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November 26, 2019

**VIA ELECTRONIC FILING**

Radio Spectrum Policy Group – Secretariat  
DG CONNECT B4: Spectrum – Office: BU33 7/065  
European Commission,  
B-1049 Brussels, Belgium

**Re: PUBLIC CONSULTATION ON THE DRAFT RSPG WORK PROGRAMME FOR 2020 AND BEYOND**

Dear Sir or Madam,

Wi-Fi Alliance®<sup>1/</sup> commends the Radio Spectrum Policy Group (the “RSPG”) on its ongoing work in the area of spectrum management. The RSPG Work Programme for 2020 and beyond<sup>2/</sup> will be a critical element in defining the future Radio Spectrum Policy of the European Union and making the European Gigabit Society a reality. Wi-Fi Alliance agrees that additional spectrum will have to be made available to provide the capacity for future wireless broadband networks, and specifically Radio Local Area Networks (“RLANs”), and that steps should be taken to use currently underutilized spectrum more efficiently. In this regard, Wi-Fi Alliance urges the RSPG to consider in its new Work Programme the enormous socio-economic benefits of license-exempt spectrum and specifically support the allocation of license-exempt spectrum in the 5925-7125 MHz frequency range that is urgently needed to maintain Wi-Fi performance in light of significant demand.<sup>3/</sup>

**Introduction and Background**

Wi-Fi Alliance is a global, non-profit industry association of over 800 leading companies from dozens of countries devoted to seamless interoperability. With technology development, market

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<sup>1/</sup> Wi-Fi®, the Wi-Fi logo, the Wi-Fi CERTIFIED logo, Wi-Fi Protected Access® (WPA), WiGig®, the Wi-Fi Protected Setup logo, Wi-Fi Direct®, Wi-Fi Alliance®, WMM®, Miracast®, and Wi-Fi CERTIFIED Passpoint®, and Passpoint® are registered trademarks of Wi-Fi Alliance. Wi-Fi CERTIFIED™, Wi-Fi Protected Setup™, Wi-Fi Multimedia™, WPA2™, Wi-Fi CERTIFIED Miracast™, Wi-Fi ZONE™, the Wi-Fi ZONE logo, Wi-Fi Aware™, Wi-Fi CERTIFIED HaLow™, Wi-Fi HaLow™, Wi-Fi CERTIFIED WiGig™, Wi-Fi CERTIFIED Vantage™, Wi-Fi Vantage™, Wi-Fi CERTIFIED TimeSync™, Wi-Fi TimeSync™, Wi-Fi CERTIFIED Location™, Wi-Fi CERTIFIED Home Design™, Wi-Fi CERTIFIED Agile Multiband™, Wi-Fi CERTIFIED Optimized Connectivity™, and the Wi-Fi Alliance logo are trademarks of Wi-Fi Alliance.

<sup>2/</sup> RADIO SPECTRUM POLICY GROUP, Work Programme for 2020 and beyond (for public consultation), *RSPG19-029 FINAL DRAFT, Brussels, 09 October 2019*

<sup>3/</sup> See US FCC proceeding ET [18-295](https://docs.fcc.gov/public/attachments/DOC-354364A1.pdf) “Unlicensed Use of the 6 GHz Band” at <https://docs.fcc.gov/public/attachments/DOC-354364A1.pdf>

building, and regulatory programs, Wi-Fi Alliance has enabled widespread adoption of Wi-Fi® worldwide, certifying thousands of Wi-Fi products each year.

RLANs using Wi-Fi standards have become increasingly important in connecting people and devices. Hundreds of millions of people rely on Wi-Fi to connect their billions of devices every day, and studies show this is increasing rapidly.<sup>4/</sup> Devices using spectrum that supports Wi-Fi are now the primary means by which Europe connects to the Internet.<sup>5/</sup> This central role will only increase in the future, since Wi-Fi technology will be a core component of Fifth Generation wireless (“5G”) networks, as highlighted by the recently released Cisco VNI Mobile Report showing that traffic offloaded to Wi-Fi increases with each successive technology generation.<sup>6/</sup> All of this traffic has been offloaded from Wi-Fi-enabled and other RLAN devices over limited spectrum, but additional work is necessary to make more spectrum available for these operations as they have been growing in number and carrying more and more traffic. Wi-Fi Alliance’s previously released *Spectrum Needs Study*<sup>7/</sup> demonstrated that additional capacity is required to meet immediate connectivity needs.

The connections provided by Wi-Fi technology through low-cost, license-exempt devices are worth billions of Euros to Europe’s economy. Indeed, a recent study by Telecom Advisory Services found that license-exempt networks like Wi-Fi generate €1.7 trillion a year to the world’s economy, a number expected to grow to €2.9 trillion by 2023.<sup>8/</sup>

### **Spectrum Shortfall Threatens Wi-Fi Performance and Viability**

Wi-Fi Alliance therefore submits its comments in response to the Public Consultation on the RSPG *Work Programme for 2020 and beyond* to urge the RSPG to take advantage of this opportunity to further expand the use of shared spectrum in the European Union and to designate more spectrum available for license-exempt RLANs including those using Wi-Fi protocols.

Wi-Fi is one of the greatest success stories of the technology era, and its societal benefits have long been known. There are more than thirteen billion Wi-Fi devices in use<sup>9</sup>. Individuals, families, enterprises, governments, and global organizations depend on Wi-Fi every day. Not only has Wi-Fi become a key complementary technology for enterprise and carrier networks, it is already established

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<sup>4/</sup> See *Wi-Fi Device Shipments to Surpass 15 Billion by End of 2016*, WI-FI ALLIANCE NEWSROOM (Jan. 5, 2016), <http://www.wi-fi.org/news-events/newsroom/wi-fi-device-shipments-to-surpass-15-billion-by-end-of-2016>.

<sup>5/</sup> CISCO, *VNI Complete Forecast Highlights Tool*, Asia Pacific, Australia, Wired Wi-Fi and Mobile Growth (2016), [http://www.cisco.com/c/m/en\\_us/solutions/service-provider/vni-forecast-highlights.html](http://www.cisco.com/c/m/en_us/solutions/service-provider/vni-forecast-highlights.html) (select “Australia” from the “Asia Pacific” drop-down menu and expand “Fixed/Wi-Fi.” (“CISCO VNI”))

<sup>6/</sup> Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2017–2022, White Paper at page 18, available at <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-738429.pdf>

<sup>7/</sup> Wi-Fi Alliance, *Spectrum Needs Study* at p. 23, Feb. 2017, available at <https://www.wi-fi.org/downloads-registered-guest/Wi-Fi%2BSpectrum%2BNeeds%2BStudy0.pdf/33364>

<sup>8/</sup> *Economic Value of Wi-Fi* available at <http://valueofwifi.com>. US\$ values in the original study were converted to € values.

<sup>9</sup> ABI Research, 2018

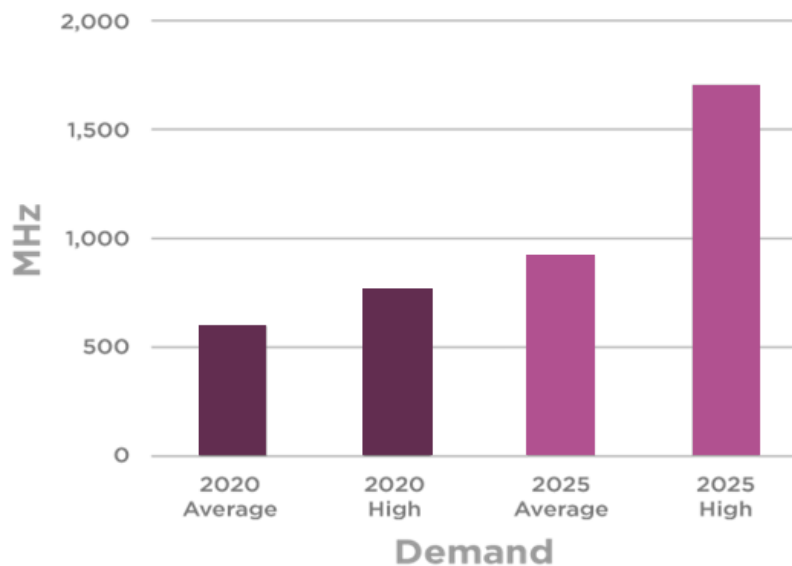
as an essential part of the connected home, indicating the value and indeed reliance enterprises and individuals place on Wi-Fi which will only increase as next generation products, applications, and deployments become available. All of this economic benefit depends upon having timely access to appropriate spectrum suitable for delivery of these innovative applications and services.

User demand for data continues to grow at an exponential rate with IP traffic projected to increase nearly threefold in the next five years, with the majority of that traffic delivered over Wi-Fi. Currently, over 60%<sup>10</sup> of mobile traffic is offloaded in hot-spot, workplace and domestic locations to Wi-Fi with that number projected to increase over the next years. Even if 100% of all mobile traffic went over licensed “5G” networks, there is still the need to connect devices to those networks and Wi-Fi is the most popular RLAN technology to do so since there is an extremely high attach rate for peripheral devices.

According to projections, the increasing number of Wi-Fi devices combined with growing demand for Wi-Fi connectivity will exceed the existing available Wi-Fi spectrum capacity in the near future. The [Wi-Fi Spectrum Needs Study](#) indicates that by 2020, Wi-Fi networks around the world will need access to significantly more spectrum than is currently available in the 5 GHz range to satisfy expected growth in Wi-Fi data traffic. It is predicted that there will be spectrum shortfall, where the shortfall is amount of new spectrum which will need to be found and made accessible for Wi-Fi use, as detailed in the diagram below.

### Wi-Fi Alliance Spectrum Needs Study

(February, 2017)



More spectrum is particularly necessary to support technologies that operate on larger channels. IEEE has standardized 160 MHz channels for Wi-Fi 5 (IEEE 802.11ac) and Wi-Fi 6 (IEEE 802.11ax). To continue to realize the socioeconomic benefits provided by Wi-Fi, adequate spectrum is required. Current unlicensed-exempt spectrum allocations are insufficient, and as the Wi-Fi Spectrum Needs

<sup>10</sup> [CISCO Visual Networking Index \(VNI\)](#) and [Mobile Data Traffic Offloaded](#)

Study indicates the demand for Wi-Fi will outpace available spectrum in the few years. If action is not taken, users in Europe are likely to experience a significant spectrum shortfall by 2020.

### **RLAN Access to 6 GHz spectrum**

Wi-Fi Alliance applauds the European Commission Mandate, adopted consistent with the RSPG recommendation, directing the CEPT to study feasibility and identify harmonized technical conditions for a sustainable and efficient use on a coexistence basis of the 5925-6425MHz band for wireless access systems including radio local area networks (WAS/RLANs). Wi-Fi Alliance and its members are actively contributing to the work that is being carried out in response to this Mandate. Correspondingly, within ETSI, industry has progressed publication of ETSI System Reference Document TR 103 524 (5925-6725 MHz) and Technical Report TR 103 631 (6725-7125 MHz) which both together span the entire 5925-7125 MHz range (6 GHz band).

This frequency range is uniquely suited to support the continued success and future growth of Wi-Fi. The radiofrequency propagation characteristics of the 6 GHz band are similar to that of the adjacent 5 GHz band, which, despite limitations, supports current Wi-Fi deployments. And the proximity of the 6 GHz to the 5 GHz band means that existing devices can be readily redesigned. Most importantly, the 6 GHz range offers contiguous spectrum blocks to accommodate 160 MHz channels, which are required for high-bandwidth applications, such as high-definition video streaming and virtual reality. The next generation of Wi-Fi (based on IEEE 802.11ax), also known as “Wi-Fi 6,”<sup>11/</sup> is designed to support these high-data throughput applications.<sup>12/</sup> In short, the future of Wi-Fi technology and its ability to continue to deliver a desirable user experience, connectivity, economic value and many other benefits depends on access to the 6 GHz.

Also, designating the *full* 6 GHz band for license-exempt (e.g. WAS/RLANs) devices can meet the goals of maximizing wireless broadband connectivity while simultaneously ensuring that licensed incumbent services operating in the 6 GHz band continue to thrive. In the ongoing CEPT effort, incumbent licensees detailed how the 6 GHz band is critical for their operations and must be protected, meaning that the 6 GHz band cannot be cleared for licensed wireless broadband such as IMT. While license-exempt devices, including Wi-Fi, can successfully operate alongside these incumbent licensees, there can be no coexistence between new licensed use of the 6 GHz band and incumbent services; relocation of existing services would be required.

In light of the above, Wi-Fi Alliance urges the RSPG to consider harmonizing license-exempt spectrum with other countries (e.g., United States<sup>13/</sup>) towards making the entire 5925-7125 MHz band accessible by WAS/RLANs.

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<sup>11/</sup> See Discover Wi-Fi, *Wi-Fi 6*, available at <https://www.wi-fi.org/discover-wi-fi/wi-fi-6>.

<sup>12/</sup> *Spectrum Needs Study* at 18. See also National Instruments, *Introduction to 802.11ax High-Efficiency Wireless*, White Paper, Jul. 24, 2017, available at <http://www.ni.com/white-paper/53150/en/>.

<sup>13/</sup> See <https://www.fcc.gov/document/fcc-proposes-more-spectrum-unlicensed-use-0>.

## **Conclusion**

The future of the Internet is more: more traffic, more devices, more uses. RLANs that use Wi-Fi protocols will be at the center of this growth. It is therefore crucial that the RSPG ensures that European citizens and enterprises can make the most of that future by dedicating additional spectrum for these operations. In pursuit of that goal, Wi-Fi Alliance agrees that the RSPG should strive to allocate more spectrum to wireless broadband networks and to promote efficient spectrum sharing, to make the most of scarce spectrum resources. RSPG should also encourage the future growth of RLANs including Wi-Fi by initiating alignment with international efforts to expand allocations for licensed-exempt operations in the 6 GHz band.

Respectfully submitted,

**WI-FI ALLIANCE**