Introduction

Cisco Systems, Inc., based in San Jose, California, is a leading global provider of IP-based networking technologies. We have a significant presence in the United Kingdom, with more than 3,000 sales, service, and research and development staff working with thousands of customers and partners. Cisco is a global vendor of enterprise-grade Wi-Fi, serving customers from small retailers to government agencies, universities, manufacturers, stadiums, warehouse and logistics, utilities and healthcare system operators. Cisco also sells its complementary Private 5G networking solution to many of these same enterprises, including partnering with Neutral Wireless on a private network supporting live-to-air outside broadcasts by the BBC's 5G remote production team. We also provide telecommunications equipment and services to Mobile Network Operator (MNO) customers in the UK and worldwide.

Cisco appreciates the opportunity to comment on Ofcom's consultation and commends Ofcom for its leadership concerning the future of the 6 GHz band. Cisco and its enterprise customers agree that Wi-Fi connectivity is crucial for global competitiveness. A recent study of US and European enterprise leaders found that 92% view 6 GHz Wi-Fi as a significant advancement, and 80% agree that it is essential for powering future connectivity[1]. Ofcom's proposal shows the UK commitment to enhancing its enterprise connectivity capabilities in an increasingly competitive global environment.

Ofcom's proposals are an excellent example of how regulators can support the UK Government's efforts to maximise economic growth and increase productivity. The proposals highlight the critical role of digital connectivity across the country and in different parts of the economy whilst also supporting industry efforts to introduce and leverage technological innovation in the UK. The proposals should also support the UK government's plans under its forthcoming Industrial Strategy as well as the government's efforts to put technology at the heart of public service delivery.

We strongly support Ofcom's proposal to authorise standard power licence-exempt operations in the Lower 6 GHz band. We already see demand in the UK for higher power and outdoor operations in the other Wi-Fi bands (2.4 GHz and 5 GHz) and the experiences of the United States and Canada, which initiated 6 GHz standard power operations last year, demonstrate that such operations enable reliable connectivity in expansive spaces like stadiums, concert halls, manufacturing warehouses, and convention centres. Outdoor standard power operations also provide high-quality connectivity for organisations like hospitals, universities, ports, mines, and sporting venues, as well as public spaces and rural communities.

Ofcom's phased approach to the Upper 6 GHz band is an innovative solution that will allow the UK to benefit from 6 GHz connectivity while Europe debates the band's future. Cisco believes that licence-exempt operations across the entire 6 GHz band offer the best economic and technological path for the UK. We look forward to working with Ofcom to determine a final spectrum allocation that best aligns with the UK's policy goals.

Meanwhile, we support Ofcom's proposal to tentatively allow low-power indoor operations in the full Upper 6 GHz band for later this year. This move addresses the current needs of UK enterprises that face limitations with only the Lower 6 GHz band available for licence-exempt use. Delaying access to new licence-exempt 6 GHz spectrum until Europe finalises its decision on the Upper 6 GHz band would disadvantage the UK compared to countries that have already acted. To increase

[1] IDC, "6Ghz WiFi: Powering the Future of Enterprise Connectivity", Infobrief, November 2024

certainty for general Wi-Fi deployments, we suggest that Ofcom create a "safe harbour" of at least 320 MHz for licence-exempt operations in the Upper 6 GHz band after the final allocation.

Should Ofcom decide in Phase 2 to allocate parts of the Upper 6 GHz band for IMT, Cisco supports exploring innovative sharing methods that would preserve the availability of the spectrum for enterprise Wi-Fi operations. Ofcom's consultation suggests IMT operations might be limited to dense urban areas. While we appreciate Ofcom's proposal for opportunistic Wi-Fi access to the rest of the band, substantial wireless infrastructure investment requires greater certainty. We instead recommend authorising locally licenced enterprise Wi-Fi operations throughout the Upper 6 GHz band in areas that might otherwise have IMT licences. This could be limited to critical enterprise deployments in urban areas and other enterprise deployments outside of dense urban areas to ensure continuation of reliable spectrum access for enterprises, minimise interference to enterprise and IMT deployments, and optimise the UK's spectrum resources.

In summary, Cisco believes Ofcom's approach is a significant step for the UK's technological and economic development in the future, and we look forward to continuing our collaboration with the agency in the next stage of this proceeding.

Questions

Question 1: What interest do you have in deploying outdoor or standard power Wi-Fi or other licence exempt RLANs in the Lower 6 GHz band? Please provide details of the types of expected deployments.

Ofcom should authorise standard power indoor and outdoor operations in the Lower 6 GHz band to unlock the full potential of Wi-Fi, enable improvement and innovation in other Wi-Fi bands, meet escalating connectivity demands, and ensure the UK remains competitive in the global digital landscape. Standard power operation, facilitated by external antennas and Automated Frequency Coordination (AFC) systems, is crucial for addressing the limitations of current low power indoor (LPI) regulations and for enabling a wide array of innovative applications across various sectors.

While the UK's authorisation of LPI devices in the Lower 6 GHz band was a positive initial step, these devices operate under significant restraints in terms of power, antennas, power sources, and form factors. Such limitations inherently restrict LPI devices' coverage area, signal penetration capabilities, and overall utility, making them unsuitable for a growing number of crucial use cases. LPI devices struggle to provide consistent and reliable connectivity across large indoor spaces, hindering their effectiveness in enterprise environments. Further, the indoor-only restriction prevents the exploitation of the 6 GHz band for use cases like transitioning logistics from indoor to outdoor locations and outdoor applications in general that could significantly benefit communities and various industries.

Ofcom's proposal to authorise standard power operations (up to 36 dBm / 4W EIRP) in the Lower 6 GHz band, under the control of an AFC system, would overcome the limitations of LPI and enable a multitude of benefits:

Expanded Enterprise Connectivity: Large commercial and public venues, such as factories, warehouses, stadiums, and conference centres, require robust Wi-Fi networks capable of covering extensive areas and penetrating structural barriers. LPI devices often fall short in these demanding environments. Standard power access points, potentially utilising external antennas, are essential

for ensuring ubiquitous and reliable connectivity throughout these spaces, supporting critical applications like real-time monitoring in industrial settings, enhanced fan experiences in stadiums, and seamless connectivity for large-scale events in conference centres.

The experience of Cisco's customer Fira de Barcelona (Fira), home to Mobile World Congress -- the largest and most influential connectivity event in the world, illustrates these issues.[2] Located in Barcelona, Spain, Fira operates three major venues that together span over 500,000 square metres of exhibition space. Fira found its existing Wi-Fi 5 infrastructure inadequate for large events and areas with high ceilings. Yet Fira faces significant hurdles in deploying Wi-Fi 6E throughout its space due to the lack of standard power authority in Europe. The high ceilings in some exhibition halls (over 12-15 metres) prevent low-power 6 GHz APs from effectively providing coverage. For similar venues in the United States, Cisco deploys standard power APs with external directional antennas to provide strong and efficient coverage throughout the facilities. In contrast, due to Europe's lack of 6 GHz standard power authority, Fira must limit its 6 GHz deployments to areas with low ceilings, while it employs external antennas using legacy Wi-Fi spectrum to direct the signal more precisely, improving coverage despite the high distances between the APs and ground level. Although this inefficient solution has helped improve its connectivity, venues like Fira need access to standard power APs and access to the Upper 6Ghz band to unlock the full potential of the latest generations of Wi-Fi (6E/7) in their venues.

Additionally, when allowing standard power indoors, an AFC database should include a figure for Building Entry Loss (BEL) to ensure more accurate calculations, ensuring that clients in these environments can more readily deploy the high-performance Wi-Fi necessary for their operations. Enterprise users also require the certainty that their investment in robust Wi-Fi connectivity will be protected from interference, and standard power under AFC could provide these guarantees.

Supporting High-Density Deployments: The increasing density of connected devices in enterprise environments, multi-dwelling units (MDUs), and other high-traffic locations demands more robust network infrastructure. Standard power APs can establish more expansive and resilient networks, effectively manage a larger number of concurrent connections, and deliver the necessary bandwidth for demanding applications. This is crucial in enterprises where a growing array of laptops, smartphones, IoT devices, and XR headsets require seamless connectivity as well as MDUs where numerous residents rely on shared spectrum resources.

College campuses typify this type of deployment, with thousands of connected devices operating over a large area, both indoors and outdoors. For example, Cisco has deployed over 2,000 APs across the campus of a large university in the Southwestern United States, including over 700 APs capable of operating at standard power. The university used the higher power levels associated with standard power to expand Wi-Fi coverage indoors, particularly in older buildings with dense construction. The university also took advantage of standard power rules to deploy 40 outdoor hotspots for student and faculty use.

Facilitating the Full Potential of Advanced Wi-Fi Technologies: The latest Wi-Fi standards, Wi-Fi 6E and Wi-Fi 7, leverage the wider channel bandwidths available in the 6 GHz band (up to 160 MHz and 320 MHz, respectively) to deliver significantly higher throughput and lower latency. These advancements are critical for supporting emerging indoor applications like augmented and virtual reality (AR/VR), ultra-high-definition video streaming, and low-latency robotics. However, achieving the envisioned performance gains often requires the greater coverage and signal strength provided

[2] *See* Wireless Broadband Alliance, "2025 WBA Industry Report" at 60-63 (Dec. 2024)

by standard power APs to effectively utilise these wider channels, especially in environments where signal attenuation is a factor. Limiting indoor operations solely to LPI would hinder the widespread adoption and full exploitation of these cutting-edge Wi-Fi capabilities.

IDC data shows that 24% of new enterprise-class access point sales in the second quarter of 2024 were Wi-Fi 6E[3], indicating a rapid adoption of this 6 GHz-enabled technology. Allowing standard power will ensure these advanced APs can operate at their optimal capacity. Wi-Fi 7, which is already available and expected to grow rapidly this year, offers even faster speeds, lower latency, and better performance in high-density environments.

Extending Outdoor Connectivity with Standard Power Operations: Authorising standard power outdoor operations in the Lower 6 GHz band, under the intelligent management of AFC systems, presents transformative opportunities for extending the reach and impact of licence-exempt operations:

- *Bridging the Digital Divide and Serving Underserved Communities*: Outdoor standard power Wi-Fi can provide crucial connectivity to communities and areas where traditional broadband infrastructure is lacking or economically unviable. Initiatives like the project by Cisco with the University of Illinois-Chicago to extend campus Wi-Fi to a surrounding underserved neighbourhood demonstrate the real-world potential of outdoor Wi-Fi to bridge the digital divide.[4] Both the Wi-Fi Alliance and the Wireless Broadband Alliance (WBA) are now FCC-approved AFC operators and are actively promoting the global deployment of outdoor Wi-Fi under AFC control, highlighting the growing recognition of its importance.
- *Supporting Diverse Outdoor Use Cases*: A multitude of outdoor applications can benefit from the enhanced coverage and capacity of standard power Wi-Fi, including extending network connectivity in campus environments, providing public Wi-Fi in parks and recreational areas, supporting outdoor events and gatherings, and enabling efficient operations in industrial and agricultural settings. The ability to leverage the high data rates of 6 GHz outdoors opens possibilities for bandwidth-intensive applications in various outdoor scenarios. Venues like BottleRock Napa Valley have deployed Cisco's Wi-Fi 6 equipment to provide coverage to concert goers, where the use of directional antennas enabled 45,500 unique Wi-Fi devices across the 26-acre site to transfer over 33 terabytes of data during the 3-day event[5]. More than 70% of organisations in the USA plan to use 6 GHz Wi-Fi outdoors, citing benefits like greater outdoor capacity and access to the same management platforms indoors and outdoors to track data usage and traffic.[6]
- *Facilitating Fixed Wireless Access (FWA):* Standard power outdoor operations in the 6 GHz band can serve as a robust and cost-effective solution for Fixed Wireless Access (FWA), providing high-speed internet to homes and businesses in areas where deploying fibre or cable infrastructure is challenging. This is particularly relevant in rural and less densely

[3] Paul Hughes and Brandon Butler, IDC, "6GHz Wi-Fi: Powering the Future of Enterprise Connectivity" at 10 (Nov. 2024) ("IDC Report").

[4] Erika Gimbel, "How University Wi-Fi Networks Better Digital Equity in Surrounding Communities," EdTech (Sept. 2023), https://edtechmagazine.com/higher/article/2023/09/how-university-wi-fi-networks-better-digital-equity-surrounding-communities.

[5] Cisco, "Wi-Fi 6 at BottleRock Napa Valley", https://www.cisco.com/c/en/us/about/case-studies-customer-success-stories/live-nation-entertainment.html.

[6] IDC Report at 26.

populated regions of the UK. In the United States, providers are leveraging technology to provide broadband service in rural areas. Many US vendors now sell equipment that can operate in the 6 GHz band to provide fixed wireless connectivity. For example, one wireless Internet service provider now uses the 6 GHz band to serve low-density rural areas, with 354 sites covering nearly 47,000 square kilometers, at speeds of more than 1 Gbps download and 500 Mbps upload to subscriber premises.[7]

Aligning with Global Regulatory Trends and Securing Economic Advantages:

The United States and Canada are already conducting standard power operations, while several other leading countries, including South Korea, Japan, Saudi Arabia, Colombia, and Argentina are considering similar authorisations. Delaying the authorisation of standard power in the 6 GHz band risks falling behind these nations in providing the advanced wireless connectivity that is increasingly essential for economic growth, innovation, and societal well-being. A robust wireless infrastructure, powered by the full potential of the 6 GHz band, will stimulate investment, foster the development of new applications and services, and enhance the UK's competitiveness in the global digital economy.

We strongly support Ofcom's proposal to authorise standard power indoor and outdoor operations in the Lower 6 GHz band. We urge Ofcom to act as soon as possible to unleash the full potential of Wi-Fi, meet the burgeoning connectivity demands of consumers and businesses, extend crucial broadband access to underserved areas, and ensure the United Kingdom remains a leader in the digital and AI age.

Question 2: Are you interested in providing or developing AFC databases for use in the Lower 6 GHz band in the UK?
Question 3: Do you have any views on the operational considerations of setting up and running AFC databases?
Question 4: Do you have any views on how we should manage the approval process for AFC databases and, in particular, whether we should rely on parts of the FCC process rather than requiring the whole process to be re-run in the UK?
Question 5: Please provide any other comments on our proposals for extending access to standard power Wi-Fi and outdoor use, including the overall approach, any details on technical parameters and the running of the AFC databases in this band.

Cisco supports the use of AFC systems for standard power operations in the UK. These sophisticated systems utilise databases containing information about the location and operating parameters of incumbent services. Standard power Wi-Fi APs query these databases before transmitting, and the

[7] Cambium Networks, "How North America's Largest 6 GHz Network Was Deployed," (Aug. 6, 2024), https://go.cambiumnetworks.com/l/428442/2024-08-06/59pgg8 (coverage discussed at 3:35; speeds discussed at 7:07).

AFC system calculates and provides the permissible channels and power levels that will ensure the protection of incumbent users.

The successful development and regulatory approval of multiple AFC operators in the United States and Canada demonstrate the feasibility and effectiveness of this spectrum sharing mechanism. We recommend that the UK leverages the experience and best practices from these countries in establishing its own AFC framework.

In addition, while Cisco has no plans to operate an AFC system for the UK, we have been a key partner in the Telecom Infra Project (TIP), which created Open AFC, an open-source software platform.[8] The primary goal of the Open AFC Software Group within TIP was to create a fully functional and scalable AFC software platform that could be adopted and utilised by various entities to offer AFC services. This initiative was driven by the need to accelerate the availability of standard power Wi-Fi in the 6 GHz band. The development of Open AFC was a collaborative effort within the industry, and those efforts ultimately resulted in FCC approval of AFC systems from several key organisations that leveraged the Open AFC software, including the Wireless Broadband Alliance (WBA), Wi-Fi Alliance Services, CableLabs and Broadcom.

Following this initial success, the Open AFC Software Group graduated from TIP and transitioned into the Open AFC Project. The current focus of the Open AFC Project is on international expansion and fostering continued collaboration to support the deployment of SP Wi-Fi in the 6 GHz band on a global scale.

It is also important to note that while Open AFC represents a significant advancement in enabling standard power Wi-Fi through an open-source approach, the broader AFC landscape includes commercial endeavours as well. Companies such as Federated Wireless, CommScope (with its Comsearch service), and Qualcomm are also offering or pursuing their own AFC services. This indicates that both non-profit and for-profit models for AFC operation can coexist within the regulatory framework.

Question 6: Do you have any comments on our proposal to use a “phased” approach, or on the alternative to wait for European harmonisation?

Cisco strongly supports Ofcom's proposed phased approach towards authorising Wi-Fi in the Upper 6 GHz band. The proactive authorisation of Low Power Indoor (LPI) Wi-Fi operations across the full 6 GHz band by the end of 2025 responds to current and future enterprise Wi-Fi needs and takes advantage of technologies and standards that are available now. It also ensures that the full 6 GHz band will be in use pending European harmonisation. Given the increasing demand for wireless connectivity and the capabilities of the 6 GHz spectrum, Ofcom’s proposed approach would yield substantial benefits for UK consumers and businesses today, even as the UK defers its final decision on the future of the Upper 6 GHz band until resolution of the European-wide process.

The Importance of the Upper 6 GHz Band Today

The UK should make additional licence-exempt spectrum available today to address the growing number of connected devices and data-intensive applications reliant on licence-exempt operations.

[8] *See* https://telecominfraproject.com/open-afc/.

Wi-Fi traffic is increasing dramatically every year.[9] Up to 90 percent of fixed traffic originates or terminates on Wi-Fi, and this volume is predicted to increase from 225 Gigabytes/month per household in 2022 to 900 GB/month by 2030.[10] This is driven in part by the growing number of connected devices. Equipment ranging from smart phones, televisions, gaming consoles, and laptops, to home alarm systems and security cameras, to sophisticated IoT networks for manufacturers, hospitals, and stadiums – all rely on Wi-Fi. We are also seeing the increasing use of mesh architecture to provide high capacity backhaul and to replace cabling indoors in both enterprise and home environments.

This demand for licence-exempt spectrum will only increase as new applications become more prevalent. Wi-Fi 7, the latest generation of Wi-Fi standards, enables the use of channels up to 320 MHz. These enhanced capabilities will support next-generation devices and applications such as artificial intelligence, AR/VR headsets, haptic technology, and advanced robotics. While access to the Lower 6 GHz band has relieved some of the congestion in legacy bands and enabled some of these new technologies in the UK, access to the full 6 GHz band would allow UK enterprises to take advantage of all the capabilities associated with the latest Wi-Fi standards.

The experience of Cisco's customer Zero Latency -- an Australian-based interactive VR gaming company with six locations in the UK – illustrates how 6 GHz Wi-Fi can transform business models by enabling high-quality services that were previously unreliable or impractical. Zero Latency's use of the 6 GHz band has transformed its business model, which heavily relies on cloud rendering between its access points and VR headsets. This requires high throughput and, most importantly, ultra-low latency for a seamless and immersive VR experience.

Zero Latency's initial operations in the 5 GHz band suffered from congestion and external interference, which negatively affected 92% of their VR gaming sessions. This unreliability prevented effective cloud rendering and forced customers to use heavy backpacks containing PCs with wired connections to their VR headsets to ensure a good local experience. With the availability of the Lower 6 GHz band in the UK, Zero Latency eliminated these bulky backpacks. This not only significantly improved the customer gaming experience but also reduced costs and power consumption, revolutionising the company's business model.

Despite these improvements, however, Zero Latency's UK customers still receive a less compelling experience than their counterparts in countries where the full 6 GHz band is available. Access to more spectrum in the Upper 6 GHz band would help the company expand its business by allowing participation by a larger number of interactive users and the use of more powerful graphics. In the UK, Zero Latency's devices can stream in no more than 40 MHz channels, resulting in throughput of 30 Mbps. In contrast, Zero Latency's operations in countries with the entire 6 GHz band available can

[9] One study has forecast that, between 2024 and 2027, total Wi-Fi traffic in the United States will increase by 83%, from 26 Exabytes (EB) per month to 48 EB per month. Andrew Spivey, ABiresearch, "Wi-Fi Innovation and Future Spectrum Allocation," at 3 (2024) (ABi Report), https://go.abiresearch.com/hubfs/Marketing/Whitepapers/Wi-Fi%20Innovation%20and%20Future%20Spectrum%20Allocation/ABI_Research%20Wi-Fi%20Innovation%20and%20Future%20Spectrum%20Allocation.pdf?hsCtaAttrib=183432523558.

[10] Arthur D. Little, "The Evolution of Data Growth in Europe: Evaluating the Trends Fueling Data Consumption in European Markets," at 3 (2023), https://www.adlittle.com/sites/default/files/reports/ADL_Data_growth_Europe_2023.pdf.

use 80 MHz channels, achieving 50 Mbps. This difference impacts the graphics and content that can be offered and restricts the ability to support more players in a session.

The future of artificial intelligence also depends on access to sufficient licence-exempt spectrum. For example, part of the growth in Wi-Fi demand is driven by new AI-driven applications that require cloud-based AI for enhanced processing and storage. These services require the high throughputs and low latencies associated with the latest Wi-Fi standards and large channel sizes. For example, licence-exempt spectrum plays a key role in integrating AI with sensor networks, enhancing capabilities like home healthcare through efficient data transmission and processing.[11]

Access to the Upper 6 GHz band is not only important for advanced applications. In dense environments with large numbers of devices and competing licence-exempt networks (e.g., MDUs, shopping centres, stadiums, conference centres), the entire 6 GHz band is crucial for providing sufficient non-overlapping channels to optimise network operation and mitigate congestion. Limiting access to the Lower 6 GHz band constrains the full potential of modern Wi-Fi in such densely populated environments. Restricting licence-exempt networks to the Lower 6 GHz band could lead to limitations like those for legacy Wi-Fi bands in enterprise networks.

A video by Jussi Kiviniemi, Founder and CEO of Hamina Wireless, illustrates the competitive impact of 6 GHz Wi-Fi spectrum allocation. Hamina Wireless, based in Finland, provides cloud-based solutions for designing, deploying, and troubleshooting wireless networks. Mr. Kiviniemi used Hamina's network planning tools to compare Wi-Fi performance for a sample university floorplan between two scenarios: a European network using only the lower 500 MHz of the 6 GHz band and a US network utilising the full 6 GHz band.

In the European scenario, the floorplan achieved good coverage with 20 and 40 MHz channels but struggled with 80 MHz channels due to co-channel interference. Conversely, the US network could operate at 80 and even 160 MHz channels with minimal interference. This presentation highlights the competitive disadvantage of limited 6 GHz spectrum allocation for Wi-Fi. Smaller channel sizes restrict advanced technologies from performing optimally and reduce the number of simultaneous users.[12]

Finally, regulators need to future-proof their spectrum policy. As a recent ABI Research whitepaper states, regulators should prioritise releasing additional licence-exempt spectrum now to support the current trajectory of device and data growth. The paper emphasises that the reactive approach taken with the 6 GHz band, where allocation only occurred once congestion on 5 GHz was already severe, should not be repeated.[13] Waiting until spectrum bands become heavily congested can lead

[11] ABi Report at 7.

[12] *See* https://www.linkedin.com/posts/jussikiviniemi_why-we-need-more-6-ghz-spectrum-in-europe-activity-7312817532648808452-z2Ec?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAGsTJEB-sxdlKFbJrDFG3C5oH56Ncv8mBQ8 (comparison of European and US examples starting with 3:08 remaining).

In an earlier video, Mr. Kiviniemi demonstrated that a European university Wi-Fi network using the 6 GHz band must reduce channel sizes to prevent interference when adding access points, significantly lowering through-put. In contrast, a U.S. university utilizing the full 6 GHz band can achieve four times the throughput for the same floorplan. *See* https://www.linkedin.com/posts/jussikiviniemi_why-should-the-eu-and-uk-allow-for-more-spectrum-activity-7294798837578145793-IEBn?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAGsTJEBsxdlKFbJrDFG3C5oH56Ncv8mBQ8.

to degraded consumer experiences and hinder the development of new technologies and business use cases. The report forecasts significant increases in Wi-Fi traffic, making proactive allocation essential to prevent future "unsustainable levels of congestion".

Why a Phased Approach Makes Sense

As Ofcom states, the primary rationale for awaiting European harmonisation is to ensure equipment compatibility. However, the advantages of providing enhanced connectivity to UK citizens and businesses today outweigh the potential drawbacks of a slightly divergent approach in the short term. While European harmonisation is a reasonable consideration, Europe is already five years behind the United States and Canada in utilising the Upper 6 GHz band. Further delaying national action to await EU consensus could further restrict the UK's digital capabilities.

As Ofcom notes, once the UK has announced it will await European harmonisation, the mobile industry would have little incentive to agree to any sharing mechanism with Wi-Fi until it is prepared to use the spectrum itself. “This approach could risk the whole implementation timetable being dictated by one industry sector at the expense of another and inevitably delaying benefits to citizens and consumers.”[14] National administrations should exercise the sovereignty and flexibility needed to implement proven technologies like Wi-Fi 6E and Wi-Fi 7 to address their national needs. The UK's density and reliance on indoor wireless connectivity warrant a proactive national strategy.

Question 7: Do you have any comments on the above suggestion to manage any “legacy” Wi-Fi devices, or alternative suggestions?

Given the planning and expense associated with enterprise Wi-Fi network deployments, Ofcom should reduce uncertainty as much as possible to allow the UK to benefit from licence-exempt operations in the Upper 6 GHz band. Cisco therefore recommends that Ofcom create a safe harbour option for access points, ensuring Wi-Fi channel utilisation remains prioritised and reducing the risk of harmful interference after European harmonisation is finalized. Specifically, by the end of 2025, Ofcom should designate at least 320 MHz in the Upper 6 GHz band for licence-exempt use, aligned with the Lower 6 GHz frequency rules. This would allow for general Wi-Fi and enterprise users to purchase and deploy Wi-Fi equipment promptly without the risk of future spectrum adjustments, fostering robust activity in the Upper 6 GHz spectrum, and benefiting consumers, enterprises, and the UK economy.

We understand that Ofcom may decide at the end of Stage two that opportunistic Wi-Fi deployments using the Upper 6 GHz band must update their equipment to vacate any portion of the band eventually allocated to IMT services. As noted above, this approach could discourage investment in equipment enabled for the Upper 6 GHz band and reduce the innovation and economic growth associated with such deployments. However, if Ofcom nevertheless pursues this approach, equipment manufacturers, ISPs, end users, and other key players should be able to take measures to reduce the risk of harmful interference after Ofcom’s final spectrum determination. While spectrum changes post-deployment might ordinarily pose significant challenges, those under consideration here should be less severe because the equipment will be marketed, sold, and

[14] Ofcom Consultation at 31.

installed with the understanding that the spectrum allocation could change. Thus, manufacturers and their customers can plan ahead for any adjustments in Ofcom's final decision.

As a leading vendor of enterprise Wi-Fi access points, Cisco commits to educating its partners and customers about the current situation and preparing them for updates reflecting Ofcom's ultimate spectrum allocation. Our customers should not pose a threat of harmful interference to any other operations, but we encourage Ofcom to take measures to ensure that all stakeholders are aware of the pending nature of the Upper 6 GHz band. This includes third-party integrators, which often provide network design, installation, and maintenance for businesses, as well as third parties offering ongoing network management services.

Many consumers receive broadband access via ISP-provided access points. ISPs should therefore implement devices capable of receiving manufacturer updates without the need or possibility for end-user involvement. While client devices may pose a greater challenge to update, focusing on changing access point behaviour should be effective, as under the proposals for opportunistic access clients will only transmit on channels made available via access points.

Question 8: Do you have a view on the amount of spectrum that should be prioritised for Wi-Fi under the prioritised spectrum split option? Please provide evidence for your view.

Cisco believes that allocation of the full Upper 6 GHz band for licence-exempt operations will provide the most economic and social benefit for the UK. Any reduction in the available spectrum for licence-exempt operations will reduce the capabilities of enterprises to take advantage of new Wi-Fi standards as well as fully utilise new technologies that will require additional bandwidth for peak performance. However, we recognise Ofcom's desire for compromise, the value of European harmonisation, and the interest of our service provider customers in obtaining new mid-band spectrum access. Therefore, we are committed to working with Ofcom on an equitable resolution regarding the Upper 6 GHz band following European discussions in 2027.

If Ofcom determines that the Upper 6 GHz band should be permanently split between IMT and licence-exempt operations, we encourage the agency to make as much spectrum available for generic Wi-Fi use as possible, aligned with the regulations governing the Lower 6 GHz band. This is essential due to the escalating demand for licence-exempt spectrum driven by significant growth in Wi-Fi usage and device proliferation. As discussed above, Wi-Fi's spectrum needs are increasing significantly, underscoring the vital role of additional licence-exempt spectrum allocation in fostering innovation and global competition. Policymakers should proactively allocate and release additional spectrum for Wi-Fi to fully support the surging demand for existing and new applications.

The rapid adoption of licence-exempt operations in the 6 GHz band highlights its importance. In the USA, the allocation of the full 6 GHz band for licence-exempt has led to substantial adoption, with Wi-Fi 6E and Wi-Fi 7 operations projected to increase to 66% of overall Wi-Fi traffic this year.[15] This rapid uptake demonstrates the immediate benefits of accessing this spectrum. Furthermore, 92% of

[15] Telecom Advisory Services, LLC, "Assessing the Economic Value of Wi-Fi in the United States" at 26 (Sept. 2024), https://wififorward.org/wp-content/uploads/2024/09/Assessing-the-Economic-Value-of-Wi-Fi.pdf.

enterprises agree that 6 GHz Wi-Fi is a significant advancement, and 80% believe it is integral to powering future connectivity.[16]

Permanently designating at least 320 MHz in the Upper 6 GHz band for licence-exempt operations would, at a minimum, enable:

- Two 320 MHz channels. These wide channels are crucial for supporting high-bandwidth applications and achieving gigabit speeds.
- Five 160 MHz channels. Such channels offer significant performance improvements over narrower channels.
- Ten 80 MHz channels. As Ofcom notes[17], these are considered a minimum requirement for enterprise Wi-Fi networks seeking gigabit speeds. As we explained earlier, moreover, 80 MHz channels are also critical for advanced technologies like AR/VR.

Further spectrum capacity for Wi-Fi deployments is increasingly necessary to support anticipated connectivity demands, due to minimum broadband speeds of up to 1 Gbps that fibre operators plan to offer by 2030. The full 6 GHz band can support up to 14 non-overlapping 80 MHz channels, making it vital for meeting future bandwidth demands. The real-world performance gains of Wi-Fi 7, enabled by 6 GHz spectrum, are evident in Speedtest Intelligence data, showing higher throughput in countries with Wi-Fi 7 deployments.[18]

Consumers, businesses, and other end users prioritise the quality of their network connection rather than the underlying technology. Given that most broadband traffic originates or terminates indoors, typical fixed broadband consumption is 50-70 times that of mobile data consumption, and users within homes tend to rely on their fixed broadband and Wi-Fi even with unlimited mobile data, a strong indoor Wi-Fi infrastructure supported by sufficient 6 GHz spectrum is crucial.

Finally, we urge Ofcom to consider that studies suggest the Upper 6 GHz band may not be as well-suited for outdoor-to-indoor mobile connectivity as lower frequency bands due to propagation conditions and potential higher energy consumption. This further strengthens the case for prioritising Wi-Fi in this band, particularly for indoor use where most smartphone data consumption occurs.

Question 9: Do you have any comments on our plan for a "phase 1" when Wi-Fi will be introduced?

See our response to Question 6.

[16] IDC Report at 4.

[17] Ofcom consultation at 9.

[18] Luke Kehoe, Ookla, "Wi-Fi 7 in Europe: France Leads in Differentiating Multi-Gigabit Fiber Experiences" (Feb. 26, 2025), https://www.ookla.com/articles/wifi7-europe-q1-2025 ("Among the ten countries with the highest Wi-Fi 7 penetration at the end of 2024, the average country-wide median download speeds on Wi-Fi 7 (565.80 Mbps) were up to 78% higher than those on Wi-Fi 6. Upload speeds—boosted by technical advancements like Multi-Link Operation (MLO), which enables simultaneous transmissions across multiple spectrum bands—were nearly twice as fast as those on Wi-Fi 6.").

Question 10: One variation on "phase 1" would be to only authorise Wi-Fi in client devices to "seed" the market. Would you have any views on this, or suggestions for other variations?

Cisco supports Ofcom's preference to implement Phase 1 as proposed, which includes immediate authorisation of LPI access points throughout the full 6 GHz band. While enabling client devices could stimulate the market, there is an immediate need for full Wi-Fi operations in the Upper 6 GHz band.

A client-only "seeding" approach does not deliver significant advanced Wi-Fi connectivity benefits to UK consumers and enterprises. According to one research firm, 807.5 million 6 GHz Wi-Fi 6E and Wi-Fi 7 devices – the vast majority of them client devices – were shipped in 2024.[19] Without access points operating in the Upper 6 GHz band, however, client devices cannot deliver enhanced performance or Quality of Service (QoS), effectively rendering their advanced capabilities useless. Consequently, UK consumers and enterprises investing in next-generation Wi-Fi devices would be unable to utilise the capabilities they have paid for, placing them at a disadvantage compared to users in markets where full-band 6 GHz Wi-Fi is already authorised.

Question 11: Do you have any comments on our plan for a "phase 2" when mobile will be introduced?

Cisco supports Ofcom's proposal to defer the introduction of mobile operations until the completion of European harmonisation efforts. While mobile network operators (MNOs) and their allies have expressed interest in the Upper 6 GHz band, several factors suggest that there is no immediate need for its allocation to mobile services, making a delayed decision more prudent.

First, the current capacity of existing licenced mobile spectrum and ongoing network enhancements may adequately address immediate mobile broadband needs. Operators hold various spectrum bands, including low, mid, and upper mid-bands. They also continually invest in network densification and technologies like MIMO to enhance spectral efficiency within their existing allocations. Recent analysis suggests that mobile data traffic growth is slowing and even plateauing in certain markets, potentially reducing the immediate pressure for significant new spectrum.[20]

Second, the ecosystem and current demand for mobile use in the Upper 6 GHz band is not yet mature or developed past trials. The band lacks compatible terminal devices and infrastructure, as demonstrated by a recent demo from a major 5G vendor that used base stations paired with bulky lab test equipment on a trolley to represent the mobile terminals. This situation was reflected by the recent experience in Hong Kong, where a 6 GHz spectrum auction yielded underwhelming results. In explaining its decision not to participate, one mobile operator cited the immaturity of the device and

[19] Catherine Sbeglia Nin, "What is the Global Status of 6 GHz?" RCR Wireless (Dec. 9 2024), https://www.rcr-wireless.com/20241209/fundamentals/global-of-6-ghz-wi-fi#:~:text=How-ever%2C%20IDC%20has%20found%206,APs%20will%20ship%20this%20year.

[20] Ericsson Mobility Report -- Mobile Data Traffic Forecast (November 2024), https://www.ericsson.com/en/reports-and-papers/mobility-report/dataforecasts/mobile-traffic-forecast ("The year-on-year growth rate for mobile network data traffic is expected to decline, from 21 percent in 2024 to 16 percent in 2030.").

infrastructure ecosystem, the limited use of the band in other markets, and the absence of viable use cases.[21] Allocating the spectrum now could leave a valuable resource sitting underutilised for a significant period, effectively pausing wireless innovation in that band.

Third, premature allocation of the Upper 6 GHz band for mobile could lead to complexities and potential inefficiencies in spectrum management. While sharing frameworks are being explored, the technical challenges of coexistence between higher-power mobile operations and incumbent users, as well as potential future licence-exempt applications, require careful consideration. As Ofcom acknowledges, achieving mobile operations in the Upper 6 GHz band on either a shared or exclusive basis could be a significant challenge, potentially requiring restrictions that limit the utility for mobile operations. It is likely that, even if Europe agrees to a harmonisation measure to allocate some portion of the Upper 6 GHz band for IMT in 2027, that spectrum will not be cleared and available in most countries for at least 5-7 years after national implementation of that decision.

Further, there is a more immediate and arguably greater need for licence-exempt spectrum to support the burgeoning demand for Wi-Fi and related technologies. Wi-Fi is the primary technology for indoor wireless connectivity and carries the vast majority of internet traffic, including smartphone data via offloading. The allocation of the 6 GHz band for licence-exempt use has been recognised as vital for advancing Wi-Fi innovation and maintaining technological leadership. Delaying the full utilisation of the Upper 6 GHz band for licence-exempt operations while waiting for possible mobile deployment to begin in at least 5 to 7 years would hinder the immediate benefits that enhanced Wi-Fi capacity can offer to consumers and businesses in the UK.

Finally, the cautious two-phase approach outlined by Ofcom allows UK regulators to observe international developments and the evolution of both Wi-Fi and mobile technologies, including 6G, before committing to a long-term allocation strategy for the Upper 6 GHz band. This enables a more informed decision based on concrete future needs and technological advancements, potentially leading to a more efficient and beneficial use of this valuable spectrum in the long run. Rushing into an allocation for mobile at this early stage without a clear immediate demand and product ecosystem could be a lost opportunity compared to the benefits that enabling the readily available and rapidly expanding Wi-Fi device ecosystem would bring when operating across the entire 6 GHz band.

While the future role of the Upper 6 GHz band for mobile cannot be entirely dismissed, the current landscape suggests that there is no immediate imperative to allocate this spectrum for IMT. The existing mobile spectrum capacity, the immaturity of the 6 GHz mobile ecosystem, potential interference challenges, the challenges of delivering coincident 6 GHz coverage on the existing cell site grid, the pressing needs of the licence-exempt Wi-Fi sector, and the lessons from international experiences all point towards the prudence of waiting before allocating any portion of the Upper 6 GHz band for mobile services, allowing for a more informed and strategic decision in the future.

Question 12: Do you have a view on the amount of spectrum that should be prioritised for mobile under the prioritised spectrum split option? Please provide evidence for your view.

[21] Telecom Spectrum News, "Hong Kong – 6 GHz Spectrum Auction" (Jan. 16, 2025), https://www.spectrum-tracker.com/news/54.

Before making a definitive decision on the appropriate allocation of the Upper 6 GHz band for mobile services, Ofcom should gather more comprehensive information to ensure the optimal use of this valuable spectrum and to avoid potentially detrimental outcomes for other crucial wireless technologies like Wi-Fi. The current proposal for a phased approach involving Wi-Fi first and then shared use with mobile acknowledges the complexity, but a more thorough information-gathering process is essential before solidifying the mobile allocation strategy.

First, Ofcom should acquire a deeper understanding of the real-world coexistence challenges between mobile and existing incumbent users in the Upper 6 GHz band. While initial analyses have been conducted, further evidence and stakeholder input are necessary. Ofcom's own assessment indicates a potential risk of interference to fixed links from mobile base stations, possibly extending over several tens of kilometres. Notably, fixed links are concentrated in areas like London, where mobile operators anticipate the highest demand. Gathering detailed information on the operational requirements and sensitivity of these incumbent links is crucial before implementing mobile deployments that could cause disruption. Similarly, the potential for interference with PMSE equipment and the increasing importance of the band for radio astronomy (e-MERLIN) necessitate careful consideration and further data collection to devise effective coexistence mechanisms or alternative solutions.

Second, we encourage a more granular assessment of the actual demand and specific use cases for mobile in the Upper 6 GHz band. While MNOs express interest in increasing capacity in high-traffic urban areas, the technical characteristics of the band, with its shorter propagation distances and potentially weaker indoor penetration compared to lower frequencies, raise questions about its overall utility for widespread mobile coverage especially indoors. Evidence suggests that even in dense urban environments, outdoor-to-indoor coverage in the 3-4 GHz bands may be limited and the 6 GHz band will only be worse. Ofcom should gather more data on the specific capacity needs of MNOs in localised high-density areas and explore if a combination of more widespread use of handover and offloading to indoor Wi-FI networks, alternative spectrum bands and network densification strategies might be more cost effective or complementary. As noted above, Hong Kong’s disappointing 6 GHz auction despite full compensation for bidders through tax breaks, highlights the uncertainty surrounding the immediate value proposition for mobile in this band.

Third, Ofcom should thoroughly consider the potential impact on the future of Wi-Fi and its growing importance for consumers and businesses. Wi-Fi traffic constitutes the bulk of overall internet traffic, and the demand for higher bandwidth applications like VR/AR and 8K video is increasing and likely to be delivered over Wi-Fi networks. Limiting the availability of Upper 6 GHz spectrum for Wi-Fi could hinder the deployment of the wider channels offered by the latest Wi-Fi standards and lose the advantages of having access to a new Wi-Fi band, leading to early congestion and a degraded user experience, particularly in dense user environments. Ofcom should gather more information on the projected growth of Wi-Fi usage, the benefits of wider channels for various applications, and the potential economic and social consequences of restricting Wi-Fi’s access to this crucial spectrum. Between now and the end of the 2nd phase of the consultation Ofcom should build upon the initial analysis of possible sharing techniques and associated measurements carried out as part of DSIT sponsored projects (Spectrum Sandbox and ONSIDE). Funding to carry out further analysis and measurements should be made available and future studies should be more targeted to examine possible co-existence mechanisms in the critical high density sharing scenarios that may occur between mobile and enterprise Wi-Fi deployments and use cases.

Further, Ofcom should closely monitor the diverse approaches being considered and implemented internationally. While WRC-23 identified the Upper 6 GHz band for IMT in Region 1, it also acknowledged its importance for Wi-Fi. Different countries and regions are exploring various allocation strategies, including exclusive licensing for mobile, exclusive licence-exempt use for Wi-Fi, and shared models like prioritised spectrum splits, indoor/outdoor segregation, and local licensing to enable and enhance sharing. Gathering detailed information on the outcomes and lessons learned from these international experiences and the measurements and associated studies carried out in the DSI will be invaluable in informing Ofcom's decision-making process and ensuring alignment with global trends where beneficial.

Finally, more information is needed on the feasibility and effectiveness of proposed hybrid sharing mechanisms between mobile and Wi-Fi in the Upper 6 GHz band. While Ofcom explores options like prioritised spectrum splits and indoor/outdoor divisions, the practical implementation and the potential limitations for both technologies require further investigation. Ofcom should understand the potential costs and benefits of such arrangements, as well as the necessary coexistence mechanisms, the potential impact of planned deployments through local licensing, and the impact of these arrangements on network performance for both mobile and W-Fi services.

Given the complexities, diverse stakeholder interests, and long-term implications, Cisco recommends that in this 2nd phase, Ofcom should prioritise gathering more detailed information across these key areas before making any final decision on the allocation of the Upper 6 GHz band for mobile. This additional information-gathering phase will enable Ofcom to make a more informed decision that maximises the overall benefits of this spectrum for the UK's digital economy and ensures a balanced approach that supports both mobile and Wi-Fi innovation.

Question 13: Do you have any evidence or views about the geographical extent of mobile networks' likely deployment in Upper 6 GHz?

Mobile networks in the Upper 6 GHz band are expected to be primarily concentrated in densely populated urban areas with high mobile traffic demand. MNOs have indicated that deployments in this band would most likely be used on a subset of existing macro sites experiencing the highest traffic. This is because the physical characteristics of the Upper 6 GHz band make it particularly well-suited for providing additional capacity in areas where traffic is already very high, rather than for expanding coverage over wider areas.

As Ofcom's consultation notes, mobile data consumption largely mirrors population distribution, with around 82% of traffic generated in urban and suburban areas. Consequently, the demand for Upper 6 GHz spectrum for mobile is anticipated to be relatively low outside these high-density zones. For areas outside these high-density urban centers and where there may be a need to protect a critical enterprise network, Cisco supports alternative authorisation approaches that reflect the likely lower demand from mobile operators, such as local licensing on a first-come, first-served basis, perhaps under an Automated Frequency Coordination system model.

It is important to note that mobile deployments in the Upper 6 GHz band, even in dense urban environments, may need to focus on outdoor-to-outdoor coverage due to less favourable propagation conditions and potential significant signal loss of mobile operations in the 6 GHz band

when trying to penetrate buildings, especially those with thermally efficient materials. As a 2022 study stated, "the [mobile] application of 6 GHz cells is most likely to be found in urban areas," and would be "mainly for specific congested outdoor locations in urban areas…."[22] As Ofcom has noted, even lower frequency bands like 3.4-3.8 GHz provide only sporadic and inefficient indoor coverage[23], with GSMA, the trade body representing the mobile operators, reporting instead that sub-1 GHz spectrum is essential for providing indoor coverage in built-up urban areas[24], suggesting 6 GHz operation would be even more challenging. Vendors and operators have indicated that higher power levels and a higher number of elements for 6 GHz Active Antenna Systems (AAS) will be required to provide similar indoor penetration levels to the 3.4 - 3.8 GHz bands, leading to higher energy consumption to provide services in this band.[25]

Question 14: Do you have any comments on our proposed phased approach to authorisation of both Wi-Fi and mobile in the Upper 6 GHz band?

Cisco strongly supports Ofcom's proposed phased approach for enabling Wi-Fi in the Upper 6 GHz band as soon as possible, with Phase 2 focused on authorising mobile use in part of the band, contingent on European-level discussions about harmonising its usage.

Cisco appreciates Ofcom's strategy, which allows UK consumers and enterprises to access next-generation Wi-Fi connectivity promptly, avoiding unnecessary delays. This phased approach also provides Ofcom with adequate time to thoroughly assess mobile networks' performance and the feasibility of coexistence before granting authorisations in the Upper 6 GHz band.

Question 15: Do you have any comments on our proposal to not include very low power portable devices in the Upper 6 GHz band at this stage, but to keep this under review?

Cisco believes that Very Low Power (VLP) mobile devices could be authorised in the portion of the Upper 6 GHz band made available for low-power indoor operations but must be subject to the

[22] LS Telecom et al., "Socio-Economic Benefits of IMT Versus RLAN in the 6425-7125 MHz band in Europe" at 17 (7 June 7 2022) (LS Telecom Study), http://dynamicspectrumalliance.org/wp-content/uploads/2022/06/DSA-Report-6425-7125-MHz-EU-Study.pdf.

[23] *See* Ofcom, "Hybrid Sharing: Enabling Both Licensed Mobile and Wi-Fi Users to Access the Upper 6 GHz band," at 14-15 & Figure 2 (6 July 2023), https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/263766-hybrid-sharing-enabling-both-licensed-mobile-and-wi-fi-users-to-access-the-upper-6-ghz-band/associateddocuments/condoc-upper-6ghz-review-june23-v2.pdf?v=329853.

[24] Coleago Consulting Ltd., "IMT Spectrum Demand: Estimating the Mid-Bands Spectrum Needs in the 2025-2030 Timeframe" at 5 (14 December 2020), https://www.gsma.com/about-us/regions/europe/gsma_resources/imt-spectrum-demand/.

[25] Ing Peter Koon, Ilsa Godlovitch, and Dr. Thomas Plückebaum, WIK Consult, "Sustainability Benefits of 6 GHz Spectrum Policy" at 35 (31 July 2023), https://www.wi-fi.org/system/files/SustainabilityBenefitsof6GHzSpectrumPolicy202307.pdf.

control of an access point. Doing so would ensure that VLP devices do not cause interference to other Wi-Fi operations. Without such governance, however, we agree that Ofcom should continue to keep this issue under review and address it later as appropriate. In particular, any VLP operations independent of an access point should not be enabled until completion of coexistence studies to ensure that VLP devices can coexist without compromising the operations of infrastructure Wi-Fi networks.

Question 16: Do you have any comments on our proposal to authorise the use of low-power indoor Wi-Fi access points and client devices to use 6425–7125 MHz?

Cisco strongly supports this proposal. See our response to Question 6 for more detail.

Question 17: Do you have any comments on the proposed technical conditions?

Question 18: Do you have any comments on the proposed VNS draft?

Cisco appreciates Ofcom's introduction of the Voluntary National Specification (VNS) as a framework for ensuring 6 GHz WAS/RLAN equipment complies with technical conditions for operation in the Upper 6 GHz band. As the approval of an ETSI harmonised standard for the Upper 6 GHz band may take years, the VNS guidance offers a practical interim solution to support the timely deployment of 6 GHz Wi-Fi equipment.

In line with our previous responses, Cisco strongly recommends expanding the VNS scope to include standard power WAS/RLANs. Harmonising technical conditions between the Lower and Upper 6 GHz bands is crucial for the seamless introduction of next-generation Wi-Fi technologies in the UK.

We urge Ofcom to adopt contention-based protocols consistent with current Wi-Fi specifications to minimise interference. This ensures that the UK’s approach will be harmonised with other nations and will allow new and existing users of the band to more easily integrate.

Question 19: Do you have any suggestions for an appropriate mechanism for enhanced sensing, or comments on the proposed solution above?

Enterprises need certainty for their wireless investments due to their costs and operational significance. Opportunistic access, as described in the consultation, is not suitable for Cisco's customers because it injects uncertainty into investments that are not only costly but critical to their

operations. Cisco strongly recommends a local licensing approach, as suggested by Ofcom as an alternative to opportunistic access. This approach could apply to areas where mobile demand is lower and high-density urban areas where there may be a need for critical enterprise Wi-Fi networks. An AFC system could enable standard power Wi-Fi operations and 5G NR-U use while safeguarding incumbent users. This would allow Wi-Fi to coexist with locally licenced mobile deployments in the same area. Cisco looks forward to collaborating with Ofcom to develop this approach.

Question 20: Do you agree with our proposal to restrict Wi-Fi from transmitting in the 6650-6675.2 MHz band to protect the radio astronomy service? Please provide any technical evidence to support your view.

Cisco supports the protection of the radio astronomy service (RAS) in the 6650–6675.2 MHz band from harmful interference. However, a complete ban on WAS/RLAN transmissions in this range is overly restrictive. As Ofcom notes, RAS observatories are outside residential and urban areas, reducing interference risks. These secure facilities control the installation and operation of radio devices on their premises, making interference from low-power indoor Wi-Fi devices unlikely due to distance and signal attenuation.

For standard power devices, use of an AFC system would protect RAS by calculating exclusion zones based on line-of-sight distances between RAS antennas and Wi-Fi access points, effectively mitigating interference while enabling efficient spectrum use. Real-world examples in the U.S. and Canada show successful coexistence of WAS/RLAN with RAS in the 6 GHz band, including the 6650–6675.2 MHz range, without reported harmful interference. These precedents demonstrate that a well-managed coexistence framework can protect RAS without necessitating a full transmission ban.

Cisco is prepared to work with Ofcom to adopt a more balanced and technically justified approach that preserves spectrum access for Wi-Fi while ensuring necessary RAS protections.

Question 21: Do you agree with our assessment of Wi-Fi coexistence with existing users of the band? If not, please provide details.

Cisco agrees with Ofcom's assessment of Wi-Fi coexistence with existing users of the 6 GHz band. Extensive studies by CEPT have consistently shown that the interference potential of WAS/RLAN operations is very low. ECC Reports 302, 316 and 364 provide detailed technical analyses confirming safe coexistence of LPI and VLP Wi-Fi with fixed satellite services and FS operations.

This conclusion is supported by real-world deployments in multiple countries, including the UK's existing RLAN operations in the Lower 6 GHz band. These practical experiences validate regulatory studies and demonstrate that Ofcom's proposed coexistence framework effectively ensures spectrum sharing without any disruption to current incumbents.

Question 22: Do you have any evidence about the costs to operators of moving fixed links in and around “high density” areas (such as urban centres) to other bands?

Cisco lacks information about the cost of relocating 6 GHz fixed networks but emphasises that relocation will undoubtedly involve significant expenses for FS operators, including equipment upgrades and deployments, along with the challenge of finding alternative spectrum to continue operations. Ofcom must consider both factors when evaluating the feasibility of repurposing the Upper 6 GHz band for high-power mobile operations.

Setting aside costs, the key issue is identifying suitable replacement frequency bands with comparable propagation characteristics, capacity, and reliability for fixed service operators. Currently, no "free" spectrum exists to accommodate these relocations without affecting other critical services, as many suitable bands are heavily utilised. Reassignments could introduce new coordination challenges, interference risks, and regulatory complexities.

We urge Ofcom to adopt a balanced approach that considers economic impact and the broader spectrum landscape. Relocation should be accompanied by a thorough assessment of available spectrum, realistic transition timelines, and mitigation strategies to minimise disruption to essential services.

Question 23: Do you have any comments on our initial assessment of our likely approach to coexistence between future mobile use and current users in the Upper 6 GHz band?

Ofcom rightly notes that coexistence requirements between mobile base stations and satellite receivers were thoroughly studied for WRC-23, resulting in the inclusion of vertical elevation EIRP mask limits for mobile base stations in ITU Radio Regulations. Before proceeding with Phase 2, Cisco urges Ofcom to confirm with industry stakeholders that commercial 5G deployments in the 6 GHz band will comply with these treaty obligations. Adherence to these regulatory conditions is essential to prevent harmful interference with satellite operations in geostationary orbit and to uphold global spectrum coordination efforts.

Question 24: Do you have any other comments on our policy proposals or any of the issues raised in this document?

Cisco appreciates the opportunity to provide comments on Ofcom’s important consultation. We value Ofcom's thorough evaluation of the 6 GHz band and its proposals to promote ongoing innovation and connectivity. Cisco fully supports Ofcom's initiatives to allow Wi-Fi access in the Upper 6 GHz band, acknowledging the substantial economic and technological advantages this will

offer to the UK. We look forward to working with Ofcom and other stakeholders to achieve the best outcome for UK consumers and enterprises.