

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

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

COMMENTS OF CABLEVISION SYSTEMS CORPORATION

Catherine Bohigian
Senior Vice President, Federal Affairs
Cablevision Systems Corp.
1099 New York Ave., NW Suite 675
Washington, DC 20001
202-393-0343 (o)

John L. Flynn
Samuel L. Feder
JENNER & BLOCK LLP
1099 New York Ave., NW
Suite 900
Washington, D.C. 20001
(202) 639-6000

INTRODUCTION AND SUMMARY

This proceeding presents a key opportunity to serve the public interest and the Commission's broadband goals by significantly expanding WiFi service.¹ WiFi is increasingly critical to providing the ubiquitous broadband services customers demand—outside, on the go—especially as exploding data usage threatens to overwhelm traditional cellular networks. Demand for WiFi use at 2.4 GHz is outstripping supply, particularly in certain urban areas, making the 5 GHz band integral to providing consumers continued access to WiFi-enabled mobile broadband. Moreover, the emerging 802.11ac standard promises increased coverage and even faster speeds but requires the wide channels that only 5 GHz can provide.

With targeted rule changes, the Commission could unleash the 5 GHz band for outdoor² WiFi, spurring investment, innovation and job creation, in addition to dramatically expanding the ability of consumers to access the Internet and other data services. Combined with targeted agreements for additional coverage, such a service could eventually compete directly with traditional CMRS service.

Cablevision Systems Corporation (“Cablevision”) therefore supports NCTA's more detailed comments calling for expanding and optimizing the 5 GHz band. Specifically, the Commission should reform the rules in three important ways. First, permit a 1W power level to allow WiFi to fulfill its promise of widespread, fast outdoor networks since lower power levels are insufficient to penetrate objects such as buildings and trees, especially at 5 GHz. Second,

¹ *In re Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, Notice of Proposed Rulemaking, 28 FCC Rcd 1769, 1770, ¶¶ 1-2 (2013) (“NPRM”).

² “Outdoor” and “outside” are used interchangeably in these comments to mean not within a building or other structure—e.g., a public area in a mall would be “indoors.”

eliminate the indoor use restriction where it currently exists, as this unnecessarily shuts the door on the robust outdoor networks Cablevision and others seek to create. Finally, do not impose dynamic frequency selection (“DFS”) outside of U-NII-2, where it is not necessary to prevent interference but would significantly degrade WiFi performance.

I. CABLEVISION IS A LEADER IN WIFI SERVICES.

Cablevision is a leading telecommunications and entertainment company that has been at the forefront of providing new and innovative services to American consumers. It recognized a number of years ago that consumers increasingly need—and demand—access to the same advanced services they access in the home while outside. To meet this demand, Cablevision announced a plan to invest \$300 million dollars to develop a WiFi network across its footprint. Today, Optimum WiFi is the largest contiguous WiFi network in North America.

Optimum WiFi is a wireless service offered free to Cablevision’s broadband Internet subscribers. The network currently has over 80,000 hotspots in New York, New Jersey and Connecticut, effectively blanketing Cablevision’s tri-state region, and has been used by over 1,000,000 customers. Cablevision’s WiFi connections are not just a convenience—they are a broadband workhorse. Optimum WiFi has served more than one billion customer logons and transported more than 17 petabytes—17 quadrillion bytes—of broadband data. Use of the network has been increasing dramatically as consumers are setting their smartphones and tablets to connect to Cablevision’s WiFi network instead of their wireless carrier’s cellular network, and as they turn to WiFi-only devices without need for cellular service at all. The result is significant cost savings for consumers who switch to lower cellular data plans or avoid them completely.

Cablevision has been investing heavily in its Optimum network to increase both coverage and speed. In the past year alone, the company increased the number of hotspots from approximately 40,000 to over 80,000. Cablevision also recently increased speeds at all Wi-Fi

locations to 15Mbps down and 4Mbps up—the same speeds home subscribers get with entry-level Optimum Online service. As a result, Optimum’s Wi-Fi service is now faster than most 3G and 4G networks. And Cablevision has leveraged its network further by participating in a coalition, CableWiFi, to provide reciprocal WiFi access for customers of a number of leading cable companies.³

Cablevision’s WiFi networks have also made important contributions to public safety. For example, during Superstorm Sandy, more than 40% of hot spots remained operational, and more than 90% of the hot spots were operational within a week after the storm. By providing service at a critical time (even as some traditional cellular networks failed or were overwhelmed), Cablevision’s WiFi network provided wireless communication for customers in dire need of information and communication. It stands ready to do so again should the need arise in the future.

II. THE 5 GHZ BAND COULD RELIEVE 2.4 GHZ CONGESTION.

Today’s WiFi networks have been built largely on the back of the 2.4 GHz band, but this band is congested and facing exhaustion. The 2.4 GHz band consists of only 83.5 MHz of spectrum, comprising three non-overlapping channels that are not wide enough for the next generation of technologies. A large and increasing number of users and applications are competing for this limited resource.

The Commission has recognized that “Wi-Fi congestion is a very real and growing problem.”⁴ Developments in the industry confirm the Commission’s concern. Last year,

³ Cable Wi-Fi, <http://www.cablewifi.com/>. Cablevision now provides reciprocal access for subscribers to Time Warner Cable, Comcast, Cox, and Bright House Networks.

⁴ *NPRM*, 28 FCC Rcd at 1818 (Statement of Chairman Julius Genachowski); *see also id.* at 1822 (Statement of Commissioner Mignon Clyburn); *id.* at 1823 (Statement of Commissioner Jessica Rosenworcel); *id.* at 1820-21 (Statement of Commissioner Robert McDowell).

manufactures shipped over 1.5 billion WiFi chipsets, which were incorporated into laptops, tablets, televisions, gaming consoles and more.⁵ Data consumption is soaring and will continue to do so. According to Cisco's Visual Networking Index, WiFi data consumption is nearly four times that of cellular.⁶ WiFi traffic will grow approximately 250 percent from 2011-2015.⁷ Yet additional hotspots and increases in spectrum efficiency are not expected to offset WiFi congestion caused by this growth.⁸

Because of congestion in the 2.4 GHz band, Cablevision has already come to rely heavily on that part of the 5 GHz band not encumbered by outdated restrictions such as prohibitions on outdoor use, insufficient power levels, and DFS requirements. By stripping away unnecessary restrictions and opening up additional spectrum in the band, the Commission can deliver on the promise of the 5 GHz band and spur additional WiFi growth.

The potential benefits of the 5 GHz band are multiplied by the emerging 802.11ac standard, which will allow significantly higher "gigabit" download speeds and an overall better

⁵ ABI Research, 2011, *Wireless Connectivity Chipsets Revenues to Exceed \$10 Billion in 2012, Wi-Fi Chipsets Account for 40% of the Market*, Sept. 18, 2012, <http://www.abiresearch.com/press/wireless-connectivity-chipsets-revenues-to-exceed-> (last visited May 26, 2013).

⁶ Cisco, *Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012–2017*, Feb. 6, 2013, average daily Wi-Fi and mobile data consumption, global figures, http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html (last visited May 26, 2013).

⁷ Cisco, *Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011-2016*, North American WiFi traffic, offload and fixed. Global WiFi traffic is forecasted by Cisco to grow from 11.5 exabytes per month in 2011 to 37.2 exabytes per month in 2015 (offload and fixed).

⁸ Rob Alderfer, CableLabs, *WiFi Spectrum: Exhaust Looms*, at 8 (May 28, 2013) (appended to Comments of the National Cable and Telecommunications Association, ET Docket No. 13-49) (May 28 2013).

user experience.⁹ Obtaining these benefits, however, will require Commission action to modify the 5 GHz band rules.

III. NEW RULES FOR THE 5 GHz BAND WOULD ENABLE TREMENDOUS WIFI GROWTH.

The Commission should reform three aspects of the rules currently hindering the band's efficient use—(i) 50 mW power levels, (ii) indoor use restrictions, and (iii) DFS requirements—to enable tremendous WiFi growth.

A. A Uniform 1W Power Level Is Necessary through Most of the 5 GHz Band.

The Commission should adopt a unified 1W power level for U-NII-1 and U-NII-4 in order to harmonize those segments with U-NII-3.¹⁰ A 1W power level is needed to support reliable outdoor links due to signal blockage caused by bushes, trees, cars, etc.¹¹ While power levels as low as 250 mW could be used in some denser areas, that power level is inadequate for many areas, especially outdoors. In addition, uniform power levels across portions of the 5 GHz band are necessary in order to bond channels and take advantage of the enhanced bandwidth/throughput capacity of 802.11ac. Otherwise, devices using channels spanning more than one segment would be forced to operate at the lowest common denominator.¹² Even low-power devices benefit from high-power transmitters. For example, because a very high

⁹ *NPRM*, 28 FCC Rcd at 1775, ¶ 18 (citing OFFICIAL IEEE 802.11 WORKING GROUP PROJECT TIMELINES – 2013-03-22, http://grouper.ieee.org/groups/802/11/Reports/802.11_Timelines.htm).

¹⁰ Cablevision recognizes that a 1W power level is not appropriate for U-NII-2 due to existing federal government uses of that part of the band.

¹¹ *See In re Amendment of the Commission's Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range*, Report and Order, 12 FCC Rcd 1576, 1590, ¶ 31 (1997) (stating that signals at higher frequencies “have propagation constraints that will reduce the communication distances of devices operating at equal powers”); *id.*, 12 FCC Rcd at 1594-95, ¶ 42 (noting that increasing U-NII device power limits above 100 mW will enable a larger variety of operations).

¹² *NPRM*, 28 FCC Rcd at 1784, ¶ 46.

percentage of traffic over WiFi is on the downlink, the user experience is greatly improved by a high-power on the transmission side, which permits faster data rates, better modulation, and better throughput.

B. The Outdoor Use Restriction Should Be Eliminated.

The Commission should remove the outdoor use restriction for U-NII-1 and U-NII-4 to harmonize those segments with U-NII-2 and U-NII-3. The current indoor-only restrictions are unnecessary and impede one of the most effective and growing applications for WiFi—outdoor use.

Enhancing outdoor WiFi serves many purposes. Consumers are increasingly relying on outdoor WiFi, as they leave their homes and offices and get online across neighborhoods and cities. Outdoor WiFi is also essential to allow cellular networks to offload their burgeoning data. One recent study concluded that, “[i]n the absence of Wi-Fi, cellular operators would need to construct up to 450,000 new radio base stations to serve increased smartphone data traffic. This could cost \$93 billion—subjecting smartphone and tablet users to significantly higher network charges or greatly diminished service.”¹³ Combining enhanced outdoor WiFi with some traditional coverage may even enable competition with incumbent CMRS providers.

¹³ Richard Thanki, *The Power of the Unlicensed Economy*, AllThingsD (July 10, 2012, 11:22 AM) available at <http://allthingsd.com/20120710/the-power-of-the-unlicensed-economy/> (last visited May 16, 2013).

C. The DFS Requirement Should Not Be Expanded Beyond U-NII-2.

The Commission should not impose DFS requirements outside of U-NII-2, where it is currently required to protect federal government users in U-NII-2. DFS causes a host of problems that make it incompatible with WiFi. Most significantly, the need to scan for signals, move channels if a protected user is detected, and then rescan greatly increases the time necessary to secure a link—resulting in either a negative user experience or no experience at all, because the consumer believes the delay is due to the network not being available. In addition, the DFS requirement increases complexity and costs for radio manufacturers as additional coding must be incorporated into the access point radios. Finally, DFS mandates restrict the pool of potential manufacturers because only certain vendors were approved during the FCC’s limited window to certify their solutions. As a result, DFS requirements should remain only in U-NII-2 and only as necessary to protect government users.

CONCLUSION

The Commission should seize this opportunity to free up additional 5 GHz spectrum and rationalize the rules governing this band. In particular, the Commission should (i) establish a 1W power level for U-NII-1, U-NII-3 and U-NII-4, (ii) eliminate the indoor use restriction for U-NII-1 and U-NII-4, and (iv) refrain from imposing DFS requirements outside of U-NII-2 and impose only necessary requirements in that segment. These reforms, combined with the emerging 802.11ac standard, will allow Cablevision and others to create the next generation of powerful outdoor WiFi networks.

Respectfully Submitted,

Catherine Bohigian
Senior Vice President, Federal Affairs
Cablevision Systems Corp.
1099 New York Ave., NW Suite 675
Washington, DC 20001
(202) 393-0343

/s/ John L. Flynn
John L. Flynn
Samuel L. Feder
JENNER & BLOCK LLP
1099 New York Ave., NW
Suite 900
Washington, D.C. 20001
(202) 639-6000