

Response to the European Commission Consultation on the Lamy Report Addressing Future Use of the UHF TV Broadcasting Band

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The Dynamic Spectrum Alliance (“DSA”), a global, cross-industry alliance of more than forty members,¹ appreciates the opportunity to comment on Pascal Lamy’s report summarizing the results of the work of the High Level Group on the Future Use of the UHF Band (Lamy Report).² The DSA aims to facilitate ubiquitous and affordable broadband access through more efficient sharing of spectrum. The UHF band can play a key role fulfilling this vision.

The Lamy Report demonstrates that as demand for a variety of wireless services grows, many users, including PMSE, emergency services and others, seek access to sub-1 GHz spectrum capacity for their applications.³ Spectrum below 1 GHz has strong propagation characteristics that allow signals to travel through walls and obstructions such as foliage or terrain variation, making it valuable for transmitting signals indoors and over longer distances.

At the same time, the distribution technologies for broadcasting and mobile communications have been advancing rapidly, especially over the last decade. The move towards greater use of mobile devices and hybrid distribution networks has created new and innovative opportunities to enjoy video content.

To accommodate a variety of uses, the Lamy Report proposes to repurpose the 700 MHz for mobile broadband while retaining broadcast allocations below 694 MHz across Europe.⁴ Whether or not the European Commission and its Member States accept the Lamy Report’s proposal to allocate these respective frequencies to mobile broadband and broadcast for exclusive use licensing, the Dynamic Spectrum Alliance urges the European Commission and its

¹ The Dynamic Spectrum Alliance membership spans multinational companies, small- and medium-sized enterprises, academia, research, and other organizations from around the world, all working to create innovative solutions that will increase the utilization of available spectrum to the benefit of consumers and businesses alike. A full list of members is available at www.dynamicspectrumalliance.org/members.html.

² Pascal Lamy, *Report to the European Commission: Results of the Work of the High Level Group on the Future Use of the UHF Band (470-790 MHz)* (2014) (Lamy Report), available at http://ec.europa.eu/information_society/newsroom/image/pascallamysreportonthefutureuseoftheuhfband_8423.pdf.

³ *Id.* at 2.

⁴ *Id.* at 7.

Member States to explore opportunities for dynamic access to unassigned or otherwise unused frequencies. In order to meet growing spectrum demands, more intensive, intelligent and adaptable sharing of spectrum must be the way forward. The TV bands are a great place to start. In particular, enabling shared, dynamic, licensed-exempt access to the vacant TV channels (white spaces) is a vital first step towards promoting flexible, intensive use of spectrum.

Regardless of whether the specific recommendations in the Lamy Report are adopted, Europe should move forward in adopting sharing technologies for the UHF band. If broadcasting technologies continue to operate in the band 470-694 MHz until at least 2030, as recommended in the Lamy Report, it is especially appropriate that Europe's spectrum regulators enable license-exempt spectrum sharing in these frequencies, provided licensed operations are protected from harmful interference.

Improving Access to License-Exempt Spectrum in Today's UHF Bands Will Enable Improved Broadband Coverage, Spur Innovation, and Create Economic Value

The European Commission should prioritize extending broadband coverage.

As the Lamy report recognizes, making broadband access ubiquitous is and should be an important goal for European policymakers.⁵ According to Analysys Mason's survey of 130 studies, a 10-percentage-point increase in broadband connections penetration yields between 0.26% and 0.92% increase in GDP.⁶ Each additional 1,000 broadband connections leads to the creation of up to 33 new jobs.⁷

Because of the favorable propagation characteristics of spectrum below 1 GHz, more of this spectrum should be available to deliver ubiquitous and affordable broadband access. Specifically, relying on lower-frequency signals that can transmit through obstructions and travel longer distances allows broadband providers to offer coverage in hard-to-serve areas.⁸ In addition to assigning exclusive use licenses for certain frequencies, such as the 800 MHz and 2.6 GHz bands, we believe this goal can be achieved through license-exempt technology.

⁵ See *id.* at 2-3.

⁶ Analysys Mason, GSMA, and Huawei, *Today, Tomorrow and the Future – Managing Mobile Data Demand in Asia Pacific 4* (2014), available at http://www.gsma.com/spectrum/wp-content/uploads/2014/11/GSMA_Huawei_Analysys-Mason-MBB-Forum-report-FINAL1.pdf.

⁷ *Id.*

⁸ See Lamy Report at 2-3 (recognizing the importance of low-frequency spectrum for bringing broadband services into rural areas, as well as for optimal in-building service in densely built urban areas).

License-exempt networks will help meet growing capacity needs.

We agree that available spectrum capacity for use in wireless networks needs to increase, in line with forecasts of rapidly growing data consumption through mobile devices. Reliance on license-exempt networks is strong and growing. A recent report from the European Broadcasting Union (EBU) estimates that “71% of all wireless data to mobile devices in the [EU] was delivered using Wi-Fi”.⁹ As traffic volumes continue to grow overall, there is no reason to think that the proportion of traffic traveling over Wi-Fi will decrease. Instead, as fixed broadband access improves and new Wi-Fi technologies -- including IEEE 802.11ac and 802.11af -- are adopted more widely, it is likely to increase. Thus, improving and increasing access to license-exempt spectrum is as important as adding new capacity for networks using licensed spectrum access.

License exemption also supports innovation and delivers broader economic value.

Globally, the sale and use of license-exempt devices create hundreds of billions of dollars of economic value each year¹⁰. Moreover, license-exempt access can accelerate technology development, because innovators can introduce products and services without seeking permission from regulators or spectrum licensees.

Indeed, thousands of new license-exempt devices are produced and certified each year. Wi-Fi devices are the best known, but Bluetooth,¹¹ Zigbee,¹² and RFID¹³ devices have all also experienced rapid growth in the last several years. Machine-to-machine technologies, which often rely on unlicensed spectrum, represent a large and growing market as well.

⁹ See European Broadcasting Union, *Spectrum Factsheet* (2014), available at <http://www3.ebu.ch/files/live/sites/ebu/files/Knowledge/Publication%20Library/Fact%20sheets/ebuspectrum-fact-sheet.pdf>.

¹⁰ See Raul Katz, *Assessment of the Economic Value of Unlicensed Spectrum in the United States* (2014), available at <http://www.wififorward.org/wp-content/uploads/2014/01/Value-of-Unlicensed-Spectrum-to-the-US-Economy-Full-Report.pdf>. In the United States alone, the estimated contribution from license-exempt spectrum use is over \$200 billion per year.

¹¹ Bluetooth is a standard facilitating hands-free operation of music players, mobile phones, and other devices.

¹² Zigbee powers technologies that benefit from ad hoc and mesh networking solutions, such as home automation.

¹³ Radio Frequency Identification (RFID) technologies are used in a variety of industries to track inventory or other objects.

Access to license-exempt spectrum also allows licensed wireless and wireline broadband providers to increase the reach of their networks and improve network management in congested areas through techniques such as cellular offloading.¹⁴

- “Globally, 46 percent of total mobile data traffic was offloaded onto the fixed network through Wi-Fi¹⁵ or femtocell in 2014. . . . Without offload, mobile data traffic would have grown 84 percent rather than 69 percent in 2014.”¹⁶
- For smartphones and tablets in particular, Cisco has found that daily data consumption over Wi-Fi is four times that of cellular.¹⁷

This ability to offload data from cellular networks to Wi-Fi has saved mobile network operators billions of dollars in network deployment costs.⁷ Studies of Wi-Fi use make it clear that greater availability of license-exempt spectrum increases both demand for and the utility of licensed spectrum.

And Wi-Fi availability has enabled consumers to use their phones and tablets more intensively to access online content and services. Use and development of these online services in turn drives demand for licensed and license-exempt network access, creating a virtuous cycle of investment in content, services, and applications.

The European Commission Should Support Efforts to Enable Dynamic, License-Exempt Access to the UHF Bands Now

The European Commission should support efforts to enable license-exempt access to the television band today, and such an approach is not contingent on adopting a position on the Lamy Report’s proposals. The technology is mature; a number of countries have adopted license-exempt regulatory frameworks for access to the band; and there is no need to wait for the 700 MHz band to be cleared to adopt rules.

¹⁴ Lamy Report at 4.

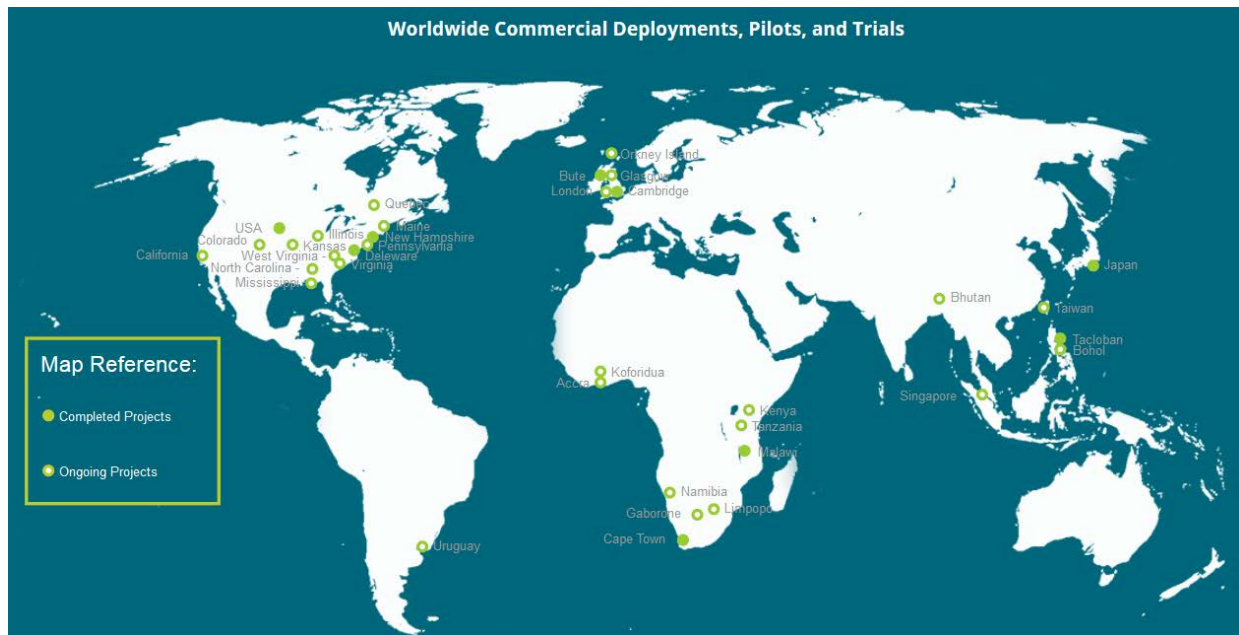
¹⁵ Trademark of the Wi-Fi Alliance.

¹⁶ Cisco, *Executive Summary, Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update 2014-2019 White Paper* (2014), http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html.

¹⁷ Cisco, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2014–2019 23* (2015), available at http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.pdf.

Dynamic spectrum access technologies works, and technologies for the UHF band are ready for deployment.

Commercial-grade devices are available for use in the vacant channels of the UHF band. The illustration below demonstrates that television white space technology is already being widely deployed in projects occurring on five continents.



These deployments have taken place in locations as diverse as the United States, Namibia, the United Kingdom, South Africa, Singapore, Botswana, Japan, South Korea, Ghana, the Philippines, Kenya, Tanzania, Uruguay, and Malawi. Each of these projects has occurred with the support and authorizations from the relevant regulatory authorities. In all cases, access to the Internet was expanded and/or improved. These deployments have provided Internet access to primary and secondary schools, university campuses, libraries, community centers, healthcare facilities, government offices, and small and medium sized businesses. Locations around Europe are hosting many of these efforts. Indeed, UK’s Ofcom has for the last several years hosted successive technical trials and commercial pilots. Across these efforts, no instances of interference to authorized incumbent users have been recorded.

While current TV white space technologies are based on proprietary technologies, the first generation of standards-based devices are in development. The standards themselves – the ETSI Harmonized European Standard, the IEEE 802.11af standard, and the IETF PAWS protocol – have already been adopted.¹⁸ For example, Mediatek demonstrated its first tri-band 5 GHz, 2.4

¹⁸ See European Telecommunications Standards Institute, ETSI Standard 301 598 v. 1.1.1 (2014), available at

GHz, and TV white spaces prototype based on the 802.11af Wi-Fi standard in a recent trial in Glasgow, Scotland. More information on trials, pilot projects, and commercial deployments is available on the Dynamic Spectrum Alliance's website.¹⁹

Each regulator that has allowed access to the TV white spaces has done so on a license-exempt basis.

Regulatory consensus supports enabling access to vacant broadcast channels on a license-exempt basis. In 2010, the United States Federal Communications Commission implemented regulations allowing fixed and portable devices access to the UHF and VHF TV white spaces on a license-exempt basis.²⁰ Regulators in the United Kingdom, Singapore, and Canada likewise have decided to allow license-exempt access to TV white spaces and are in the process of implementing their regulations.²¹ Regulators in many other nations have permitted pilot projects on an interim basis, and are now considering regulations allowing license-exempt access to the TV white spaces. As noted by the head of the ITU's Radiocommunication Bureau, the development of dynamic spectrum access, such as in the TV white spaces, is "essentially in the

http://www.etsi.org/deliver/etsi_en/301500_301599/301598/01.01.01_60/en_301598v010101p.pdf; Press Release, IEEE, Amendment in IEEE 802.11af Enables Geolocation Database Access to RF Spectrum White Spaces (Feb. 25, 2014), *available at* http://standards.ieee.org/news/2014/ieee802.11af_amendment.html; <https://datatracker.ietf.org/doc/draft-ietf-paws-protocol/>.

¹⁹ See <http://www.dynamicspectrumalliance.org/pilots.html>.

²⁰ The first rules appeared in 2008, but they were substantially revised in 2010. See *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186; *Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket No. 02-380, Second Memorandum Opinion and Order, 25 FCC Rcd 18661 (2010).

²¹ See Industry Canada, *Framework for the Use of Certain Non-Broadcasting Applications in the Television Broadcasting Bands Below 698 MHz* (2012), *available at* <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10493.html>; Press Release, Industry Canada, *Enhancing Wi-Fi Services in Rural Communities*, Feb. 15, 2015, *available at* <http://news.gc.ca/web/article-en.do?nid=928659>; Infocomm Development Authority of Singapore, *Regulatory Framework For TV White Space Operations In The VHF/UHF Bands* (2014), *available at* http://www.ida.gov.sg/~media/Files/PCDG/Consultations/20130617_whitespace/ExplanatoryMemo.pdf; Ofcom, *Implementing TV White Spaces* (2015), *available at* <http://stakeholders.ofcom.org.uk/binaries/consultations/white-space-coexistence/statement/tvws-statement.pdf>.

hands of national regulators in each country.”²² To inform these discussions, the DSA has developed Model Regulations that can be the basis for regulations adopted by regulators globally.¹²

Even if a part of today’s broadcast band is to be repurposed, Dynamic Spectrum Access can enable broadband access before, during, and after the clearing and repurposing process.

Allowing dynamic, license-exempt access to vacant channels in the UHF band will enable valuable broadband coverage and capacity benefits to be gained regardless of whether a part of that band is repurposed for exclusive use by mobile broadband operators. Even if policymakers eventually decide to clear broadcast services from a portion of today’s UHF bands, or broadcasters themselves choose to vacate, moreover, dynamic access to spectrum provides a smooth and seamless way to exploit any unused spectrum fragments that result. This can be achieved without the costs and delay associated with fully clearing and auctioning spectrum. Given that the Radio Spectrum Policy Group estimates that it may take as long as three years to simply coordinate clearing of the 700 MHz band,²³ European policymakers should act now to enable sharing and improve broadband access in the meantime.

The European Commission Should Reject the Lamy Report’s Recommendation That Access to the 470-694 MHz Band Should Be Limited Downlink-Only Operation.

The Lamy Report recommends that countries consider, on a national basis, permitting access to vacant spectrum in the 470-694 MHz band for unidirectional services.²⁴ There is absolutely no reason to adopt such a limited approach. As noted above, numerous deployments demonstrate that it is possible to deliver high quality, bi-directional broadband access across vacant television channels without causing interference to incumbent operations. Establishing a downlink-only requirement for this spectrum would limit its potential to expand access to broadband and support innovative applications. Such a proposal would serve as a barrier to entry for companies and other organizations looking to deploy two-way broadband and other services, but which do not already possess spectrum licenses.

Conclusion

The Dynamic Spectrum Alliance welcomes the opportunity to comment on the Lamy Report. Consumers in European will be best served by spectrum policies that encourage efficient use of

²² François Rancy, Director, ITU Radiocommunication Bureau, Remarks at the ITU Radiocommunication Seminar for Arab Countries (Dec. 13, 2013).

²³ Lamy Report at 13.

²⁴ *Id.* at 9.

limited spectrum resources, including in the 470-790 MHz UHF frequencies. Consistent with steps being taken by some of the world's leading spectrum regulators, the Dynamic Spectrum Alliance, therefore, urges the European Commission to support license-exempt access to unassigned or otherwise unused UHF frequencies, as it considers proposals to license portions of the UHF bands in the future.

Respectfully submitted,



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