

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)
)
Revision of Part 15 of the Commission's Rules) ET Docket No. 13-49
to Permit Unlicensed National Information)
Infrastructure (U-NII) Devices in the 5 GHz Band)

REPLY COMMENTS OF WI-FI ALLIANCE

July 24, 2013

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SUMMARY

Wi-Fi technology, which is a critical component of the mobile wireless ecosystem, has improved how American businesses operate and provided greater connectivity and convenience for U.S. consumers. The Commission is therefore properly working toward opening up the 5 GHz band for additional unlicensed operations to foster and promote the growth of Wi-Fi, including the deployment of the latest generation of Wi-Fi technology (802.11ac). Promoting these technologies is also an integral step in advancing the Commission and the President's goal to provide broadband connectivity across the country.

Of the many important issues raised in the *NPRM*, several have already been extensively studied and thus can and should be promptly acted upon. Among them is the proposal to extend the U-NII-3 (5725-5850 MHz) band by 25 megahertz; increasing the maximum output power in the U-NII-3 band; amending the spectral density and minimum bandwidth requirements; modifying Section 15.407 of the rules to accommodate U-NII-3 band operations; and adopting the revised Bin 1 test for certifying compliance with dynamic frequency selection ("DFS") requirements. By acting on those proposals for which there is general consensus – preferably by the end of the calendar year – the Commission can quickly promote the benefits that can be realized by the development and expansion of Wi-Fi networks.

Parties agreed with Wi-Fi Alliance that new rules for the U-NII-2A (5250-5350 MHz), U-NII-2C (5470-5725 MHz), and U-NII-3 bands adequately protect Terminal Doppler Weather Radar ("TDWR") operations. There is no evidence that properly certified and operated U-NII devices interfere with TDWR. The Commission's alternative proposals – including implementation of a geo-location database and enhanced emission and channel sensing requirements – are therefore unnecessary. While Wi-Fi Alliance supports removing the indoor-only restriction in the U-NII-1 (5150-5250 MHz) band and recommends increased power for that

band, other commenting parties proposed even higher power limits. Wi-Fi Alliance encourages the Commission to evaluate both options in order to permit the highest power use technically feasible.

Finally, many parties raised concerns regarding interference to Dedicated Short Range Communications Services (“DSRC”) and other operations in the U-NII-4 (5850-5925 MHz) band and encouraged additional study with regard to such operations. Wi-Fi Alliance agrees and urges that effort to begin promptly. Likewise, while Wi-Fi Alliance and others recognized the need to open the U-NII-2B (5350-5470 MHz) band to unlicensed use, additional study is also necessary to evaluate whether that band can be shared with government radar operations.

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Wi-Fi Alliance hereby submits its reply comments in the above-referenced proceeding designed to amend the Commission’s rules governing Unlicensed National Information Infrastructure (“U-NII”) devices operating in the 5 GHz band.^{1/}

I. INTRODUCTION

As its comments stated, Wi-Fi Alliance believes that the Commission’s proposals to make additional spectrum available for U-NII devices and to permit more complete use of spectrum already designated for unlicensed operations in the 5 GHz band will help address the growing demand that has resulted from increasing adoption of Wi-Fi technologies.^{2/} It encouraged the Commission to take several steps toward ensuring this availability, including by extending the U-NII-3 band by 25 megahertz from 5825 MHz to 5850 MHz; adopting a unified set of equipment authorization rules under Section 15.407 for the U-NII-2C (5470-5725 MHz) and the expanded U-NII-3 (5725-5850 MHz) bands; adopting improved security features so that

^{1/} *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 (2013) (“*NPRM*”); *see also* *Revision of Part 15 of the Commission’s Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, Order, ET Docket No. 13-49, DA 13-1388 (rel. June 17, 2013) (extending the reply comment deadline to July 24, 2013).

^{2/} *See* Comments of Wi-Fi Alliance, ET Docket No. 13-49 (filed May 28, 2013) (“*Wi-Fi Alliance Comments*”).

U-NII devices may operate only in the bands for which they are certified; adopting the improved Bin 1 testing requirements for devices with dynamic frequency selection (“DFS”); and codifying the requirements previously announced in staff guidance to eliminate users’ abilities to initiate transmissions in a mode that does not include DFS in bands where DFS use is required. Wi-Fi Alliance also urged the Commission to align the rules governing the U-NII-1 (5150-5250 MHz) band with those governing the U-NII-2A (5250-5350 MHz) band^{3/} – including the ability to use the U-NII-1 band for outdoor operations and to permit low-power devices that pose no threat to incumbent radar systems to operate without DFS functionality in the U-NII-2A and U-NII-2C bands, thereby enabling new applications for Wi-Fi Direct and other short-range Wi-Fi links. Finally, Wi-Fi Alliance asked the Commission to make the U-NII-4 (5850-5925 MHz) and U-NII-2B (5350-5470 MHz) bands available for unlicensed use following testing and other evaluation of the ability of U-NII operations to co-exist with existing operations in those bands.

Many commenting parties had similar recommendations and the Commission should therefore act quickly on those proposals that received general agreement. In order to promote additional, enhanced access to unlicensed spectrum, the Commission should promptly adopt rules where consensus exists – ideally by the end of this calendar year. The comments demonstrated that there are other areas – notably access to the U-NII-2B and U-NII-4 bands – where additional study is required. The Commission should continue to consider this spectrum for U-NII use, albeit under a different timetable. The Commission should facilitate the additional analysis of those bands so that they may also be made available for unlicensed operations.

^{3/} As noted below, Wi-Fi Alliance recognizes that others recommended that the Commission align its U-NII-1 power rules to the U-NII-3 band, permitting ever higher power operations. It recommends that the Commission evaluate both options and permit the highest power use technically feasible. *See* Section VI, *infra*.

II. GROWTH IN WI-FI USAGE

Wi-Fi Alliance's comments stated that facilitating greater use of the 5 GHz band for additional unlicensed operations would help meet the skyrocketing demand that has resulted from the adoption of Wi-Fi technologies, facilitate the Commission's and the President's goal of providing ubiquitous broadband access across the country, and promote the use of 802.11ac technology.^{4/} Other commenting parties overwhelmingly agreed. In particular, stakeholders pointed out that Wi-Fi is a critical component of the mobile wireless ecosystem, and the use of Wi-Fi technology in a variety of sectors has improved American businesses and provided added convenience and connectivity for U.S. consumers.^{5/} As Cisco noted, Wi-Fi has rapidly become the way in which a wide variety of devices – including laptop and notebook computers, tablets, and smartphones – connect to the Internet.^{6/} This ubiquity of Wi-Fi connectivity has made Wi-Fi “one of the great American success stories, spurring innovation, job creation, [and] economic growth.”^{7/}

Other commenting parties note that the growth of Wi-Fi has been a major contributor to the national economy, stating that the economic benefits of unlicensed technologies are in the tens of billions of dollars a year and, by some accounts, contribute to upwards of \$50 billion in

^{4/} Wi-Fi Alliance Comments at 2-6.

^{5/} See, e.g., Comments of Cisco Systems, Inc. ET Docket No. 13-49, at 5-7 (filed May 28, 2013) (“Cisco Comments”); Comments of the Consumer Electronics Association, ET Docket No. 13-49, at 12-13 (filed May 28, 2013) (“CEA Comments”); Comments of IEEE 802, ET Docket No. 13-49, at 10-11 (filed May 28, 2013) (“IEEE 802 Comments”); Comments of the Information Technology Industry Council (“ITIC”), ET Docket No. 13-49, at 10-12 (filed May 28, 2013) (“ITIC Comments”); Comments of the National Cable & Telecommunications Association, ET Docket No. 13-49, at 1 (filed May 28, 2013) (“NCTA Comments”).

^{6/} Cisco Comments at 9.

^{7/} Cisco Comments at 1.

annual economic growth.^{8/} As the National Cable & Telecommunications Association (“NCTA”) observed, there are various public interest benefits of Wi-Fi networks, including that millions of consumers can be provided with fast, reliable Internet access, and that consumers can supplement their licensed networks with Wi-Fi in order to manage their wireless data plan usage.^{9/}

Commenting parties pointed to several factors that are driving the explosive growth of Wi-Fi. Cisco noted that the amount of traffic offloaded from cellular networks doubled between 2011 and 2012, a fact that is driven in large part by the proliferation of Wi-Fi.^{10/} Like Wi-Fi Alliance, other commenters recognized that the latest Wi-Fi standard – 802.11ac, with bandwidths of 20, 40, 80 and 160 megahertz – will provide even faster transmission speeds and other important advancements and will also increase the demand for additional unlicensed capacity.^{11/} For instance, IEEE 802 recognized that the 802.11ac standard will deliver multi-gigabit throughput speeds, which NCTA pointed out should lead to shorter transmission times

^{8/} Comments of Comcast Corporation, ET Docket No. 13-49, at 10-11 (filed May 28, 2013) (“Comcast Comments”).

^{9/} NCTA Comments at 4. As evidence of the cable industry’s investments in the development and expansion of Wi-Fi networks, NCTA noted that “cable operators have deployed more than 150,000 Wi-Fi access points throughout the country in both urban and rural areas, and more access points are being deployed every day.” *Id.* at 3.

^{10/} Cisco Comments at 15-16; *see also* Comcast Comments at 11-12; NCTA Comments at 4; Comments of Wireless Internet Service Providers Association, ET Docket No. 13-49, at 1 (filed May 28, 2013) (“WISPA Comments”).

^{11/} *See, e.g.*, Wi-Fi Alliance Comments at 5-6; Comments of Cablevision Systems Corporation, ET Docket No. 13-49, at 4-5 (filed May 28, 2013) (“Cablevision Comments”); CEA Comments at 12-13; Cisco Comments at 17-21, 23; IEEE 802 Comments at 10-11; ITIC Comments at 10-12. In June 2013, Wi-Fi Alliance announced the initiation of interoperability certification for IEEE 802.11ac devices, which will bring additional capacity, performance, and robustness to support connected applications at home, in public places, and in enterprise networks. *See* Letter from Wi-Fi Alliance to Julius Knapp, Chief, Office of Engineering and Technology, FCC, and Karl Nebbia, Associate Administrator, Office of Spectrum Management, NTIA (June 21, 2013) (“Wi-Fi Alliance June 2013 Letter”); Press Release, *Wi-Fi Certified™ ac Takes Wi-Fi® Performance to New Heights* (rel. June 19, 2013), available at <http://www.wi-fi.org/media/press-releases/wi-fi-certified™-ac-takes-wi-fi®-performance-new-heights>.

(and therefore higher Wi-Fi air interface capacity), lower battery consumption on Wi-Fi devices, and better overall customer experiences.^{12/} By opening up the 5 GHz band in a way that facilitates deployment of 802.11ac technologies, industry will be better positioned to meet the needs of the latest generation of Wi-Fi technology, which will in turn increase the benefits to American consumers and businesses.^{13/}

Additional access to 5 GHz spectrum in particular is necessary to meet congestion caused by the increased adoption of Wi-Fi.^{14/} As commenters pointed out, the 5 GHz band is particularly attractive for new Wi-Fi deployments given that it provides a large amount of unlicensed spectrum and is compatible with existing Wi-Fi standards.^{15/} The 5 GHz band is also an ideal target for expanded unlicensed use since it is harmonized internationally.^{16/} Thus, in view of the need for additional spectrum for valuable Wi-Fi services, and based on the general consensus that the 5 GHz band is an opportune band for that expansion, the Commission should move forward with its proposals to open up the 5 GHz band for more unlicensed uses.

Promoting Wi-Fi deployment is also an integral part of the Commission's and the President's goal to create seamless broadband connectivity across the country. Indeed, the President recently reiterated that "[e]xpanding the availability of spectrum for innovative and flexible commercial uses, including for broadband services, will further promote our Nation's economic development by providing citizens and businesses with greater speed and availability

^{12/} See IEEE 802 Comments at 11; NCTA Comments at 11.

^{13/} See, e.g., Cisco Comments at 19-20; IEEE 802 Comments at 11; Comments of the Telecommunications Industry Association, ET Docket No. 13-49, at i, 6 (filed May 28, 2013) ("TIA Comments").

^{14/} See Cablevision Comments at 3; IEEE 802 Comments at 9; WISPA Comments at 5.

^{15/} See, e.g., NCTA Comments at 7-10; TIA Comments at i; WISPA Comments at ii; Comments of Shared Spectrum Company, ET Docket No. 13-49, at 3 (filed May 28, 2013) ("SSC Comments").

^{16/} See, e.g., NCTA Comments at 10; Comments of Motorola Mobility LLC, ET Docket No. 13-49, at 1 (filed May 28, 2013) ("Motorola Mobility Comments").

of coverage, encourage further development of cutting-edge wireless technologies, applications, and services, and help reduce usage charges for households and businesses.”^{17/} Wireless Internet Service Providers Association (“WISPA”) similarly noted that “[p]roviding WISPs with the ability to access additional spectrum in the 5 GHz band is perhaps the best thing the Commission can do to enable fixed broadband services to be extended to more people in rural, unserved and underserved areas.”^{18/}

Finally, the comments highlighted that all of these benefits can be realized by U-NII devices sharing spectrum in a manner that does not affect incumbent operations.^{19/} Whether by emissions characteristics, sensing, or other interference mitigation techniques, the ability of U-NII devices to avoid causing harmful interference to existing systems will enable the Commission to deliver the economic and social benefits outlined in the comments even in the presence of a diverse array of incumbent systems. As the pressure on the Commission to find additional wireless capacity becomes increasingly intense, it should consider spectrum sharing opportunities where appropriate. This proceeding provides a unique opportunity to push forward into that future.

III. PHASED RESOLUTION OF ISSUES RAISED IN THE *NPRM*

In its initial comments, Wi-Fi Alliance urged the Commission to take a sequenced approach to amending its rules governing U-NII devices in the 5 GHz band, stating that it should

^{17/} See White House Office of the Press Secretary, *Presidential Memorandum: Expanding America’s Leadership in Wireless Innovation*, June 14, 2013, available at <http://www.whitehouse.gov/the-press-office/2013/06/14/presidential-memorandum-expanding-americas-leadership-wireless-innovation>. In the Memorandum, the President went on to urge NTIA to work with the FCC to make spectrum available for commercial operations. *Id.* at 2.

^{18/} WISPA Comments at 5-6; *see also* Comcast Comments at 3.

^{19/} *See, e.g.*, Comcast Comments at 13-14; IEEE 802 Comments at 3; TIA Comments at 10; Comments of Time Warner Cable Inc., ET Docket No. 13-49, at 12 (filed May 28, 2013) (“Time Warner Comments”).

adopt decisions in this proceeding on matters as they can be resolved, rather than waiting for resolution of all of the issues.^{20/} Other commenters agreed with this phased-in approach and encouraged the Commission to adopt a series of decisions in this proceeding in order to resolve issues as quickly as possible.^{21/} As commenters noted, several of the issues raised in the *NPRM* have already been subject to extensive study by the Commission and other interested industry and governmental parties, and therefore the Commission can and should promptly address those issues for which there is a well-developed record and/or general consensus.^{22/} On the other hand, commenters noted that certain issues addressed in the *NPRM* are relatively novel and complex and require extensive analysis and additional record development.^{23/} For those issues, the Commission may require additional study. A contrary position, whereby the Commission would wait until all of the issues raised in the *NPRM* could be decided, would delay important benefits to consumers and impede innovative investments like cable Wi-Fi networks.^{24/}

While it may take longer to resolve certain components of the *NPRM*, the following are elements of the Commission's proposals on which there is agreement. The Commission should take action on these matters soon – ideally before the end of this calendar year – in order to further promote use of the current U-NII bands and enable greater use of Wi-Fi by the American public.

Extend the U-NII-3 Band. In the *NPRM*, the Commission proposed to extend by 25 megahertz the current U-NII-3 band in order to create a new 125 megahertz-wide band (which

^{20/} Wi-Fi Alliance Comments at 6-8.

^{21/} See TIA Comments at 2, 8-9; Comcast Comments at 29; Cisco Comments at 24-25; IEEE 802 Comments at 3, 11-12; NCTA Comments at 13, 24-26; Time Warner Comments at 3.

^{22/} See, e.g., TIA Comments at 2; IEEE 802 Comments at 11-12.

^{23/} See, e.g., Comcast Comments at 29; NCTA Comments at 26; Time Warner Comments at 3.

^{24/} IEEE 802 Comments at 11; NCTA Comments at 24.

will become 380 megahertz of contiguous spectrum when combined with the U-NII-2C band).^{25/}
Wi-Fi Alliance and others agreed.^{26/}

Increase Maximum Output Power to 1 Watt. The Commission proposed to remove the bandwidth dependent term from Section 15.407 and apply the power limits of Section 15.247 in order to accommodate devices that were previously permitted under that section of the rules.^{27/} Wi-Fi Alliance and other commenters agreed that the 1 watt power limit (without the bandwidth-dependent term) should apply to the U-NII-3 band.^{28/}

Amend Spectral Density Requirements. In the *NPRM*, the Commission proposed to modify Section 15.407 to require the power spectral density (“PSD”) limit currently used under Section 15.247 (8 dBm/3 kHz or 33 dBm/MHz). This would represent a higher PSD when the device emission bandwidth is between .5 and 20 megahertz, but the 1 watt power limit would continue to apply above 20 megahertz.^{29/} Wi-Fi Alliance and others agreed with this proposal.^{30/}

Minimum 6 dB Bandwidth of 500 Kilohertz. Because the Commission proposed to eliminate the bandwidth-dependent limit on total power, it also proposed to eliminate the 26 dB bandwidth requirement and to add the minimum 6 dB bandwidth requirement from Section

^{25/} See *NPRM* ¶¶ 27-29.

^{26/} See, e.g., Wi-Fi Alliance Comments at 11; Cisco Comments at 42-43; Comcast Comments at 22; Comments of Ericsson, ET Docket No. 13-49, at 4 (filed May 28, 2013) (“Ericsson Comments”); Comments of Fastback Networks, ET Docket No. 13-49, at 2 (filed May 28, 2013) (“Fastback Comments”); Comments of First Step Internet, LLC, ET Docket No. 13-49, at 3 (filed May 28, 2013) (“FSI Comments”); IEEE 802 Comments at 12; Motorola Mobility Comments at 2; Time Warner Comments at 9.

^{27/} See *NPRM* ¶ 30.

^{28/} See Wi-Fi Alliance Comments at 12; IEEE 802 Comments at 18; Motorola Mobility Comments at 4; Comments of Motorola Solutions, Inc., ET Docket No. 13-49, at 3 (filed May 28, 2013) (“MSI Comments”).

^{29/} See *NPRM* ¶ 31.

^{30/} See, e.g., Wi-Fi Alliance Comments at 12; Ericsson Comments at 5; IEEE 802 Comments at 17-18; Motorola Mobility Comments at 4; MSI Comments at 3; TIA Comments at 10.

15.247 to the rules.^{31/} Wi-Fi Alliance agreed with this proposal, as did other commenting parties.^{32/}

Modify Section 15.407 Rules. The Commission proposed to adopt several other changes to Section 15.407 of its rules, including modifying the measurement bandwidth in Section 15.407(a)(5) to 1 megahertz and adopting more restrictive emissions limits in Section 15.407(b).^{33/} Wi-Fi Alliance and others agreed with these proposals.^{34/} In addition, the Commission proposed to retain the peak-to-average ratio limit of 15.407(a)(6),^{35/} which Wi-Fi Alliance and other commenting parties supported.^{36/}

Bin 1 Testing Changes. In the *NPRM*, the Commission proposed to adopt the revised Bin 1 test proposed by NTIA for certifying compliance with DFS requirements.^{37/} This proposal received unanimous support from commenting parties – including Wi-Fi Alliance.^{38/}

Miscellaneous Rule Changes. In order to simplify Part 15, the Commission sought to make miscellaneous revisions and updates to its rules.^{39/} Commenting parties, including Wi-Fi Alliance, supported these changes.^{40/}

^{31/} See *NPRM* ¶ 32.

^{32/} See, e.g., Wi-Fi Alliance Comments at 12-13; Cisco Comments at 45-46; Ericsson Comments at 5; IEEE 802 Comments at 18.

^{33/} See *NPRM* ¶¶ 31, 34.

^{34/} See, e.g., Wi-Fi Alliance Comments at 12-13; Cisco Comments at 47; Ericsson Comments at 5; IEEE 802 Comments at 18; Motorola Mobility Comments at 4; MSI Comments at 3.

^{35/} See *NPRM* ¶ 35.

^{36/} See, e.g., Wi-Fi Alliance Comments at 13-14; Cisco Comments at 48; IEEE 802 Comments at 19; MSI Comments at 4.

^{37/} See *NPRM* ¶¶ 73-74.

^{38/} See, e.g., Wi-Fi Alliance Comments at 9; Cisco Comments at 28-29; IEEE 802 Comments at 23; TIA Comments at 10; WISPA Comments at 19.

^{39/} See *NPRM* ¶ 113.

^{40/} See, e.g., Wi-Fi Alliance Comments at 30-31; Cisco Comments at 51-52; Ericsson Comments at 12; IEEE 802 Comments at 24-25; TIA Comments at 11.

Transition Plan. The Commission proposed to establish a 12-month deadline after the effective date of any new or modified rules adopted in this proceeding after which manufacturers would not be permitted to obtain certification for U-NII devices that do not comply with the new rules. It also proposed a two-year deadline after which only U-NII devices that meet the new rules could be manufactured in or imported into the U.S. for sale (allowing devices certified until the end of the first twelve months to be sold until the end of the two-year period).^{41/} The Commission also proposed in the *NPRM* to grandfather for the life of the equipment those U-NII devices that are already installed or in use.^{42/} Wi-Fi Alliance and others supported these transition plans.^{43/}

IV. RULES FOR THE U-NII-2A, U-NII-2C AND U-NII-3 BANDS

A. Adoption of the Rules Imposed for the U-NII-2C and U-NII-3 Bands Will Resolve TDWR Interference and Other Enforcement Matters.

Wi-Fi Alliance's comments supported the harmonization of the rules governing the U-NII-2C and expanded U-NII-3 bands under the regulations that currently govern digital devices in the U-NII bands (Section 15.407 of the rules). It pointed out that making those rules consistent – along with adopting improved security features that allow U-NII devices to operate only in the bands in which they are authorized, adopting the Bin 1 testing requirements for devices with DFS, codifying DFS requirements in staff guidance, and otherwise enhancing existing DFS rules – will resolve all identified concerns regarding potential interference to Terminal Doppler Weather Radar (“TDWR”) operations.^{44/}

^{41/} See *NPRM* ¶ 114.

^{42/} See *NPRM* ¶¶ 114-115.

^{43/} See, e.g., Wi-Fi Alliance Comments at 31-32; Cisco Comments at 52-54; Ericsson Comments at 12; IEEE 802 Comments at 25-26; NCTA Comments at 24; TIA Comments at 11.

^{44/} See Wi-Fi Alliance Comments at 8-24.

Others agreed that DFS adequately protects TDWR operations. For example, as both IEEE 802 and Cisco pointed out, there has been no case to date where functioning DFS has failed to detect radar, and the Commission should not ignore this fact.^{45/} Motorola Solutions, Inc. likewise stated that there is no evidence that DFS, when used correctly, has been ineffective at protecting incumbent users from harmful interference.^{46/}

Other commenters complained that the current and proposed rules are insufficient and that additional protection is necessary for TDWR.^{47/} Wi-Fi Alliance disagrees. In the past, interference to TDWR came from two primary sources – devices without DFS capabilities operating in bands that require DFS and modification of devices to disable DFS. The proposed rules address both of these issues. In particular, the Commission would prohibit devices from operating in bands for which they are not authorized – *i.e.*, a device operating in a band that does not require DFS capabilities will not be permitted to operate in a band which requires that functionality. The new rules – which feature improved security features – will also prohibit DFS capabilities from being deactivated when they are required.

In addition, new technical rules will provide better protection to TDWR. Devices operating in the expanded U-NII-3 band will be governed by Section 15.407 of the rules, the emission requirements for which are better designed to protect TDWR, rather than Section 15.247, which is not. In addition, the Commission would adopt rules incorporating Bin 1 testing

^{45/} See IEEE 802 Comments at 10; Cisco Comments at 38.

^{46/} See MSI Comments at 6.

^{47/} See Comments of Cambium Networks LTD, ET Docket No. 13-49, at 1-2 (filed May 28, 2013) (“Cambium Comments”); Comments of the National Association of Broadcasters, ET Docket No. 13-49, at 6 (filed May 28, 2013) (“NAB Comments”); Comments of the Department of Transportation, ET Docket No. 13-49, at 6 (filed June 11, 2013) (“DOT Comments”).

requirements, the staff guidance on master-client devices, and new rules for sensing thresholds, which will fully address concerns regarding protection of TDWR.^{48/}

There is simply no evidence that U-NII devices with properly equipped DFS capabilities have interfered with TDWR systems. Moreover, the protection that the DFS capabilities offer will be enhanced by the proposed rules. While interference to TDWR may occur where DFS has been deactivated, the proposed rules guard against that also. There is also no evidence that U-NII operations in other bands interfere with TDWR.^{49/} U-NII devices have been improperly retuned into DFS bands, but the proposed rules address this as well. The prime identified cause of adjacent band interference from the U-NII-3 band will be addressed by imposing the Section 15.407 rules in the U-NII-3 bands. Therefore, there is no requirement to adopt regulations that seek to prevent interference to TDWR from adjacent bands.

Improved security, demonstrated as part of the certification process, will also make re-tuning of radios, or changing emissions parameters in a way contrary to the certification, very difficult. Wi-Fi Alliance agrees with those commenting parties that supported the Commission's

^{48/} See *NPRM* ¶¶ 67-74. The revised Bin 1 testing requirements and provisions regarding device country code selection were supported by various commenters. See Cisco Comments at 28-29; IEEE 802 Comments at 23; TIA Comments at 10; WISPA Comments at 19; see also Ericsson Comments at 6; NCTA Comments at 23. Likewise, there was general consensus supporting the Commission's proposal to limit the relaxed -62 dBm detection threshold to those U-NII devices that operate with an EIRP of less than 200 mW (23 dBm) and have an EIRP spectral density of less than 10 dBm/MHz (10 mW/MHz). See Cisco Comments at 49; Fastback Comments at 9; IEEE 802 Comments at 23. Finally, commenters agreed that the Commission should eliminate the uniform channel spreading rule. See Fastback Comments at 10; IEEE 802 Comments at 24; MSI Comments at 8.

^{49/} In particular, Wi-Fi Alliance agrees with representatives of the cable industry who asserted that it is unnecessary to impose DFS obligations in the U-NII-3 band. See Cablevision Comments at 7; Comcast Comments at 26-27; NCTA Comments at 20-22; Time Warner Comments at 13. There are no radar operations in the U-NII-3 band and, as noted above, there is no evidence that U-NII-3 band equipment operating as proposed here will cause interference to TDWR operations. Cambium is wrong when it says that the DFS capability of devices certified under the U-NII-2C rules does not always prevent interference to TDWR installations, thus giving rise to an additional requirement for minimum frequency separation. See Cambium Comments at 2. There is no evidence that U-NII devices with properly equipped DFS have interfered with TDWR systems.

proposal that manufacturers implement security features in devices capable of operating in the U-NII bands, so that third parties cannot reprogram the devices to operate outside the parameters for which they were certified.^{50/} The Commission need not go further by imposing unrealistic requirements on manufacturers. In particular, it agrees with Ericsson that the Commission should not condition equipment approval on a device's ability to "guarantee" that it cannot be modified to operate outside of its approved parameters.^{51/} As Ericsson pointed out, no technology can be "guaranteed to be 'unhackable.'"^{52/}

B. Alternative Proposals to Protect TDWR are Unnecessary.

Wi-Fi Alliance agrees with IEEE 802, Cisco, Motorola Solutions, Inc. and others that none of the following recommendations supported by other commenting parties are necessary^{53/}:

Geo-locational Databases. Instead of mandating a geo-location database, Wi-Fi Alliance urges the Commission to rely upon the current and proposed sensing rules to detect the presence of TDWR operations. The imposition of a mandatory database requirement in the U-NII-2C band may unnecessarily delay access to the U-NII spectrum. Given that there is no evidence that functioning DFS fails to protect radar, the Commission should permit the current and proposed rules to provide protection to TDWR.

Enhanced Emission Requirements/Frequency Separation. As Wi-Fi Alliance pointed out, the Commission's alternative proposal to impose lower emissions limits to protect TDWR operations is unnecessary because, although the benefits of new emissions limits are speculative, the costs of restricting the equipment according to the proposed rule are very real and will result

^{50/} See IEEE 802 Comments at 16; Cisco Comments at 32-33.

^{51/} Ericsson Comments at 6-7.

^{52/} Ericsson Comments at 6.

^{53/} See Cisco Comments at 37-41; IEEE 802 Comments at 19-22; MSI Comments at 5-7; WISPA Comments at 17.

in significant degradation of the utility of equipment subject to the new out-of-band emissions (“OOBE”) limit.^{54/} Others agreed. Cisco, for example, noted that NTIA has not cited to a single instance in which OOBE, as opposed to co-channel emissions, has been responsible for interference to a TDWR, and argued that a “belt and suspenders” approach is not warranted absent hard evidence that such requirements are necessary.^{55/} IEEE 802 also argued that the Commission should “[r]efrain from adopting more disruptive approaches, *i.e.*, more restrictive unwanted emissions requirements or frequency separation” because the new rules will ensure (1) that the problems attributable to high gain point to point systems and their inability to coexist with radar will not occur, and (2) that DFS cannot easily be disabled post-market by the selection of a domain that does not require DFS.^{56/}

100 Percent Occupied Channel Sensing. There is no evidence that sensing over 100 percent of the bandwidth will produce any better results than sensing over 80 percent of the bandwidth, the current requirement.^{57/} To the contrary, as Cisco pointed out, instead of enhancing protection for TDWR, a 100 percent channel sensing requirement will have only one result – degrading U-NII performance.^{58/}

While no additional rules are required to further protect TDWR, changes suggested by Wi-Fi Alliance and endorsed by others will make the rules less restrictive without compromising

^{54/} Wi-Fi Alliance Comments at 22-23.

^{55/} Cisco Comments at 38.

^{56/} IEEE 802 Comments at 3, 19-20; *see also* MSI Comments at 5-7 (explaining that the Commission should not adopt new unwanted emissions limits based on whether the devices are operating indoors or outdoors as the Commission’s proposed service rule changes are sufficient to protect against unauthorized use of U-NII devices); WISPA Comments at 17 (noting WISPA does not agree that the Commission should mandate any other additional security measures at this time).

^{57/} *See* NAB Comments at 5.

^{58/} Cisco Comments at 40-41.

the ability to protect TDWR.^{59/} For example, other commenting parties supported equipping “master” devices with DFS, allowing devices to create a list of available channels.^{60/} Fastback suggested optional rules for devices that can detect specific frequencies that may require protection for TDWR systems, allowing U-NII devices to operate on other channels that are not in operation by the primary user.^{61/} Wi-Fi Alliance endorses this suggestion, which may allow use of most of a channel, rather than eliminating the potential use of an entire channel. Fastback also suggested that U-NII devices be permitted to scan for available channels in the background in order to identify clear channels to which communications can be migrated if radar operations are initiated.^{62/} Wi-Fi Alliance similarly endorses this suggestion.

Wi-Fi Alliance also encouraged the Commission to consider allowing low-power devices in the U-NII-2A and U-NII-2C bands without DFS capability that would operate without causing interference to radar systems.^{63/} Such an approach would permit U-NII devices to establish Wi-Fi Direct and other very short range links without affecting incumbent operations. As Wi-Fi Alliance noted, the 60-second channel availability check (“CAC”) and in-service monitoring regulations have limited the use of these bands by these short-range mobile devices.^{64/} Other parties that commented on this issue agreed. IEEE 802 recognized that the 60-second CAC and in-service monitoring regulations have limited the use of the U-NII-2A and U-NII-2C bands by Wi-Fi direct applications and consequently recommended a low-power mode exemption to

^{59/} Wi-Fi Alliance Comments at 18.

^{60/} Ericsson Comments at 9; IEEE 802 Comments at 14-15.

^{61/} Fastback Comments at 9.

^{62/} Fastback Comments at 9.

^{63/} Wi-Fi Alliance Comments at 18-19.

^{64/} Wi-Fi Alliance Comments at 19.

DFS.^{65/} ITIC noted that requiring DFS for low-power Wi-Fi devices in the U-NII-2A and U-NII-2C bands not only imposes additional costs, “but it also limits enabling new and innovative next generation Wi-Fi applications that could be deployed consistent with protection of incumbents, using other interference-avoidance solutions.”^{66/} Wi-Fi Alliance looks forward to collaborating with the FCC, the NTIA, and other interested parties to develop such a satisfactory functionality.

Wi-Fi Alliance does not believe that the current and proposed rules intended to protect radar operations via DFS should be weakened. Fastback and Cambium, while generally supporting the application of the Section 15.407 rules to U-NII-3 devices, proposed retention of the Section 15.247 antenna gain rules.^{67/} Wi-Fi Alliance disagrees. Use of the antenna gain rules in Section 15.407 is an important part of the set of changes that will adequately protect DFS. Indeed, it is the antenna gain rules that will likely be the most effective in preventing interference to TDWR systems. While the antenna gain limits may prevent the use of point-to-point systems, these systems have other spectrum options and the rules governing the U-NII spectrum should be optimized to support service to and from U-NII end user devices, not intermediate links.

V. RULES FOR THE U-NII-4 BAND

The greatest number of initial comments in this proceeding were submitted by entities concerned about the impact of introducing U-NII operations to the 5850-5925 MHz (U-NII-4) band. In particular, most of those expressing concern do not wish for U-NII operations to

^{65/} IEEE 802 Comments at 27.

^{66/} ITIC Comments at 10.

^{67/} See Cambium Comments at 4; Fastback Comments at 3-4. The WISP commenters encouraged the Commission to retain the antenna gain and other technical and operating rules from Section 15.247. See FSI Comments at 3-5; Comments of SPITwSPOTS, Inc., ET Docket No. 13-49, at 3-5 (filed May 28, 2013) (“SPITwSPOTS Comments”); WISPA Comments at 12-13.

compromise Dedicated Short Range Communications Services (“DSRC”) operations in the Intelligent Transportation Services (“ITS”).^{68/}

While Wi-Fi Alliance continues to believe that the public interest will be best served by expanding by 75 megahertz the amount of spectrum that can be used for Wi-Fi operations, it recognizes (as it did in its initial comments) that the Commission must proceed carefully in introducing U-NII devices in the U-NII-4 band.^{69/} Nevertheless, protecting DSRC does not mean that there cannot be U-NII operations in the U-NII-4 band. Those suggesting so at this early stage are being unnecessarily alarmist. U-NII operations have successfully been secondary in bands with many other primary licensees. There is no reason to believe that those successes cannot be replicated in the U-NII-4 band. For example, Qualcomm recommended that the upper

^{68/} See generally, Comments of Alliance of Automobile Manufacturers, Inc. and Association of Global Automakers, Inc., ET Docket No. 13-49 (filed May 28, 2013) (“AAM and AGA Comments”); Comments of American Association of State Highway & Transportation Officials, ET Docket No. 13-49 (filed May 28, 2013); Comments of American Honda Motor Co., Inc., ET Docket No. 13-49 (filed May 28, 2013); Comments of California Department of Transportation, ET Docket No. 13-49 (filed May 28, 2013); Comments of Delphi Automotive, ET Docket No. 13-49 (filed May 28, 2013); Comments of Ford Motor Company, ET Docket No. 13-49 (filed May 28, 2013); Comments of General Motors Company, ET Docket No. 13-49 (filed May 28, 2013); Comments of Intelligent Transportation Society of America, ET Docket No. 13-49 (filed May 28, 2013) (“ITSA Comments”); Comments of Intelligent Transportation Systems Program Advisory Committee, ET Docket No. 13-49 (filed May 28, 2013); Comments of Mercedes-Benz USA, LLC, ET Docket No. 13-49 (filed May 28, 2013); Comments of OmniAir Consortium, ET Docket No. 13-49 (filed May 28, 2013); Comments of SAE International, ET Docket No. 13-49 (filed May 28, 2013) (“SAE Comments”); Comments of Savari, Inc., ET Docket No. 13-49 (filed May 28, 2013) (“Savari Comments”); Comments of Toyota Motor Corporation, ET Docket No. 13-49 (filed May 28, 2013) (“Toyota Comments”); Comments of Volkswagen Group of America, ET Docket No. 13-49 (filed May 28, 2013).

^{69/} See Wi-Fi Alliance Comments at 26-29. Several parties pointed out that Congress has not mandated the use of the U-NII-4 band for U-NII operations. See, e.g., DOT Comments at 3; ITSA Comments at 33; SAE Comments at 3; Toyota Comments at 5-6. That is no impediment to the Commission investigating the use of the U-NII-4 band for shared use. In light of the substantial public benefits that would result from the expansion of the U-NII-3 band through the shared use of the U-NII-4 band, the Commission should continue its evaluation of the U-NII-4 band.

20 or 30 megahertz of the U-NII-4 band be reserved exclusively for DSRC (with U-NII operations prohibited) and the remaining 45 or 55 MHz be shared.^{70/}

Wi-Fi Alliance recommended a series of steps the Commission should take to facilitate the responsible use of the U-NII-4 band while ensuring that DSRC remains protected and primary.^{71/} Wi-Fi Alliance therefore urges the Commission to facilitate the dialogue and technical analyses necessary to take the next steps to share the U-NII-4 band.^{72/}

Several commenting parties noted that NTIA is not expected to complete its assessment of the use of the U-NII-4 band until 2014.^{73/} Wi-Fi Alliance encourages NTIA to proceed with its study and to issue results as soon as possible. NTIA's ongoing efforts need not put on ice the steps that Wi-Fi Alliance recommends. To the contrary, in order to bring the benefits of extending the U-NII bands to the American public, the Commission should promote further study of the band while NTIA completes its work, with the goal of synthesizing all relevant inputs as soon as circumstances permit.^{74/}

^{70/} See Comments of Qualcomm Incorporated, ET Docket No. 13-49, at 8-12 (filed May 28, 2013) (“Qualcomm Comments”).

^{71/} Wi-Fi Alliance Comments at 27. Wi-Fi Alliance notes that the Department of Transportation, through NTIA, has three specific requests regarding the consideration of the use of the U-NII-4 band for unlicensed operations. First, the U-NII-4 band should remain co-primary for ITS and be protected from harmful interference. Second, it asks to remain actively involved in discussions regarding the U-NII-4 band. Finally, it notes that it has completed its statutorily mandated study of the use of the band and asks the FCC to wait to adopt final rules until it finishes. All three of these requests are reasonable, although as noted above, further study – with DOT and other stakeholders – should proceed while NTIA and DOT continue their study of the band.

^{72/} In the interim, Wi-Fi Alliance agrees with other commenters that power levels, emission rules and other requirements, including those proposed by Wi-Fi Alliance, are contingent upon finding sharing solutions.

^{73/} See, e.g., AAM and AGA Comments at 7-8; Qualcomm Comments at 7; Savari Comments at 28; SAE Comments at 4; TIA Comments at 7.

^{74/} Wi-Fi Alliance notes that Rep. Dingell has recently asked Acting Chairwoman Clyburn whether the FCC plans to act prior to receiving NTIA's further report about the feasibility of sharing the U-NII-4 band. See Letter from John D. Dingell, Member of Congress, to Mignon Clyburn, Acting Chairwoman, FCC (July 9, 2013). As noted above, waiting for the results of the NTIA's further study is not

In addition to those commenting parties concerned about DSRC, others expressed interest in the impact on the use of the U-NII-4 band on additional services. SES and Intelstat, for example, are opposed to the use of the U-NII-4 band because of its potential impact on C-band satellite operations.^{75/} Like DSRC, Wi-Fi Alliance believes that C-band operations will not be affected by shared use with U-NII operations. Nevertheless, it agrees that further study is appropriate to validate that there will be no impact from shared use of the U-NII-4 band on all potentially affected services, including DSRC, C-band satellite use, amateur operations and federal radar.

VI. RULES FOR THE U-NII-1 BAND

As the Wi-Fi Alliance comments noted, the U-NII-1 band should no longer be limited to low-power, indoor use.^{76/} Others agreed that the power levels for the U-NII-1 band should be increased and it should be used – as are the U-NII-2A and U-NII-3 bands today – for outdoor operations. For instance, Motorola Mobility LLC suggested that the Commission apply the more flexible U-NII-2A rules to the U-NII-1 band, including by applying the U-NII-2A power limits and eliminating the restriction on outdoor operation of U-NII-1 devices.^{77/} In contrast, Motorola Solutions, Inc. asserted that the Commission should harmonize treatment of the U-NII-1 band with the U-NII-3 rules by raising the transmitter power limit for U-NII-1 devices, but also urged the Commission to eliminate the restriction on outdoor operations.^{78/} Fastback Networks added

inconsistent with the FCC proceeding with its own evaluation of the use of the band for unlicensed operations. Both analyses can occur in parallel with the FCC waiting for the further NTIA report to take final action.

^{75/} See generally Comments of SES, S.A. and Intelstat S.A., ET Docket No. 13-49 (filed May 28, 2013).

^{76/} See Wi-Fi Alliance Comments at 24-25.

^{77/} Motorola Mobility Comments at 4-6.

^{78/} MSI Comments at 4-5.

that it “fully supports removing the restriction on outdoor operation.”^{79/} Representatives of the cable industry likewise agreed that the power levels for the U-NII-1 band should be increased and that the restriction on outdoor use should be removed.^{80/}

Despite the overwhelming sentiment for changing the U-NII-1 rules, several parties sought to limit power levels or the use of the band for indoor operations. Fastback presented an overly-complicated proposal to split the types of devices that access the U-NII-1 band into at least two categories, with “transportable” devices operating under existing U-NII-1 rules with lower-power and professionally installed devices operating with the higher-power otherwise permitted under the U-NII-3 rules.^{81/} Wi-Fi Alliance disagrees with this approach. There should be no requirement that devices be professionally installed in order to take advantage of higher-powered operations. That requirement would limit the utility of the U-NII-1 band, which the amendment of the power rules and indoor-limitation are intended to ameliorate.

Globalstar, the incumbent mobile satellite system (“MSS”) whose feeder links operate in the U-NII-1 band, agreed that U-NII devices could operate in the band with the increased power levels of the U-NII-2A band, but argued for continued imposition of outdoor restrictions on the use of the band.^{82/} Wi-Fi Alliance appreciates Globalstar’s recognition that devices should be allowed to operate with higher power. However, Wi-Fi Alliance continues to disagree on limiting U-NII-1 use to indoor only. Globalstar’s interference analysis is based on the change in noise level at the satellite. However, in a digital telephony system, what matters is the voice

^{79/} Fastback Comments at 5.

^{80/} See, e.g., Cablevision Comments at 5-6; Comcast Comments at 24-25; NCTA Comments at 13-17; Time Warner Comments at 9-12.

^{81/} Fastback Comments at 5-6.

^{82/} See Comments of Globalstar, Inc. ET Docket No. 13-49, at 4-6 (filed May 28, 2013) (“Globalstar Comments”). Globalstar stated that “[s]uch outdoor transmissions would threaten substantial harmful interference to Globalstar’s NGSO MSS feeder uplink operations at 5096-5250 MHz.” *Id.* at 4.

quality at the user terminal, not the noise level at the satellite. Accordingly, the relevant path is the downlink – from the satellite to the user terminal – not the earth station uplink. U-NII devices share only the uplink path with Globalstar and there will therefore be no degradation to Globalstar’s forward link voice quality from unlicensed use of the U-NII-1 band. Moreover, the MSS band is underutilized, as evidenced by Globalstar’s own efforts to convert its spectrum to wireless terrestrial use including, ironically, a low-power, Wi-Fi like service.^{83/} The Commission should not, therefore, unnecessarily protect a service with declining utility. Instead, it should structure its rules to promote a service that is growing rapidly and plays a critical role in the lives of most Americans.

In addition, as Wi-Fi Alliance pointed out, the indoor restriction on the U-NII-1 band limits the use of the spectrum for public hotspot and service provider Wi-Fi networks and blocks new consumer applications using Wi-Fi Direct.^{84/} In order to make the complete use of the U-NII-1 band, while not infringing on existing operations, the Commission should eliminate the outdoor restrictions applicable to the U-NII-1 band.

Wi-Fi Alliance recommended that the power limits for the U-NII-1 band conform to those in the U-NII-2A band to create 200 megahertz of contiguous spectrum with similar rules.^{85/} However, as noted above, others recommended that the Commission allow even greater power, conforming the rules to those in the U-NII-3 band.^{86/} Cablevision, for instance, argued that the Commission should adopt a unified 1 watt power level for the U-NII-1 band in order to harmonize it with the U-NII-3 band because a 1 watt power level is needed to support reliable

^{83/} See Petition for Rulemaking of Globalstar, Inc., RM-11685 (filed Nov. 13, 2012).

^{84/} See Wi-Fi Alliance Comments at 25.

^{85/} See Wi-Fi Alliance Comments at iii, 24-25.

^{86/} See, e.g., Cablevision Comments at 5-6; MSI Comments at 4-5; NCTA Comments at 13-17.

outdoor links due to signal blockage.^{87/} NCTA likewise encouraged harmonization of the rules governing the U-NII-1 band with those governing the U-NII-3 band, stating that doing so would enable service providers to offer 160 megahertz wide 802.11ac Wi-Fi channels and would result in improved signal quality, range, coverage and throughput.^{88/} Wi-Fi Alliance recommends that the Commission evaluate both options and permit the highest power use technically feasible. Allowing the flexibility of higher-powered devices will enhance the use of the band for outdoor operations and facilitate greater indoor use where building penetration is problematic.

VII. RULES FOR THE U-NII-2B BAND

Wi-Fi Alliance's comments noted that while designation of the U-NII-2B band for unlicensed use will create 475 megahertz of contiguous spectrum in which U-NII devices can operate, additional work is necessary before the band can be used for, among others, Wi-Fi devices.^{89/} Others agreed that the Commission should work to make the U-NII-2B band available.^{90/}

While Wi-Fi Alliance agreed that further analysis is required, it disagrees with those commenting parties that suggested the U-NII-2B band may never be used for unlicensed operations.^{91/} The U-NII-2C band is successfully shared with government TDWR operations through the use of DFS. Non-government TDWR systems can be similarly protected. Hubbard was therefore wrong when it argued that DFS does not effectively protect TDWR operations

^{87/} Cablevision Comments at 5.

^{88/} NCTA Comments at 13-15.

^{89/} Wi-Fi Alliance Comments at 29-30.

^{90/} *See, e.g.*, CEA Comments at 2-3, 14; Comments of Google and Microsoft, ET Docket No. 13-49, at 5-6 (filed May 28, 2013); Motorola Mobility Comments at 7-9; MSI Comments at 8-10; TIA Comments at 8.

^{91/} *See* Comments of Advanced Designs Corporation, ET Docket 13-49, at 2-4 (filed May 28, 2013) ("ADC Comments"); *see also* Comments of Baron Services, Inc., ET Docket 13-49, at 6-9 (filed May 28, 2013) ("Baron Comments").

today and that it is insufficient to protect its TDWR system.^{92/} There is no reason, as NAB and Baron suggested, to add requirements to protect broadcast TDWR systems – like geo-location/database and enhanced software security requirements – that are not necessary to protect government radar systems.^{93/}

Wi-Fi Alliance’s comments generally agreed that the Commission should impose the U-NII-2A and U-NII-2C band rules to the new U-NII-2B band.^{94/} While Wi-Fi Alliance disagrees with Hubbard, NAB and Baron regarding the additional protection required for TDWR operations, it recognizes that more study of the band is necessary before operations there can begin. Accordingly, the power and emissions rules that the Commission proposes should remain contingent on resolution of the sharing issues between unlicensed and incumbent operations.

VIII. OTHER ISSUES

A. WRC-15

The *NPRM* asked parties to comment on the relationship between the upcoming 2015 World Radio Conference (“WRC-15”) and the possible expanded use of the unlicensed operations in the current and future U-NII bands. Commenting parties took different approaches. For instance, the Alliance of Automobile Manufacturers urged the Commission to withhold action in this proceeding in order to leverage the national and international studies that are being conducted on U-NII and incumbent system characteristics in the 5 GHz band.^{95/} The European

^{92/} See Comments of Hubbard Broadcasting, Inc., ET Docket 13-49, at 4-7 (filed May 28, 2013).

^{93/} See Baron Comments at 15-17; see also NAB Comments at 4-5.

^{94/} Wi-Fi Alliance Comments at 30.

^{95/} AAM and AGA Comments at 31-32.

Space Agency likewise insisted that no national regulations should be approved before compatibility studies are completed and a decision is taken at WRC-15.^{96/}

In contrast, Wi-Fi Alliance agrees instead with Ericsson and TIA. They urged the Commission to adopt rules for the 5 GHz band as soon as possible in order to make the spectrum available for unlicensed use.^{97/} The Commission should plainly take no action that is inconsistent with international agreements or with the direction in which international regulations are obviously going. However, no actions that the FCC proposed fall in those categories. Instead, the Commission should take a leadership role in more fully exploiting the 5 GHz band for unlicensed operations; the U.S. experience can then better inform international spectrum planning.^{98/}

B. Priority Access for Healthcare Facilities

The Association for the Advancement of Medical Instrumentation (“AAMI”) proposed that, in expanding unlicensed use of the 5 GHz band, the Commission should permit healthcare facilities to have prioritized access in the geographical vicinity of healthcare facilities to either the U-NII-2B or U-NII-4 bands.^{99/} Wi-Fi Alliance strongly supports healthcare use of Wi-Fi. However, priority designation of unlicensed spectrum for any class of users – even as critical as healthcare facilities – is inconsistent with FCC policies. Many classes of users that operate

^{96/} Comments of the European Space Agency, ET Docket No. 13-49, at 2 (filed April 19, 2013).

^{97/} See Ericsson Comments at 3; TIA Comments at 7.

^{98/} Wi-Fi Alliance is pleased that the Commission has proposed that the U.S. view at WRC-15 be to support the designation of the U-NII-2B band for wireless access systems and in particular radio local area networks (“RLANs”). See *FCC Seeks Comment on Recommendations Approved by the Advisory Committee for the 2015 World Radiocommunication Conference*, Public Notice, 28 FCC Rcd 2016, Attachment 1 at 12-13 (2013) (seeking comment on draft preliminary views for WRC-15 and stating that the United States supports studies towards a possible primary allocation to the mobile service in the 5350-5470 MHz band for the implementation of wireless access systems).

^{99/} See Comments of Association for the Advancement of Medical Instrumentation, ET Docket No. 13-49, at 9-11 (filed May 24, 2013).

critical facilities – first responders, critical infrastructure industries and others, for example – use Wi-Fi technology. It would be impractical and unduly complex to determine the class of users that are entitled to priority access and to implement that system. Instead, users, including healthcare facilities, should manage the wireless ecosystem within their own facilities consistent with sound engineering practices. Wi-Fi Alliance recently released a white paper on this topic, discussing a variety of design and network deployment issues that healthcare providers can consider when operating a Wi-Fi network in their facility.^{100/}

IX. CONCLUSION

In order to address the growing demand that has resulted from increased adoption and deployment of Wi-Fi technologies, the Commission properly proposed to facilitate greater use of the 5 GHz U-NII bands for unlicensed operations, and the commenters in this proceeding overwhelmingly agreed. Although there continue to be complex issues presented in this proceeding that require further testing and discussion – particularly with regard to the rules governing the U-NII-4 and U-NII-2B bands – Wi-Fi Alliance and others agreed that the Commission should act swiftly to adopt rules for which there is general consensus in the record. In so doing, the Commission will provide industry with regulatory certainty and give consumers and businesses access to the substantial benefits that Wi-Fi affords.

^{100/} *Wi-Fi in Healthcare: Security Solutions for Hospital Wi-Fi Networks*, WI-FI ALLIANCE (May 2013), available at http://www.wi-fi.org/sites/default/files/downloads-registered/wp_201202_Wi-Fi_Security_for_Hospital_Networks-Final.pdf.

Respectfully submitted,

WI-FI ALLIANCE

A handwritten signature in black ink, appearing to read 'Edgar Figueroa', with a long horizontal flourish extending to the right.

Edgar Figueroa
President and CEO
10900-B Stonelake Blvd., Suite 126
Austin, TX 78759
512-498-9434
efigueroa@wi-fi.org

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