

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

In the Matter of)
)
Wireless Telecommunications Bureau Seeks)
Information From The Public For Report) WT Docket No. 12-156
To Congress On Microwave Bands)
)

COMMENTS OF CLEARWIRE CORPORATION

Clearwire Corporation (“Clearwire”) hereby respectfully submits these comments in the above-captioned proceeding.¹ Congress has tasked the Federal Communications Commission (“FCC” or “Commission”) with preparing and submitting a report on the “rejection rate” on requests for common carrier use of spectrum in the 11, 18 and 23 GHz bands.² As the holder of approximately 13,000 microwave licenses, covering approximately 48,000 paths across those three frequency bands, Clearwire is particularly well-suited to provide information about the use and application process associated with microwave spectrum in the 11, 18 and 23 GHz microwave bands.

I. BACKGROUND

Clearwire operates open, Internet-Protocol (“IP”) 4G wireless broadband networks in markets across the United States and Europe. These networks provide communities with high-speed residential and mobile Internet and interconnected voice over Internet protocol (VoIP) services. It is the leader in WiMAX 4G, currently the leading 4G standard in the world. Clearwire’s 4G network now reaches 132 million people in the U.S. and covers over 80 of the

¹ In the Matter of Wireless Telecommunications Bureau Seeks Information from the Public for Report to Congress on Microwave Bands, *Public Notice*, WT Docket No. 12-156 (rel. Jun. 20, 2012) (“*Microwave Public Notice*”).

² Middle Class Tax Relief and Job Creation Act of 2012, P.L. 112-96, § 6412 (2012), 126 Stat. 156 (“Spectrum Act”).

top U.S. markets. Clearwire ended the first quarter of 2012 with approximately 11 million total subscribers consisting of 1.3 million retail subscribers and 9.7 million wholesale subscribers. Clearwire currently markets its 4G service through its own brand called CLEAR® as well as through its 4G wholesale relationships with, among others, Sprint Nextel Corporation, Comcast Corporation, Time Warner Cable Inc., Bright House Networks, LLC, FreedomPop, and NetZero.

As the nation's first, greenfield 4G wireless broadband provider, Clearwire was able to develop and deploy a backhaul strategy specifically designed for the demands of 4G mobile broadband. A key component of that strategy is the use of cost-effective microwave backhaul that is simple to install and manage, yet delivers the capacity and reliability needed for the explosive demand of broadband customers. Today, Clearwire operates the largest wireless backhaul network in the United States and uses microwave backhaul for more than 90 percent of its cell sites. While there is a wide range of microwave frequencies that can be deployed within Clearwire's backhaul network, the most commonly utilized microwave bands within the system are licensed 11 GHz links with 40 MHz channels, and 18 and 23 GHz links with 50 MHz channels. Across those three bands, Clearwire has almost 13,000 licenses which include over 48,000 paths. Clearwire's microwave licenses are in the Private Operational Fixed Service.³

II. DISCUSSION

Clearwire understands the *Microwave Public Notice* has been issued by the Commission as part of a wider investigation by Congress into the deployment of common carrier licenses for fixed point-to-point microwave services in the 11, 18 and 23 GHz bands. To that end, Clearwire

³ Clearwire is aware that the Commission is specifically interested in rejection rates for common carrier operations, and Clearwire currently holds no common carrier microwave licenses. However, as the Commission stated in its *Microwave Public Notice*, common carrier and private operations share the 11, 18 and 23 GHz bands, and it may be difficult to distinguish between the two. *Microwave Public Notice* at 2. In addition, the frequency coordination and licensing process for common carrier and private carrier are essentially the same. Thus, Clearwire's experiences with respect to the frequency coordination process is relevant to this process.

has already provided information regarding its private carrier microwave use with staff from the Government Accounting Office (“GAO”). As part of those discussions, Clearwire emphasized the importance of the existing microwave licensing process to its success in deploying a wireless backhaul network. Clearwire also expressed support for Chairman Genachowski’s response to an inquiry by Congressman Jay Inslee regarding the current microwave licensing process in which the Chairman stated: “[the] majority of commenters on this issue supported the existing licensing regime, and the Commission found that there was no factual basis for the assertion that frequency coordination licensing for wireless backhaul leads to inefficient use of the spectrum.”⁴ Clearwire wholeheartedly agrees that the Commission’s existing microwave licensing process has been successful. From its inception, Clearwire has relied on a backhaul network that is predominately a ring topology constructed of point-to-point microwave links. Advancements in microwave antenna technology have allowed carriers like Clearwire to achieve the reliability and resiliency needed to support advanced wireless services using wireless backhaul. The utilization of a microwave backhaul solution allowed Clearwire to launch its wireless broadband network with backhaul operating costs of 50-75% less than the traditional backhaul solutions. Clearwire’s microwave backhaul network allowed Clearwire to quickly expand service area coverage to meet customer growth needs and usage patterns. Additionally, Clearwire’s backhaul network is agnostic to any specific access network (voice or data) technology which allows faster adoption of 4G in a broader cross-section of tier 1 and 2 markets. It also allowed Clearwire to offer competitive broadband services in underserved tier 3 markets that would otherwise need extensive backhaul infrastructure construction.

The current microwave licensing process which includes frequency coordination through a third party frequency coordinator and an application filed at the FCC based on that frequency

⁴ January 20, 2012 letter from Chairman Julius Genachowski to Congressmen Jay Inslee.

coordination process provides substantial benefits to operators like Clearwire. The ease of the application process provides Clearwire with benefits such as: time to market, scalability, capacity growth and flexibility. Clearwire has not experienced any difficulty acquiring the microwave spectrum required to meet its needs.

With respect to rejection rates on requests for use of spectrum in the 11, 18 and 23 GHz bands, the Commission has asked for three types of information: (1) how frequently proposed operations in these bands could be successfully coordinated; (2) information regarding coordination requests in each band that could not be accommodated; and (3) the reasons such requests could not be accommodated. The Commission indicated that the definition of “successfully coordinated” includes any coordination request that ultimately results in a path that satisfies the original communications requirements between points.⁵ As Clearwire already made clear in its discussions with GAO, it has not had any of its frequency coordination requests “rejected.” Its proposed operations have always been successfully coordinated. However, Clearwire has occasionally had to “upband” or “downband” in certain areas to find appropriate spectrum in a particular market.

Clearwire works with a limited number of equipment vendors. Each of those equipment vendors operates on certain sub-bands within the 11, 18 and 23 GHz bands. Essentially this means that Clearwire needs to locate two frequencies within less than the complete spectrum band in which to operate its backhaul network. On occasion, Clearwire has been unable to do to secure its original band choice in a particular area. This problem although rare, has always been successfully resolved by revising the request to operate on one of the other three bands.

Clearwire has never been in a position where it was completely unable to locate the microwave frequencies it needed. Even in the somewhat more difficult areas around the Denver, Colorado

⁵ *Microwave Public Notice* at 2.

and Washington, DC quiet zones, Clearwire has always been successful in coordinating frequencies, and has never had a coordination request rejected.

III. CONCLUSION

As described herein, Clearwire has successfully relied on the Commission's microwave licensing process to establish and grow its cutting-edge wireless backhaul network. Clearwire has experienced very little difficulty in acquiring the licenses it needs in the 11, 18 and 23 GHz microwave bands and agrees with the Chairman that the existing microwave application and coordination process is very successful, results in efficient use of spectrum and is providing a vital component to the growth and extension of 4G broadband service within the United States.

Respectfully submitted,

/s/ Cathleen A. Massey

Cathleen A. Massey
Vice President Regulatory Affairs &
Public Policy

Nadja S. Sodos-Wallace
Senior Regulatory Counsel

Christiaan Segura
Regulatory Counsel

Clearwire Corporation
1250 Eye St., NW, Suite 901
Washington, DC 20005
202-351-5033

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