



Cisco's response to the RSPG public consultation on the final draft Work Programme for 2022 and beyond

Cisco Systems, Inc. (Cisco) is a global provider of networking solutions and products that support the needs of enterprise and service provider customers. A significant part of our business is supplying wireless connectivity to enterprise and government customers, many of whom rely on wireless to meet their operational needs. As we work with businesses across Europe what we are witnessing is a desire to utilize wireless capabilities more deeply than ever before, and to utilize different technologies that address different use cases. That is the reason Cisco has been so active in spectrum policy discussions on the need for license-exempt technologies to occupy the full 5945-7125 MHz range. But it has also prompted us to advise customers on 5G, both public and private, as well as other technologies. This requires us to pay close attention to spectrum allocation decisions throughout Europe, as well as to the technologies that will operate in those allocations. As the Digital Decade rightly pointed out, annual growth in data traffic and new use cases will supersede the capacities the additional frequencies make available. Therefore, Cisco welcomes the opportunity to input into RSPG's public consultation on the final draft work programme for 2022 and beyond.

In the below we set out some key considerations to take into account in future strategic opinions:

First, Cisco would like to emphasize that telecoms regulators should promptly implement in national law European Commission decisions taken previously:

- As a WAS/RLAN manufacturer, Cisco wishes to express our appreciation to RSPG for its participation in the European process that led up to the European Commission decision to open the lower part of the 6GHz band. Cisco is excited by the opportunity to expand its WAS/RLAN offerings to customers, and our customers are excited by the new capabilities that will be enabled by this band. However, more than 7 months after the decision was taken, many Member States still haven't implemented the decision into national law. Inattention comes at a cost. Wi-Fi remains the most commonly used wireless communications technology, the primary medium for global internet traffic and continues to grow, with more than 4 billion devices shipping annually and 16 billion devices in use globally. We ask all European regulators to enforce the 5925-6425 MHz decision as soon as possible to unleash the additional potential which will be brought by opening the lower part of the band to WAS/RLAN.

Looking ahead, we would like to emphasize two critical needs with the future growth of Wi-Fi and 5G that need to be addressed for Europe to meet its objectives in the European Digital Decade:

Opening the full 6GHz band for WiFi:

- Cisco has strongly supported the use of 5945-6425 MHz in Europe for license-exempt WAS/RLAN technologies such as Wi-Fi, and globally we have advocated for the full 6 GHz band (5945-7125 MHz) to be open for license-exempt. From the perspective of spectrum planning, WAS/RLAN today is the workhorse that: (1) supports 5G offloading; (2) enables enterprises to deploy a more advanced and more flexible

versions of Wi-Fi¹ to support varied use cases; and (3) provides needed capacity and capability to address the use cases of tomorrow whether consumer broadband or enterprise. With more than 50% of all IP data traffic originating or terminating on WAS/RLAN, starving this technology of much-needed spectrum would in our view be a grave error.

- Since February 2020 and the Covid pandemic, the world has been relying on Wi-Fi to stay connected. While many companies are seizing the opportunities of digital transformation, many businesses cases continue to rely on Wi-Fi. Therefore, opening the full 6 GHz band to licence-exempt RLAN is the best public policy choice for European regulators. The full 1200 MHz is needed to supply new technologies with the spectrum necessary to deliver on current and emerging innovative use cases, now and in the future. Indeed, with just 500 MHz, license-exempt technologies will be unable to support advanced use cases or support even routine consumer and enterprise networking needs in a few short years. Cisco supports the decision of the CEPT to open a technical study on 6425-7125 MHz for WAS/RLAN. We hope that the RSPG and the Commission will pay close attention to the technical findings as the study progresses.
- The 6 GHz Wi-Fi technology and standards are ready and complete. Interoperability certification is open, equipment is moving into the market today and benefits from spectrum use are available immediately. Delay in the decision to bring licence-exempt to the upper 6 GHz band brings with it large opportunity costs. The benefits of opening the full 6GHz band would rise in economic value to 564 billion EUR.
- Finally, while WAS/RLAN is the most widely deployed wireless technology inside enterprise networks today, it is as a matter of regulation a “commons” where enterprise networks must share airtime with consumer devices that employees, guests, and others bring on to an enterprise premises. For many use cases and for most purposes, that sharing occurs with contention-based protocols (commonly referred to as listen-before-talk), but the very nature of the commons is such that enterprises cannot use the technology for use cases where a high degree of determinism is needed because there is nothing to block consumer devices from using the exact same channel. This is not a fault of the technology – because it could be used for deterministic applications if enterprises had exclusive spectrum – but a fact of life of the spectrum allocation itself. If regulators wanted to provide an additional 802.11-based option to enterprises, then spectrum would need to be found adjacent to the 6 GHz band, such as in the lower 7 GHz range.

Meeting needs and harmonizing local spectrum for 5G:

- Private 5G network offers organizations the control and reliability they need for certain mission-critical activities, along with seamless integration across their existing systems. Network congestion can be an issue on public networks. Organizations can take advantage of the synergy between private 5G networks, Wi-Fi networks, LoRaWAN networks, Bluetooth low-energy networks, and so on — by tying it all together and creating a seamless, secure experience for IT and end users alike. Private 5G also reduces cyberthreats by limiting exposure to public interfaces. Wherever state secrets, intellectual property, or personal data are a critical issue, private 5G will shine.
- RSPG should therefore recognise the difference between public and private network and favor wide area licensing for mobile operators, and local licensing for private networks.

¹ Wi-Fi 6 is available today, with Wi-Fi 6E products designated for the 6 GHz range. The technology that will become Wi-Fi 7 is already in the standards process in IEEE 802.11.



- Enterprise customers (including government customers) are starting to digitize operational processes to an extent never before seen, and in the process, not just improving efficiency, but also discovering new sources of data within their organizations that enables them to provide better products and services to customers. That is happening as a function of wireless networking, although to date largely from the capabilities of license-exempt technology, and it will profoundly impact national economic performance and competitiveness. For the future, regulators who wish to address these networking needs should think in terms of two very large technology ecosystems – IEEE 802.11 or “Wi-Fi” and 3GPP 5G/6G – and some important but smaller ecosystems that serve critical needs, such as low power wide area technologies for wide area IoT solutions.
- Going forward, growth in the wireless industry will come more from connecting things – whether those are things in the home (security systems, televisions, appliances), things you wear or carry with you (AR/VR goggles, smartwatches), connected vehicles, or things used in business operations of all types (laptops, smartscreens, connected equipment in hospitals, factories, agriculture and more). While it remains important for policymakers to pay attention to the ever-advancing throughput needs of consumers to ensure that broadband networks both wired and wireless can meet consumer demand, there is an equally important need for policymakers to pay attention to the diverse and innovative needs of enterprises and governments who will be driving the growth of wireless networking to a far greater extent than ever before, and who will be utilizing a range of technology options and business models to do so.
- Local/Private 5G spectrum will be in high demand and these needs can be met in one of these three ways: 1) service provider spectrum (which could include network slicing for 5G networks) 2) spectrum that is directly available for vertical entities’ use (non-exclusive or exclusive) and (3) spectrum shared among users with technology that supports contention-based protocols (e.g., licence-exempt) that would typically also be shared with consumer-grade devices. Cisco urges policymakers to focus generally on two spectrum ranges in addition to the 6 GHz licence-exempt spectrum discussed above:
 - **3.4 – 3.8 GHz:** Around the globe, this is the most consistent service provider “spectrum footprint” and the one that is the focus of network build out everywhere. It will support vertical use cases when private sector IT managers choose to obtain wireless networking capability “as a service” from a service provider. The technology is 3GPP TDD and equipment is readily available. It is well worth noting, however, that some jurisdictions have used a portion of this spectrum or spectrum immediately adjacent to it for an allocation that is directly available for vertical entities’ use. The German example is 3.7-3.8 GHz and the UK example is 3.8 - 4.2 GHz.² What Germany and the UK are seeking is a way for their enterprises to effectively take advantage of 3 GHz scale economies for equipment whenever enterprises wish to obtain the spectrum directly, whether they choose to build a network themselves or procure services from operators or others. This approach is quite savvy, given the global popularity of the 3 GHz range for service provide networking kit.
 - **26 GHz:** This is likely to be a 3GPP dominated band, but one that remains in its infancy while economic activity continues to gravitate toward the 3 GHz range. For this reason, there is much less equipment available today. That

² The US FCC has also made some spectrum in the 3.55-3.7 GHz range available to private entities as “generally authorized access” – the entities get exclusive use in a small, county-wide footprint, but their available frequencies might change in response to a database control mechanism that is providing priority to US government and other priority users. In this case, there is one example of an electric utility that purchased priority rights over its electric service footprint in competition with telecommunications service providers in the band.

said, the propagation characteristics of 26 GHz lend themselves very well to shorter range or indoor applications of the type that enterprises would need. Previous consultations have focused on the band as a potential band for operators. Operators are highly unlikely to use this spectrum for wide area networking. RSPG countries should consider whether a service provider licensed band best balances the range of spectrum options that its economy will need, or whether this spectrum should be directly available to enterprises on a locally licensed basis. UK's Ofcom, for example, decided to split the band between locally licensed and operator spectrum. In any event, the regulator will need to exercise a degree of patience while the hard work of technology availability at 26 GHz, and decisions about how to apply the technology to solve networking needs, occurs.

- Finally, Cisco encourages more harmonization/alignment among the 27 Member States regarding spectrum allocation and consultation with the private sector on the technical criteria for the licensing process.

We are looking forward to working with the RSPG on a spectrum policy that fully benefits the European Union. For further information, please contact Diane Mievis, Cisco Government Affairs, on dmievis@cisco.com; +32 471 53 46 00.