

March 26, 2021

Radio Spectrum Policy Group

European Commission

Directorate General for Communication Networks, Content and Technology (CONNECT)

Electronic Communications Networks and Services Directorate

Spectrum Unit B4

B-1049 Brussels

Re: Response to RSPG Draft Opinion on Spectrum Sharing – Pioneer initiatives and bands

Federated Wireless Inc. (Federated Wireless) hereby submits comments in response to the RSPG Draft Opinion on Spectrum sharing and its recommendations that the European Union (EU) improve spectrum sharing and implement innovative sharing solutions. Federated Wireless commends RSPG for its recognition of the importance of sharing to promote innovation and maximize the use of frequency bands that are critical to the delivery of wireless broadband services. We appreciate the opportunity to share our experience in implementing automated dynamic spectrum sharing in the United States and offer our perspectives on how this same automated technology can be readily deployed to meet RSPG's vision for the EU.

I. Background on Federated Wireless and Dynamic Spectrum Sharing

Federated Wireless is a U.S.-based wireless technology company that has been certified by the U.S. Government to manage dynamic sharing of the 3550-3700 MHz band, known as the Citizens Broadband Radio Service (CBRS), between incumbent military and commercial uses, as well as between different tiers of commercial uses on both a licensed and unlicensed basis. Commercial services launched in September of 2019 and today there are well over 100,000 CBRS base stations operating across the United States providing wireless broadband services via fixed wireless providers (WISPs), enterprise IT, hospitality, retail, real estate, industrial IoT, and transportation, among other sectors.

While the FCC's rules for CBRS are specific to the United States and its incumbent users, the Federated Wireless cloud-based, automated Spectrum Access System (SAS) is readily adaptable to new frequency bands and technologies. Once protection criteria for incumbent users are established and a database of these incumbent users is updated with the most current information, it is straightforward to adapt the dynamic shared access system developed for CBRS to operate in other frequency bands.

For example, Federated Wireless is a prospective Automated Frequency Control (AFC) system administrator for the 6 GHz band in the United States. The U.S. Federal Communications Commission (FCC) adopted new rules last year that will permit the introduction of unlicensed devices (WiFi, 5G NR-U, etc.) to operate on a shared basis in the 5.925-7.125 GHz band. Standard power and outdoor unlicensed devices will be required to connect to an AFC system to determine what frequencies are available for unlicensed operations.

Federated Wireless has adapted our dynamic shared spectrum technology to function as an AFC for the 6 GHz band. The Federated Wireless AFC determines what frequencies are available after downloading information about incumbent services from the FCC's Universal Licensing System (ULS), analyzing the potential impact of unlicensed devices to incumbent operations, and determining what frequencies can be used while implementing FCC-defined protection of those incumbents. This simplified type of automated dynamic sharing can also be adapted readily to other frequency bands, other types of incumbents, and other new services.

Another example is the United Kingdom's 5G New Thinking (5GNT) Shared Spectrum Rural Network (SSRN) project. Federated Wireless is part of the team developing a prototype system to streamline and then automate the Local Access Licensing spectrum sharing process adopted by the U.K.'s Office of Communications (Ofcom). The U.K. Department for Digital, Culture, Media & Sport (DCMS) is funding this project to focus on enabling rural communities to deploy 5G networks on a shared basis in unused spectrum licensed to the national mobile network operators.

As RSPG notes, automated dynamic spectrum sharing technology is available today from multiple vendors, is frequency band agnostic, and can readily provide regulators with a spectrum management tool that offers advantages over traditional approaches. These advantages include:

- Speed to market and agility of deployment;
- Seamless protection of incumbent users;
- Increased spectrum efficiency through opportunistic spectrum access on a geographic or time dependent basis; and
- Support for innovative business plans and the creation of a robust and sizeable ecosystem of suppliers and vendors;
- Flexibility to adjust protection criteria (whether more conservative or more liberal) as needed;
- Ability to adjust for future growth of both incumbent and new services;
- Streamlined cross-border coordination.

Given that dynamic shared access technology is already available from multiple vendors, has been tested through a rigorous process involving multiple government agencies, incumbent users, industry associations and technology providers, and there has been over a year of commercial success without any reports of interference to incumbents, we urge the EU and the Member States to move as quickly as possible to adapt commercially available automated sharing solutions for the European market.

With regard to the possible approaches the EU and Member States can take to implement spectrum sharing, Federated Wireless supports the adoption flexible licensing models that facilitate a wider range of use cases, foster innovation, and result in more efficient spectrum utilization. Specifically, we recommend that Member States offer spectrum access on both a licensed and lightly-licensed basis within the same band – preferably subject to the same

technical rules with a band-wide interoperability requirement and a “use-it or share-it” condition on the licensed portion. This tiered licensing approach will assure the largest possible ecosystem for equipment and devices, resulting in more choice and lower cost for both network operators and end users.

With a combined/tiered licensing approach, equipment manufacturers will build devices to satisfy both the needs of licensed and unlicensed users, particularly if there is a band-wide interoperability mandate. Without this combination, a market where equipment is purpose-built for specific customers and their exclusively licensed bands will continue. Limiting the potential size of the equipment and device ecosystem will similarly limit the potential for new and innovative uses of these bands, and it increases the likelihood that these bands will be licensed only by those with sufficient size and capital to drive ecosystem development (e.g., the incumbent mobile network operators).

A “use-it or share-it” approach provides higher tier licensees with enough certainty that the spectrum they have purchased via auction is available to them when and where they need it without having to make business decisions years in advance. At the same time, it provides opportunistic access for lower tier users who may only need the spectrum on a temporary basis to support a particular event or who are looking to tailor their network to a specific set of needs or geography, such as Industrial Internet of Things (IIoT) or security.

In addition to adopting a “use-it or share-it” license requirement, Federated Wireless recommends that license conditions include the right for the license holder to lease the spectrum to others – whether on a geographic basis (partitioning) or by sub-dividing the spectrum (disaggregating). Once eligibility criteria for lessees as well as protection criteria amongst users are established, a dynamic shared access system can facilitate leasing arrangements by automating the process and ensuring protection criteria are met. Such a secondary market will drive innovation, allow new technology to be deployed by leased spectrum users, and support niche sectors, such as enterprise networks and industrial uses. Furthermore, in order to incentivize more efficient spectrum use, we recommend allowing license holders to include any coverage and deployments undertaken by leased spectrum users to count towards the license holder’s performance obligations. This condition would not be an obligation to lease spectrum, merely an option available to license holders.

Under a combined “use-it or share-it” and streamlined secondary market approach, we anticipate that license holders will opt to lease any unused spectrum to other users. By offering leases to opportunistic users, the license holders will be able to monetize unused portions of their licensed spectrum and attribute the deployments of their lessees towards their own performance obligations. In turn, the opportunistic users are likely to enter into leases with license holders in order to have greater certainty regarding spectrum access rights. An automated spectrum sharing system can facilitate these secondary market transactions through the automation of spectrum leasing and the reduction of transaction costs and administrative burdens.

As the EU and Member States seek to encourage the introduction of new use cases through a flexible licensing regime, we believe a combination of licensed, shared-licensed and unlicensed in the same band will best achieve the goals of encouraging innovation and enabling enterprises and operators the ability to develop new business models, applications, services, products and capabilities.

Federated Wireless appreciates the opportunity to share its perspectives on automated dynamic shared spectrum technology and encourages RSPG, the EU and Member States to work rapidly to implement an automated shared approach that enables both licensed and opportunistic access to spectrum. Such technology is available today and is being adapted to meet the unique challenges of other markets and bands.

Respectfully submitted,

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