
IEEE 802
Local and Metropolitan Area Network Standards Committee

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TO: Mr. Roberto Viola, Chair, EU RSPG **CC:** Michael J. Lynch

SUBJECT: IEEE 802 Responses to the Draft RSPG Opinion on
Strategic Challenges facing Europe in addressing the
Growing Spectrum Demand for Wireless Broadband - RSPG13-511 Rev 1

DATE: 29 April 2013

Dear Mr. Viola

As Chairman of IEEE 802 LAN/MAN Standards Committee it is my pleasure to submit to you IEEE 802 Document 18-13-0047-07, the responses of IEEE 802, The LAN/MAN Standards Committee, that we hope will be of use in the development of this RSPG Opinion.

The IEEE 802 LAN/MAN Standards Committee develops and maintains networking standards and recommended practices for local, metropolitan, and other area networks, using an open and accredited process, and advocates them on a global basis. The most widely used standards are for Ethernet, Bridging and Virtual Bridged LANs Wireless LAN, Wireless PAN, Wireless MAN, Wireless Coexistence, Media Independent Handover Services, and Wireless RAN. An individual Working Group provides the focus for each area.

It is our hope that the responses contained herein will be useful as you complete the development of your Opinion.

Regards,

/s/ Paul Nikolich

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IEEE 802 Responses to the Draft RSPG Opinion on Strategic Challenges facing Europe in addressing the Growing Spectrum Demand for Wireless Broadband

I. Introduction

This contribution was developed by IEEE Project 802@, the Local and Metropolitan Area Network Standards Committee (“IEEE 802”), an international standards development committee organized under the IEEE and the IEEE Standards Association (“IEEE-SA”). IEEE 802 is pleased to provide comments on the Radio Spectrum Policy Group’s draft opinion, “Strategic Challenges facing Europe in addressing the Growing Spectrum Demand for Wireless Broadband.”¹

The IEEE 802.11 Working Group, which participated in drafting this contribution, is the group within IEEE 802 that develops standards for Radio Local Area Networks (RLAN). RLANs serve an important role in delivering wireless broadband in residential, enterprise, and public locations throughout Europe and the world. RLANs today are being used by all types of service providers to deliver wireless broadband services to users. This contribution focuses primarily on additional spectrum for license-exempt Wireless Broadband in the 5 GHz frequency range, but makes an additional recommendation for frequencies below 1 GHz.

II. Background

On February 20, 2013, the Radio Spectrum Policy Group (RSPG) approved for public consultation a draft opinion identifying candidate spectrum bands for wireless broadband. The consultation is in response to a request from the European Commission. In its request to RSPG, the European Commission noted that the European Council and Parliament have already set an objective of a minimum of 1200 MHz of new spectrum to be made available for wireless broadband to address burgeoning demand.² The European Commission asked RSPG to evaluate bands that might be made available in the 2012-2015 time frame, for which the 1200 MHz target has been established, as well as the longer 2015-2020 period coinciding with Digital Agenda targets for Europe. The RSPG evaluated spectrum from 400 MHz to 6 GHz.

The draft RSPG opinion notes that the European Commission specifically asked for the RSPG’s views on shared spectrum, and in particular, extending the allocation of unlicensed spectrum for wireless access systems.³ With respect to unlicensed wireless broadband, the RSPG refers to a recent European Commission communication mentioning Wi-Fi, which we

¹ Radio Spectrum Policy Group, “Draft RSPG Opinion on Strategic Challenges facing Europe in addressing the Growing Spectrum Demand for Wireless Broadband”, RSPG13-511 Rev. 1, dated February 20, 2013.

² RSPG Draft Opinion - page 3.

³ RSPG Draft Opinion, page 4.

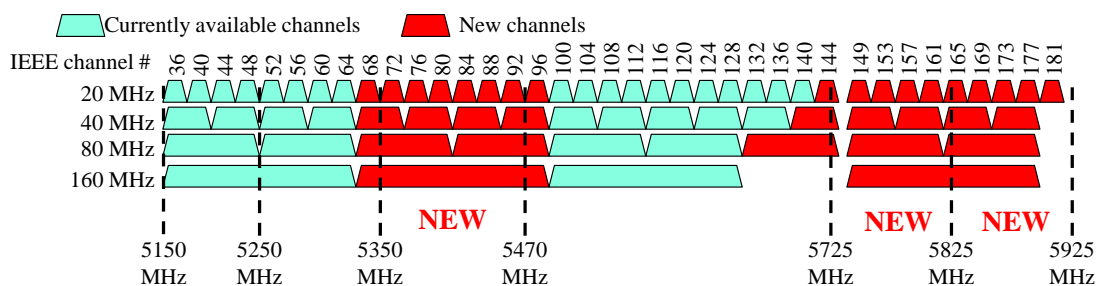
understand as a reference to IEEE 802.11-based equipment:

the Commission notes that “more than half of all smartphone traffic appears to be routed over Wi-Fi networks, and this nomadic traffic is growing 4-6 times faster than mobile traffic. Global sales of Wi-Fi-enabled equipment should have reached 3.5 billion units by 2014. Mobile network operators are also relying on the same licence-exempt RLAN frequencies for data off-loading to increase network capacity, improve coverage in buildings and save costs”, which can be considered as an advantage. According to Analysys-Mason 2012, the proportion of data traffic attributable to Wi-Fi on handsets will rise from 55% to 61%, and on connected mid-screen devices will remain constant at around 82%.⁴

The RSPG draft opinion then recommends that the European Commission construct a strategic plan for spectrum to be utilized for wireless broadband based on the RSPG candidate bands contained in Annex 1 to its draft opinion.⁵ Annex 1 includes several candidate bands adjacent to current license-exempt RLAN bands: 5350-5470 MHz, 5725-5875 MHz and 5875-5925 MHz. The RSPG identifies these bands as potentially available for wireless broadband use in the “medium term”, defined by RSPG as beyond 2015.

III. Views of IEEE 802

IEEE 802 endorses the RSPG’s draft opinion with respect to the 5 GHz candidate bands identified in Annex 1 with potential for Wireless Broadband, and it urges the RSPG to include these bands in its final recommendations to the European Commission. In IEEE 802’s view, the candidate bands should be considered as potential bands for license-exempt RLAN use. As RSPGs’ draft opinion makes clear, license-exempt RLANs have an increasingly important role in the delivery of wireless broadband to users. While these are low power technologies that enable a high degree of spectral re-use, existing spectral allocations for license-exempt RLAN use do not begin to meet the requirements that IEEE 802.11 believes are being placed on this technology. For example, the latest iteration of IEEE 802.11 technology, known as IEEE 802.11ac, uses channels that are 80 MHz or 160 MHz wide, enabling the delivery of multi-gigabit per second throughput.⁵ Among other things, this advanced technology enables the delivery of multiple video data streams. While IEEE 802.11ac technology will take advantage of existing 5 GHz allocations, a contiguous block of available spectrum would greatly improve channelization and efficiency of these state-of-the-art radio systems.



⁴ RSPG Draft Opinion, page 9 (emphasis in the original).

⁵ IEEE 802.11ac includes many advances in technology, including 256 QAM modulation, up to 8 spatial streams, beamforming, Multi-User MIMO, improved RTS/CTS mechanisms and better CCA energy detection in secondary channels..

As the above diagram shows, a contiguous block of spectrum from 5150-5925 MHz would enable nine 80-MHz channels and four 160-MHz channels. IEEE 802 believes the availability of contiguous blocks of spectrum would help address an increasing user demand for higher bandwidth services and applications ensuring license-exempt RLAN devices deliver throughput speeds needed to advance and support the goals for Europe's Digital Agenda with respect to coexistence of multiple license-exempt RLAN systems.

IEEE 802 is mindful that existing users in the candidate bands must be protected from harmful interference. IEEE 802 believes the benefits to society of enabling a robust environment for next generation license-exempt RLANs requires regulators to launch an evaluation of these bands for use by RLANs including an investigation of appropriate coexistence techniques.

IEEE 802 notes that the draft RSPG opinion discusses the importance of harmonization with respect to reaching economies of scale for wireless broadband spectrum. IEEE 802 also notes that the United States Federal Communications Commission has opened a proceeding that, among other things, evaluates whether a contiguous block of shared spectrum from 5150 MHz to 5925 MHz can be made available for RLAN use.

IEEE 802 recommends sharing studies in the band 3800-4200 MHz consider broadband wireless access including RLANs.

In addition, in light of the spectrum regulatory changes in other regions for frequency bands below 1 GHz, specifically in Singapore and Japan, IEEE 802 recommends that the RSPG consider adding license-exempt devices (both short range devices and RLANs) to the allocation in the 921-925 MHz band presently reserved for defense systems and GSM-R.

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