Before the
Federal Communications Commission
Washington DC 20554

In the Matter of	)	
	)	
Fixed Wireless Communications Coalition,	)	RM-_____
Petition to Amend Part 101 of the Commission's	)	
Rules for Automated Government Frequency	)	
Coordination and Conditional Licensing	)	
in the 23 GHz Fixed Service Band	)	

Petition for Rulemaking

Mitchell Lazarus
FLETCHER, HEALD & HILDRETH, P.L.C.
1300 North 17th Street, 11th Floor
Arlington, VA 22209
703-812-0440
lazarus@fhhlaw.com
Counsel for the Fixed Wireless
Communications Coalition

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Petition for Rulemaking

Pursuant to Section 1.401 of the Commission's Rules, the Fixed Wireless Communications Coalition (FWCC) files this request to amend the rules as described below.[1]

A. SUMMARY

The 23 GHz band is an important source of capacity for wireless backhaul in support of mobile broadband devices. The band is shared with the federal Government, requiring applications to be coordinated through the National Telecommunications Information Administration (NTIA).[2] The Commission and NTIA allow conditional authorization – *i.e.*, operation while an FCC application is pending – only on six channel pairs, and only at power levels at or below +55 dBm EIRP. (Conditional authorization is also preconditioned on

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[1] The FWCC is a coalition of companies, associations, and individuals interested in the fixed service – *i.e.*, in terrestrial fixed microwave communications. Our membership includes manufacturers of microwave equipment, licensees of terrestrial fixed microwave systems and their associations, and communications service providers and their associations. The membership also includes railroads, public utilities, petroleum and pipeline entities, public safety agencies, cable TV and private cable providers, backhaul providers, and/or their respective associations, communications carriers, and telecommunications attorneys and engineers. Our members build, install, and use both licensed and unlicensed point-to-point, point-to-multipoint, and other fixed wireless systems, in frequency bands from 900 MHz to 95 GHz. For more information, see www.fwcc.us.

[2] NTIA is an agency within the U.S. Department of Commerce that, among other responsibilities, manages the federal Government's spectrum use.

successful prior frequency coordination with non-Government users.) The importance of conditional authorization to 23 GHz private users is evidenced by an overwhelming preference for the six pairs on which it is permitted.

Another band shared between private and Government users, at 70/89/90 GHz, employs an automated coordination system that informs an applicant in real time whether NTIA approves a proposed link.

The FWCC here asks the Commission and NTIA to implement a similar system at 23 GHz, and also to permit conditional authorization on all 23 GHz frequencies, and at all otherwise permissible power levels, on receipt of automated NTIA approval. As now, applicants would have the benefit of conditional authorization without that prior approval on the current six channel pairs, subject to the +55 dBm EIRP power limit. Government frequency usage is never available to applicants.

Because this request has no adverse effect on any private party, we ask the Commission (assuming NTIA's consent) to proceed directly to a notice of proposed rulemaking on its own motion, without a preliminary round of notice and comment.

B. BACKGROUND

1. Need for backhaul spectrum

The Commission's National Broadband Plan predicts steep growth in demand for mobile broadband capacity.[3] Increases in mobile use will inevitably raise the demand for point-to-point

[3] *Connecting America: The National Broadband Plan* at 76 (released March 16, 2010).

microwave backhaul as well.[4] A shortage of backhaul capacity can inhibit speed at the handset, even if adequate last-mile spectrum is available.[5]

The National Broadband Plan proposes regulatory changes to improve flexibility and cost-effectiveness in deploying wireless backhaul.[6] We submit the present petition as part of that discussion.

2. Conditional authorization

Section 101.31 of the Commission's Rules provides for "conditional authorization" of most fixed microwave links.[7] This provision permits a license applicant to begin operating a link as soon as the application is filed, if the link has been frequency coordinated and certain other conditions are met.[8] The applicant agrees to cease operation immediately if the application is dismissed or denied.[9]

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4 *Id*. at 77. Backhaul, in this context, is the transport of customer communications between the carrier's central network facilities and the local cell towers that send radio signals to and from customer handsets.

5 *Id*. at 78.

6 These include modification of minimum throughput rules, easing restrictions on antenna size, use of higher frequencies, and greater spatial reuse of microwave frequencies. *Id*. at 93-94. The FWCC has expressed its views on these proposals in other proceedings.

7 47 C.F.R. § 101.31(b).

8 In addition to the conditions mentioned in text, the antenna structures must either have or not need FAA approval, the application must not require a waiver or an Environmental Assessment, the station site must lie outside certain specified areas (depending on frequency band), and the link must operate in accordance with its frequency coordination. *See* 47 C.F.R. § 101.31(b)(1)(ii)-(vi), (viii).

9 47 C.F.R. § 101.31(b)(2), (3)

Because fixed service facilities must often be installed on short notice to meet urgent needs, conditional licensing has been an important element of the rules. Fixed service bands carry critical public safety communications (including police and fire vehicle dispatch), coordinate the movement of railroad trains, control natural gas and oil pipelines, regulate the electric grid, backhaul wireless telephone traffic and mobile broadband, and carry large amounts of business data. Conditional licensing allows providers to meet public safety, infrastructure, and commercial needs with minimum delay.

3. The 23 GHz fixed service band

The 23 GHz band is an important component of the fixed service mix. All of the bands licensed for individual links – the 4, 6, 10, 11, and 23 GHz bands, and the remaining fixed service allocation at 18 GHz – are subject to various limitations. Satellite earth stations, which share the 4 and 6 GHz bands, are routinely coordinated and licensed for the entire band and satellite arc, even if they actually use only one transponder on one satellite.[10] They block the coordination of many proposed fixed service links.[11] Coordination at 4 GHz is all but impossible nationwide, due to the proliferation of registered receive-only satellite dishes. Earth station congestion has likewise made the lower 6 GHz band largely unavailable in and near major population centers, where the need for fixed service communications is greatest. The 10 GHz band is only 130 MHz wide.[12] Recent rules allowing smaller antennas in the 11 GHz band, while very welcome, will

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[10] *See Amendment of Part 101 of the Commission's Rules to Accommodate 30 Megahertz Channels in the 6525-6875 MHz Band*, WT Docket No. 09-114, Report and Order, FCC 10-109 at ¶ 4 (released June 11, 2010).

[11] *Id*. ("[A] satellite earth station has an extensive preclusive effect on the ability of subsequent [fixed service] applicants to coordinate stations in adjacent areas.")

[12] 47 C.F.R. § 101.101 (table).

greatly increase usage over the next few years.[13] There is little 18 GHz spectrum left for the fixed service, following reallocations to satellite operations.[14] In light of these restrictions, the Commission should enable fixed service operations to make the best use of the limited spectrum available.

The propagation characteristics of 23 GHz are ideal for wireless backhaul over relatively short distances. It is particularly useful in built-up areas where demand density is high, cell towers tend to be close together, and backhaul needs are limited to single-digit kilometers. The low-profile antennas in the band help to meet urban and suburban zoning requirements.

The 23 GHz band has experienced a dramatic increase in usage over just the past year. Over the fourteen months from March 2009 to May 2010, the number of licensed, applied-for, and prior-coordinated 23 GHz channels more than doubled, from 20,777 to 41,808.[15] The ongoing deployment of broadband mobile wireless networks is certain to drive these numbers higher.

C. NEED FOR RULEMAKING

Rules for all of the site-licensed fixed service bands, except 23 GHz, permit conditional authorization on any frequency. The 23 GHz band has special restrictions because it is shared with federal Government users.

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13 *See Antenna Requirements for the 10.7-11.7 GHz Band*, WT Docket No. 07-54, Report and Order, 22 FCC Rcd 17153 (2007).

14 *Redesignation of the 17.7-19.7 GHz Frequency Band*, Report and Order, 15 FCC Rcd 13430 (2000).

15 All data on band and frequency usage is courtesy of Comsearch and derived from Commission databases.

Prior to 2002, conditional authorization was permitted on any 23 GHz frequency, so long as the link operated with an ERP of +55 dBm or less.[16] In collaboration with NTIA, the Commission has since limited conditional authorization to six frequency pairs.[17] Four of these pairs have been in place since 2002.[18] The other two were added by waiver effective June 29, 2009,[19] and more recently by rule amendment.[20] The +55 dBm power limit remains a prerequisite for conditional authorization.[21]

Applicants for 23 GHz links outside the six pairs are not eligible for conditional authorization. They must await approval through NTIA, Commission processing, and grant of the license before they can operate. These steps typically take several weeks. Seeking to avoid the delay, license applicants show an overwhelming preference for the frequencies on which conditional authorization is allowed.

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16 *See* 47 C.F.R. § 101.31(b)(1)(vii) (as of 2000). ERP is a measure of the power emanating in the main beam of the antenna. The value +55 dBm is equivalent to 316 watts.

17 47 C.F.R. § 101.31(b)(1)(vii).

18 *Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications*, Report and Order, 17 FCC Rcd 15040 at ¶ 24 (2002).

19 *Amendment of Part 101 of the Commission's Rules to Accommodate 30 Megahertz Channels in the 6525-6875 MHz Band*, Notice of Proposed Rulemaking and Order, 24 FCC Rcd 9620 at ¶ 24 (2009).

20 *Amendment of Part 101 of the Commission's Rules to Accommodate 30 Megahertz Channels in the 6525-6875 MHz Band*, WT Docket No. 09-114, Report and Order, FCC 10-109 at ¶ 25 (released June 11, 2010).

21 The 2002 order changed the limit from ERP to EIRP, which is a more common measure in the microwave industry. The practical effect was to increase the permissible power by 2 dB. *See Amendment of Part 101*, 17 FCC Rcd 15040 at ¶ 72 (2002).

Figure 1 shows usage of the band as of March 2009. The four frequency pairs then eligible for conditional authorization stand out in attracting a highly disproportionate fraction of users. (Each vertical bar covers two one-way frequencies.)

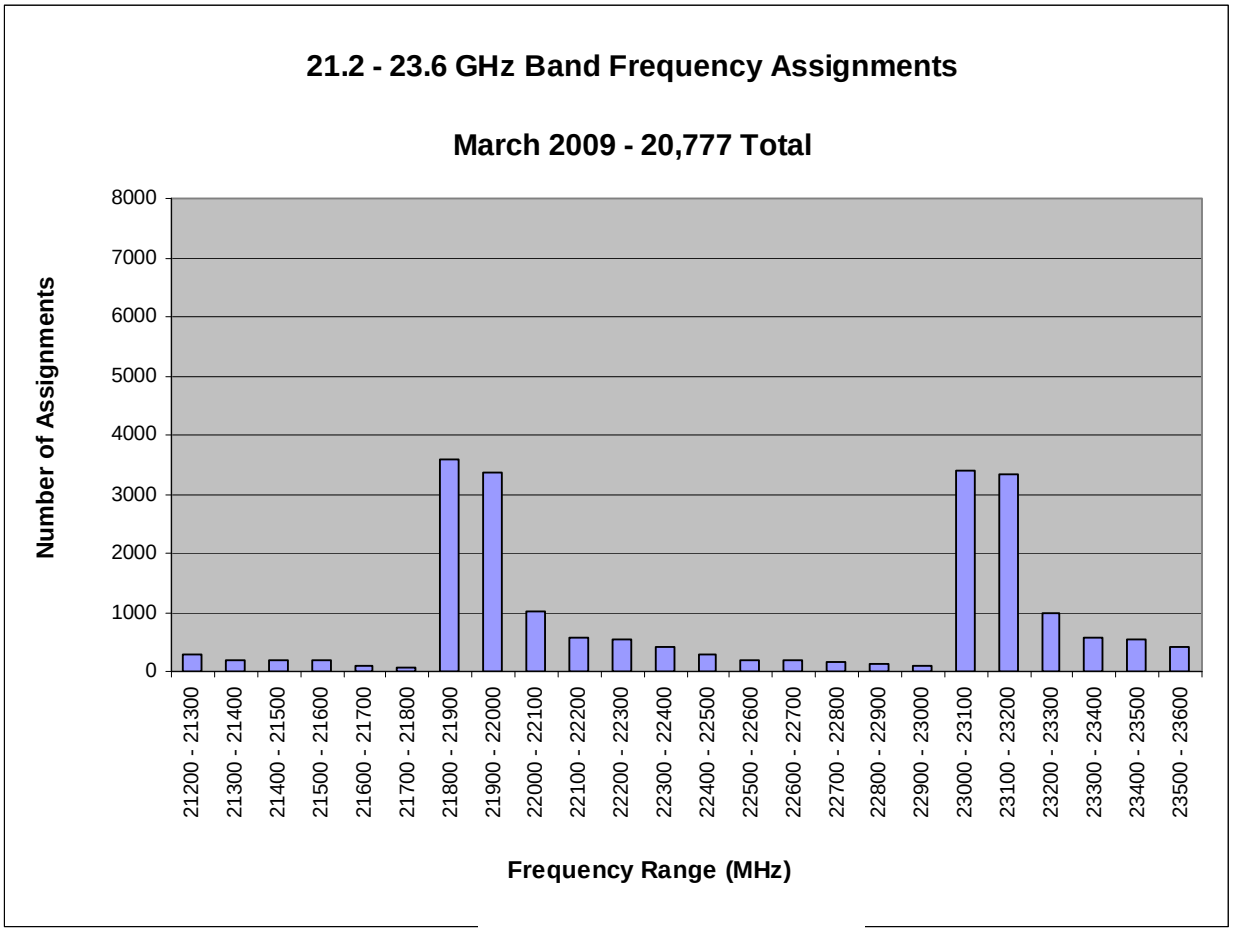

Figure 1

Figure 2 shows usage fourteen months later, eleven months after the waiver that authorized conditional authorization on two additional pairs. In addition to strong overall growth, the plot shows a conspicuous spike in usage of the two pairs added by waiver.

In summary:

- Most new 23 GHz construction is on frequencies eligible for conditional authorization.

- The greatest percentage increase occurred on the two channel pairs added by waiver effective June 29, 2009.
- Fully 79% of the total links in use occupy only 25% of the available spectrum.[22]
- The remaining 1800 MHz of 23 GHz spectrum is underutilized, in total accommodating only 21% of all channels in use.

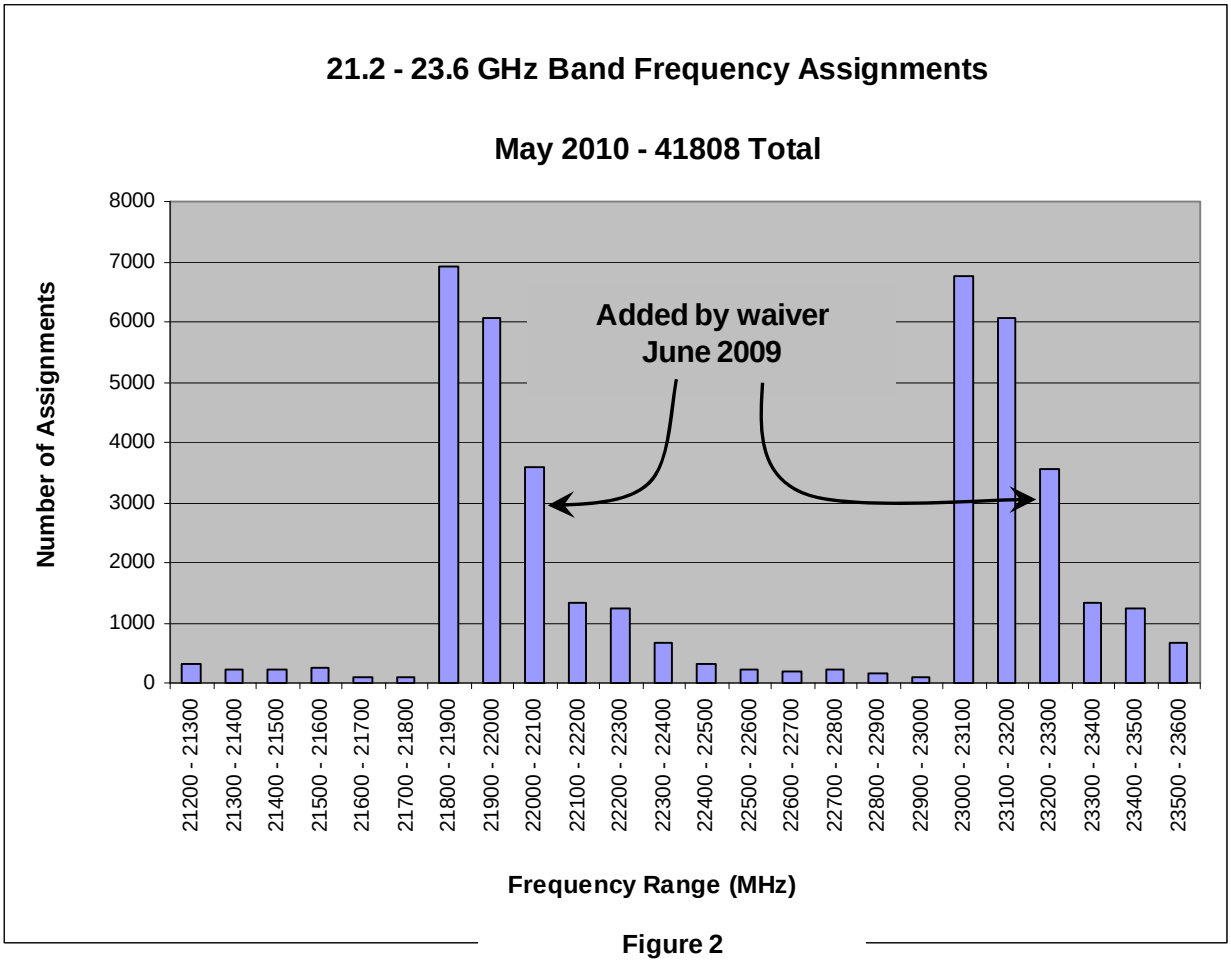

Figure 2

[22] Although this is primarily as a result of conditional authorization, some minimal use of the 21.6–21.8 and 22.8–23.0 GHz channels may also be due to their designation for narrowband operations. See 47 C.F.R. § 101.147(s)(1)-(7) (table) n.1.

D. PROPOSED RULE AMENDMENT

1. Full-band conditional authorization

Given that usage of the 23 GHz band correlates strongly with the availability of conditional authorization, it likely follows that expanded access to conditional authorization would yield more intensive use of the band. Implementing conditional authorization on all frequencies, however, requires frequency coordination with NTIA that operates in real time. We suggest a mechanism to accomplish that.

Our proposal is based on the system presently used in the 70/80/90 GHz bands to facilitate sharing between non-Government point-to-point systems and Government services. There, as in most of the 23 GHz band, private applicants must obtain NTIA approval before operating.[23] But the 70/80/90 GHz bands employ an automated web-based application. Non-Government applicants submit their proposed link data to NTIA through a secure access protocol.[24] The system analyzes the interference potential between the applicant's link data and existing Government systems. Typically within a few minutes, the applicant receives either a "green light" or "yellow light" response. A "green light" means the applicant can proceed to operate the link.[25] A "yellow light" requires an application form and submission to NTIA, much like the present system for most 23 GHz frequencies. Successful completion of either the "green light"

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[23] 47 C.F.R. § 101.1523; *Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands*, Report and Order, 18 FCC Rcd 23318 (2003).

[24] The applicant must first obtain a non-exclusive, nationwide license. 47 C.F.R. § 101.1501. The Commission issues an unlimited number of these, and each such license can support any number of links.

[25] *Wireless Telecommunications Bureau Announces Permanent Process for Registering Links in the 71-76 GHz, 81-86 GHz, and 92-95 GHz Bands*, Public Notice, 20 FCC Rcd 2261 at § I(C) (2005). There are also requirements to register the link in a database maintained for that purpose. *Id* at § I(B).

or "yellow light" process constitutes the required frequency coordination with NTIA.[26] At no time is data on Government frequency usage accessible to applicants.

The attached exhibits show a blank application screen on this system, followed by sample filled-in screen with a "green light" response.

We ask the Commission and NTIA to adopt a similar system for 23 GHz applications, including applications both for non-eligible frequencies and for eligible frequency pairs where the applicant proposes to operate at power levels over +55 dBm. (The Commission should carry over the present rules allowing conditional authorization on eligible pairs at powers of +55 dBm and below, without the need for a "green light" process.) The ability to coordinate with NTIA in real time, and to "pre-clear" systems with Government operations prior to submitting an FCC application, will permit conditional authorization throughout the 23 GHz band with no threat of harmful interference to Government systems. This will greatly improve the efficiency of the current licensing process by avoiding trial-and-error applications and eliminating lengthy delays.

Proposed language appears in Appendix A, drawn from the parallel rule for 70/80/90 GHz.[27]

2. Power limitation

As noted above, the rules limit conditional authorization, even on eligible frequencies, to links operating with an EIRP of +55 dBm or less.[28] This provision dates from the period when

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[26] 47 C.F.R. § 101.1523(b)(3).

[27] 47 C.F.R. § 101.1523(b)(1). Section 101.1523 includes other provisions needed to complete the unique licensing and registration scheme for 70/80/90 GHz. They are not required for 23 GHz, whose operators receive a conventional Part 101 license.

[28] 47 C.F.R. § 101.31(b)(1)(vii). As noted above, the limit originally applied to ERP.

conditional authorization was allowed across the entire band. It first appears in the 1996 Report and Order that combined the previous Parts 21 and 94 (common carrier and non-common-carrier fixed microwave, respectively) into the current Part 101.[29] Presumably the +55 dBm value came out of discussions with NTIA, although there is no explanation for this particular number.

The 2002 restriction to specific frequency pairs retained the numerical power limit, again without discussion.[30]

The +55 dBm limitation may have been needed before 2002 to protect Government users against unpredictable use under conditional authorizations. The full prior coordination proposed here should make a power limit unnecessary. Accordingly, we ask the Commission to delete it from the rule, except for the limited case where an applicant seeks to operate on one of the presently eligible frequencies without the "green light" procedure.[31]

E. PUBLIC INTEREST

The requested rule change will enable fixed service providers to initiate service quickly on more 23 GHz links, thus improving service to infrastructure facilities, public safety, transportation, and wireless broadband, among others. It will also encourage denser use of the band, promoting spectrum efficiency.

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[29] *New Part 101 Governing Terrestrial Microwave Fixed Radio Services*, Report and Order, 11 FCC Rcd 13449 at ¶ 29 (1996).

[30] *Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications*, Report and Order, 17 FCC Rcd 15040 at ¶ 24 (2002). As noted above, this order changed the application of +55 dBm from ERP to EIRP, allowing 2 dB more power.

[31] This request to drop the power limit is independent of the request for real-time frequency coordination and full-band conditional authorization. The Commission can, if necessary, grant the latter without the former.

Implementation of our proposal will require the consent and cooperation of NTIA. While putting the system in place will entail some commitment of resources, NTIA may subsequently enjoy some savings in personnel costs, thanks to the automatic handling of applications that now must be processed by hand. We ask the Commission and NTIA to weigh the net costs against the benefits of better spectrum usage and improved service to the public.

We are not aware of any downside to this request as to any private party.

For the above reasons, the requested change is in the public interest.

F. REQUEST FOR EXPEDITED TREATMENT

Ordinarily the Commission would place this Petition on public notice, receive comments and reply comments, and eventually issue a notice of proposed rulemaking, if merited.[32] That part of the process typically takes about a year. The Commission would then receive comments and reply comments on the NPRM, and in due course issue a Report and Order.[33] That second stage typically requires at least another year.

Because the present request has no conceivable adverse effect on any private party, we ask the Commission (assuming NTIA's acquiescence) to forgo the first round of comments and replies, and instead proceed directly to a notice of proposed rulemaking on its own motion, as provided for under the rules.[34]

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32 *See generally* 47 C.F.R. §§ 1.401-1.407.

33 47 C.F.R §§ 1.412-1.425.

34 "Rulemaking proceedings are commenced by the Commission, either on its own motion or on the basis of a petition for rulemaking." 47 C.F.R. § 1.411.

CONCLUSION

A grant of this petition will facilitate the deployment of mobile broadband service and improve efficiency spectrum usage in the 23 GHz band. This furthers NTIA's stated goal, shared with the Commission, of "effective, efficient, and equitable use of the spectrum,"[35] and directly supports the Commission's broadband objectives.

We ask the Commission to issue a notice of proposed rulemaking that sets out the amendments above.

Respectfully submitted,

/s/

Mitchell Lazarus
FLETCHER, HEALD & HILDRETH, P.L.C.
1300 North 17th Street, 11th Floor
Arlington, VA 22209
703-812-0440
lazarus@fhhlaw.com
Counsel for the Fixed Wireless
Communications Coalition

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[35] http://www.ntia.doc.gov/about.html

	Tx Site 1 (NAD83)	*Rx Site 2 (NAD83)*
LAT	DD MM SS.S ◉N ○S	DD MM SS.S ◉N ○S
LON	DDD MM SS.S ○E ◉W	DDD MM SS.S ○E ◉W

	Tx Info	*Rx Info*
Manufacturer (Tx/Rx)		
Model Number (Tx/Rx)		
Antenna Manufacturer		
Antenna Model Number		
Antenna Gain *(dBi)*		
Antenna Center Line Above Ground Level *(meters)*		
Antenna Polarization (Horizontal/Vertical)	◉H ○V	
Site Elevation AMSL *(meters)*		

Tx EIRP *(dBm)*		Tx Center Frequency *(GHz)*	
Tx Emission Designator		Min Tx Output Power *(dBm)*	
Tx Modulation Scheme		*Max Tx Output Power (dBm)*	
Rx Noise Figure		Rx Threshold/Interference *(dB)*	
Rx Cable Losses			

Submit Request Reset

National Telecommunications and Information Administration, U.S. Dept. of Commerce.,
1401 Constitution Ave., NW Washington, DC 20230 - (202) 482-1850
Questions or Comments, Email: freqcoord@ntia.doc.gov
OMB No. 0660-0018
Expires: 11/30/2010

NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
OFFICE OF SPECTRUM MANAGEMENT
Web Based Frequency Coordination

Main Logout

The frequency you requested is Available

The frequency you requested is Available

	Tx Site 1 (NAD83)				*Rx Site 2 (NAD83)*			
LAT	DD MM SS.S	44	57	21 ◉N ○S	DD MM SS.S	44	57	54 ◉N ○S
LON	DDD MM SS.S	93	5	41 ○E ◉W	DDD MM SS.S	93	5	3 ○E ◉W

	Tx Info	*Rx Info*
Manufacturer (Tx/Rx)	BRIDGEWAVE	BRIDGEWAVE
Model Number (Tx/Rx)	AR80	AR80
Antenna Manufacturer	RADIO WAVES	RADIO WAVES
Antenna Model Number	HPLP2-80	HPLP2-80
Antenna Gain *(dBi)*	50	50
Antenna Center Line Above Ground Level *(meters)*	12	20
Antenna Polarization (Horizontal/Vertical)	○H ◉V	
Site Elevation AMSL *(meters)*	238	248

Tx EIRP *(dBm)*	70	Tx Center Frequency *(GHz)*	73
Tx Emission Designator	1G40F1D	Min Tx Output Power *(dBm)*	20
Tx Modulation Scheme	BFSK	*Max Tx Output Power (dBm)*	20
Rx Noise Figure	7	Rx Threshold/Interference *(dB)*	45
Rx Cable Losses	1		

Please click Confirm to reserve this frequency and send a confirmation email to: lfontain@comsearch.com

Your frequency will be reserved for 60 days starting today. Please follow regular FCCprocedure to ensure that your frequency is reserved.

Confirm Cancel

National Telecommunications and Information Administration, U.S. Dept. of Commerce.,
1401 Constitution Ave., NW Washington, DC 20230 - (202) 482-1850
Questions or Comments, Email: freqcoord@ntia.doc.gov
OMB No. 0660-0018
Expires: 11/30/2010

APPENDIX A

Revise Section 101.31(b)(1)(vii) as follows:

With respect to the 21.8-22.1 GHz and 23.0-23.3 GHz band, the filed application(s) ~~does not~~ proposes to operate on a frequency pair centered on ~~other than~~ 21.825/23.025 GHz, 21.875/23.075 GHz, 21.925/23.125 GHz, 21.975/23.175 GHz, 22.025/23.225 GHz or 22.075/23.275 GHz ~~and does not propose to operate~~ with an E.I.R.P. not greater than 55 dBm, or alternatively, has completed coordination with Federal Government links according to the "green light" coordination standards and procedures adopted in Report and Order, FCC XX-XXX, and as further detailed in subsequent implementation public notices issued consistent with that order. The center frequencies listed above are shifted from the center frequencies listed above for certain bandwidths as follows: add 0.005 GHz for 20 MHz bandwidth channels, add 0.010 GHz for 30 megahertz bandwidth channels, and subtract 0.005 GHz for 40 MHz bandwidth channels. *See* specific channel listings in §101.147(s).

COURTESY SERVICE LIST

Chairman Julius Genachowski
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commissioner Michael J. Copps
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commissioner Robert McDowell
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commissioner Mignon Clyburn
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commissioner Meredith Attwell Baker
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Ruth Milkman, Chief
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

James Schlichting, Senior Dep. Bur. Chief
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Joel Taubenblatt, Deputy Bureau Chief
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Aaron Goldberger
Senior Legal Advisor
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Blaise Scinto, Chief
Broadband Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Mark Settle, Deputy Chief
Policy and Rules Division
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Lawrence E. Strickling
Assistant Secretary for Communications and Information
Department of Commerce
1401 Constitution Avenue, N.W.
Washington, D.C. 20230

Karl Nebbia, Associate Administrator
National Telecommunications and Information Administration
Department of Commerce
1401 Constitution Avenue, N.W.
Washington, D.C. 20230

Edward Davison, Deputy Assoc. Administrator
National Telecommunications and Information Administration
Department of Commerce
1401 Constitution Avenue, N.W.
Washington, D.C. 20230