP to 44 dBm for licensed P2MP operation for 320 MHz wide channels

#### 4. The 6.425-7.125 Band

With respect to the 6.425-7.125 Band, NetMoby proposes that the Commission:

- a. Designate each as new licensed, point-to-multipoint ("P2MP") fixed wireless service spectrum.
- b. Permissible emissions for each band would include voice, video and data.

In addition, specifically, Net Moby proposes for the band 6.425-7.125 that the Commission adopt the proposed changes to Part 101, Subparts A - F per the Petition of Broadband Access Coalition (BAC) for a Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission's Rules to Authorize and Facilitate the Deployment of Licensed Point-to-

Multipoint Fixed Wireless Broadband Service in the 3700-4200 MHz Band, RM-11791 (filed June 21, 2017) (BAC Petition) , with the following exceptions or additions:

- a. As a means to enable two 2 Gigabit per second (Gbps) fixed wireless channels:
  - i. Designate one 320 MHz wide channel pair drawn from 5.925-6.245 and 6.425-6.745
  - ii. Eliminate any option for the use of omnidirectional antennas; all base station and client radios must employ direction antennas with beam widths in the horizontal or vertical planes of never greater than 95 degrees
- b. As a means to reduce contention and increase the probability of successful co-existence and interference-free operation with co-channel and adjacent channel operations of incumbents, limit maximum Effective Isotropic Radiated Power (EIRP) to 47 dBm for licensed P2MP operations for 5, 10, 20, 40, 80 and 160 MHz wide channels and limit maximum EIRP to 44 dBm for licensed P2MP operation for 320 MHz wide channels

### **III. Conclusion**

Again, NetMoby NetMoby fully supports the FCC's efforts to create additional flexible access—particularly for wireless broadband services—in spectrum bands between 3.7 and 24 GHz (mid-band spectrum) as well as to promote spectrum efficiency, and submits the foregoing suggestions to assist the Commission in these efforts. However, as it has explicated in another current proceeding before the FCC, NetMoby urges that the FCC not permit the flexible use of the 3.7-4.2 GHz Band for Mobile Broadband, since this will do nothing to eliminate the deleterious and discriminatory effect of the Digital Divide for all Americans.

Dated: October 2, 2017

Respectfully submitted,

/s/ Peter T. Lewis  
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