IEEE P802.18
Radio Regulatory Technical Advisory Group (RR-TAG)

Draft response to Ofcom's consultation: Expanding access to the 6 GHz band for commercial mobile and Wi-Fi services				
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This document contains a proposed response to UK Ofcom's consultation "Expanding access to the 6 GHz band for commercial mobile and Wi-Fi services".

Consultation response form

Please complete this form in full and return to sharingupper6ghz@ofcom.org.uk

Consultation title	Consultation: Expanding access to the 6 GHz band for commercial mobile and Wi-Fi services
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Confidentiality

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Your response: Please indicate how much of your response you want to keep confidential. Delete as appropriate.	None
For confidential responses, can Ofcom publish a reference to the contents of your response?	Yes

Your response

Question	Your response
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.	Confidential – N IEEE 802 LMSC is a leading consensus-based open standards development committee for networking standards that are used by industry globally. It produces standards for networking devices, including wired and wireless local area networks ("LANs" and "WLANs"), wireless specialty networks ("WSNs"), wireless

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	metropolitan area networks ("Wireless MANs"), and wireless regional area networks ("WRANs"). Technologies produced by implementers of our standards are a critical element for all networked applications today. IEEE 802 LMSC is a committee of the IEEE Standards Association and of Technical Activities, two of the Major Organizational Units of the IEEE. IEEE has over 460,000 members in more than 190 countries and its core purpose is to foster technological innovation and excellence for the benefit of humanity. IEEE is also a major accredited standards development organization whose standards are recognized worldwide. In submitting this document, IEEE 802 LMSC acknowledges that other components of IEEE Organizational Units may have perspectives that differ from, or compete with, those of IEEE 802 LMSC[1]. IEEE 802 LMSC is highly supportive of deploying and Standard Power (SP) Wi-Fi technology (based on IEEE 802.11 standards) in the lower 6 GHz band (i.e., 5925 MHz to 6425 MHz) under the control of Automated Frequency Coordination (AFC) system. There is a strong opportunity along with high market demand to extend high-capacity wireless broadband to a broad range of environments, both indoors and outdoors. Among others[2], some important SP Wi-Fi deployments include the following: - Enterprise and campus networks: Enabling robust, high-throughput indoor and outdoor networks for large corporate campuses, and smart city infrastructure. - Rural and underserved areas: Bridging the digital divide by delivering reliable outdoor Wi-Fi service in areas where wired connectivity is limited. - Automation in industries – Industry manufacturing, transportation, and logistics rely on Wi-Fi service for static and mobile robots used for production as well as supply chain and warehouse operations.
Question 2: Are you interested in providing or developing AFC databases for use in the Lower 6 GHz band in the UK?	Confidential – N N/A
Question 3: Do you have any views on the operational considerations of setting up and running AFC databases?	Confidential – N IEEE 802 LMSC strongly believes that collaboration between AFC system operators, Wi-Fi equipment manufacturers and Ofcom is required for smooth operation

[1] This document solely represents the views of IEEE 802 LMSC and does not necessarily represent a position of either IEEE or the IEEE Standards Association or IEEE Technical Activities.

[2] Relevant Wi-Fi use cases and deployments for 6 GHz. (https://www.hpe.com/uk/en/resource-library.html/restype/white-papers_webinars_video_reports_infographics_customer-references_articles/search/6%20GHz) [Accessed: 17 April 2025]

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	of AFC databases. The operational setup of AFC databases should: - Emphasize regular re-checks of channel availability that are crucial to respond rapidly to any changes in the interference environment. - Be built on tried and tested existing designs[3,4] to ensure seamless integration with Wi Fi devices. - Support a growing number of access points and manage the potential high volume of database queries without latency, ensuring smooth user experience, i.e., be scalable. - Have a potential interference reporting system in place similar to the USA FCC established mechanism[5]. - Have each AFC operator report channel availability independently to promote healthy competition, and in turn lead to better AFC database product.
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?	Confidential – N IEEE 802 LMSC recommends the adoption of key elements of the FCC's established process for approval of AFC databases and AFC operators as the basis for the Ofcom's strategy, rather than duplicating the entire effort independently. Adopting validated FCC testing will minimize delays and resource expenditures. Additionally, relying on the FCC's approach promotes compatibility with global standards, ensuring that Wi-Fi devices and AFC systems benefit from economies of scale.
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.	Confidential – N IEEE 802 LMSC is highly supportive of deploying SP Wi-Fi in the lower 6 GHz band (i.e., 5925 MHz to 6425 MHz) under the control of AFC, and requests Ofcom to consider the following additional considerations when extending SP Wi-Fi operation. As AFC devices are being certified and introduced in the market, the Wi-Fi industry expects the first significant deployments of SP mode to be indoor through upgrading of low power indoor (LPI) access points to indoor SP access points, i.e., SP/LPI converged access points. These converged access points are targeting simultaneous support of LPI-only clients, SP clients, and dual LPI/SP clients in the same indoor network to improve overall system efficiency and spectrum utilization while protecting incumbent services.

[3] See Wi-Fi Alliance: 6 GHz AFC resources, Specifications, test plans, and training modules to enable implementation of the 6 GHz standard power devices under AFC system control (https://www.wi-fi.org/discover-wi-fi/6-ghz-afc-resources) [Accessed: 17 April 2025].
[4] See Wireless Innovation Forum: Specifications (https://6ghz.wirelessinnovation.org/baseline-standards) [Accessed: 17 April 2025].
[5] 6 GHz Automated Frequency Coordination Systems Interference Reporting Portal (https://www.fcc.gov/ecfs/document/104180485219308/1) [Accessed: 17 April 2025]

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	In anticipation of deployment of indoor SP access points and to improve interoperability with various client device types, IEEE 802.11 recently updated its sets of supported regulatory capability signaling[6] to distinguish indoor SP access points amongst other improvements and expansion in the regulatory signaling. Indoor SP mode of Wi-Fi operation is critical in delivering next generation consumer connectivity experiences, healthcare[7] and industry training via AR/VR/XR. Additionally, as indoor SP access points are operating indoors, they should be entitled to an additional Building Entry Loss (BEL) credit to be considered in an AFC System's calculation of spectrum availability and maximum permissible transmit power. FCC allows indoor SP operation and also considers BEL credit for such operation using waiver request. Hence, IEEE 802 LMSC recommends Ofcom to consider enabling indoor SP mode in its rules for the 6 GHz band.
Question 6: Do you have any comments on our proposal to use a "phased" approach, or on the alternative to wait for European harmonisation?	Confidential – N IEEE 802 LMSC agrees with the phased approach because it benefits the UK consumer and businesses, by enabling immediate LPI Wi-Fi access to upper 6 GHz spectrum while European harmonisation discussions continue. By adopting a phased strategy proactively, the industry can accelerate investment in Wi Fi infrastructure, and ensure that consumer demand for faster, more reliable wireless connectivity is met. As an example, adoption of Wi-Fi in the upper 6 GHz band would promote deployment of Wi-Fi in wider bandwidths like 160 MHz and 320 MHz channels. With access to additional 320 MHz channels, Wi-Fi devices can build upon IEEE Std. 802.11az-2022[8] to offer sub-1 meter positioning accuracy, which results in new innovative use cases such as micro-targeting for retail and warehouse asset tracking. The availability of a greater number of channels at various channel widths (from 20 MHz to 320 MHz) will facilitate more modular and flexible deployments that allow scaled operation of services. Some examples[9] include multi-layer operation,

[6] See "IEEE Draft Standard for Information Technology -- Telecommunications and Information Exchange Between Systems Local and Metropolitan Area Networks -- Specific Requirements - Part 11: Wireless Local Area Network (LAN) Medium Access Control (MAC) and Physical Layer (PHY) Specifications," in IEEE P802.11-REVme/D5.0, February 2024 , vol., no., pp.1-6203, 18 March 2024.

[7] See Wi-Fi Alliance: Wi-Fi Alliance® demonstrates the impact of 6 GHz Wi-Fi® for advanced AR/VR in healthcare (https://www.wi-fi.org/beacon/the-beacon/wi-fi-alliance-demonstrates-the-impact-of-6-ghz-wi-fi-for-advanced-arvr-in) [Accessed: 17 April 2025].

[8] IEEE Standard for Information Technology--Telecommunications and Information Exchange between Systems Local and Metropolitan Area Networks--Specific Requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications Amendment 4: Enhancements for Positioning," in IEEE Std 802.11az-2022 (Amendment to IEEE Std 802.11-2020 as amended by IEEE Std 802.11ax-2021, IEEE Std 802.11ay-2021, IEEE Std 802.11ba-2021, and IEEE Std 802.11-2020/Cor 1-2022) , vol., no., pp.1-248, 3 March 2023, doi: 10.1109/IEEESTD.2023.10058117.

[9] Selected examples of frequency-band-agnostic new services and architectures include smart automation facilities, (https://community.hpe.com/t5/networking/hyper-aware-facilities-will-drive-the-future-of-smart-automation/ba-p/7219007) [accessed: 8 April 2025]

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	service segmentation and prioritization, context-aware wireless networks, and hyper-aware access point deployments. Furthermore, this approach may encourage other regulators to consider a similar approach.
Question 7: Do you have any comments on the above suggestion to manage any "legacy" Wi-Fi devices, or alternative suggestions?	Confidential – N IEEE 802 LMSC agrees with Ofcom that there might be some "legacy" device interference in the upper 6 GHz band if devices are allowed to operate Wi-Fi (in LPI mode) before the conclusion of the European co-existence studies, but it can be managed and mitigated as shown by following considerations. A large percentage of APs will be managed by different enterprises (e.g., libraries, schools, public and private offices, airports, stadiums, city downtown Wi-Fi), and therefore they can be configured to disable operations in the upper 6 GHz band quite easily. For consumer APs, it would be possible for operators/ISPs to geolocate them with sufficient precision and remotely configure the gateways to use specific bands only. Mechanisms and protocols that could be used for this purpose have been defined by the Broadband Forum, e.g., TR-069 and TR-369, which have been widely implemented. Finally, "legacy" devices will be those that will be put on the market after Ofcom opens the upper 6 GHz band, i.e., in early 2026. So, they will be very modern and (tri-band) high-end devices which would be fully compliant with IEEE 802.11's updated supported regulatory capability signaling. Additionally, they would be mostly Wi-Fi 6E/7 capable and therefore, can use complex features like spectrum puncturing for enhanced co-existence with other wireless technologies when operating in the same band.
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.	Confidential – N IEEE 802 LMSC strongly supports enabling Wi-Fi operation in the maximum available spectrum within the upper 6 GHz band under the prioritized spectrum split option. IEEE 802.11be's global 6 GHz channelization is designed to accommodate multiple 160 MHz and 320 MHz channels throughout the 5925 MHz to 7125 MHz frequency band, where available. The 5925 MHz to 7125 MHz frequency band would allow three 320 MHz channels to support Gigabit Wi-Fi connectivity which is critical to enabling latency sensitive high throughput applications like real-time XR for health, education and gaming, robotics, and industrial automation. In particular, this is critical to enable relevant applications like AR, VR

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	and XR in dense residential environments[10] in addition to scaling of applications in enterprise and industrial deployments when multiple of these application sessions have to be supported simultaneously and in close proximity.
Question 9: Do you have any comments on our plan for a "phase 1" when Wi-Fi will be introduced?	Confidential – N IEEE 802 LMSC agrees with Ofcom in their preference to move ahead with "Phase 1" and requests Ofcom to allow Wi-Fi operations in the upper 6 GHz band as early as possible (ideally in 2025). As mentioned in response to Questions 1, 6, and 8 above, the currently available 6 GHz spectrum is insufficient for ongoing Wi-Fi 7 deployments which require the entire 6 GHz spectrum to achieve performance expectations by using the advanced features in Wi-Fi 7, like enhanced quality of service, improved target wake time, and multi-link operation.
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?	Confidential – N IEEE 802 LMSC respectfully disagrees with the "seed the market" approach and requests Ofcom to consider the following points. There is demand for more capacity for broadband connections: According to BNetzA[11] and Ofcom[12], the majority of internet use occurs over fixed networks primarily delivered through Wi-Fi. BNetzA reports that the increase in the volume of fixed traffic in 2023 was more than four times the increase in the volume of mobile traffic in the same year[13]. According to Arthur D Little[14], it forecasts that the growth in fixed data traffic (and therefore Wi-Fi traffic) in Europe between 2022 and 2030 is similar to past elevated levels, and the total volume of fixed data traffic is significantly more than that of the mobile data traffic over the same period of time.

[10] See Plum Consulting's Wi-Fi spectrum requirements whitepaper, (https://plumconsulting.co.uk/wi-fi-spectrum-requirements/) [Accessed: 17 April 2025].

[11] See Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen: Jahresbericht Telekommunikation 2023, 16 May 2024, (https://data.bundesnetzagentur.de/Bundesnetzagentur/SharedDocs/Mediathek/Berichte/2023/240515_JB_TK_23_web_barrierefrei.pdf) [Accessed: 17 April 2025]

[12] See Ofcom: Communications Market Report 2024, 18 July 2024, (https://www.ofcom.org.uk/phones-and-broadband/service-quality/communications-market-2024/) [Accessed: 17 April 2025] ("Seventy-one per cent of broadband connections were provided using fibre technologies at the end of 2023.")

[13] See Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen: Press release of Jahresbericht Telekommunikation 2023, 16 May 2024, (https://www.bundesnetzagentur.de/SharedDocs/Pressemitteilungen/DE/2024/20240516_JB_TK2023.html?nn=659670) [Accessed: 17 April 2025] ("In 2023, a total data volume of around 132 billion GB was transmitted in fixed networks in Germany. This corresponds to an average data volume of around 287 GB per connection per month. Compared to 2022, the data volume transmitted in fixed networks in Germany increased by around 11 billion GB.") and ("According to surveys by the Federal Network Agency, the data volume transmitted via mobile networks in Germany in 2023 amounted to 9,118 million GB, compared to 6,714 million GB in 2022.")

[14] See Arthur D Little: The evolution of data grow in Europe, (https://www.adlittle.com/en/insights/report/evolution-data-growth-europe) [Accessed: 17 April 2025] ("We expect average fixed data consumption to grow from approximately 225 GB/month in 2022 to 900 GB/month per home by 2030, accounting for an overall annual growth rate of 20%, similar to past elevated levels.") and ("We expect Europe's mobile data consumption per user to continue growing in the coming years, increasing from the 2022 level of approximately 15 GB/month to 75 GB/month by 2030, creating an annual growth rate of 25%.")

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	"Seed the market" approach will not address this demand if Wi-Fi operation in upper 6 GHz band is held off until European harmonisation is concluded. This approach would then incur a loss of consumer confidence in Wi-Fi technology and relevant and important use cases would remain unaddressed. Moreover, the cross-border market confidence in Wi-Fi devices operating globally is lost putting UK at a disadvantage to the rest of the world. Therefore, IEEE 802 LMSC respectfully asks Ofcom to not follow through with "seed the market" approach and instead use the Ofcom's proposed phased approach where upper 6 GHz spectrum is opened for LPI Wi-Fi operation.
Question 11: Do you have any comments on our plan for a "phase 2" when mobile will be introduced?	Confidential – N IEEE 802 LMSC respectfully asks Ofcom to carefully assess the impact of enabling mobile communications in the upper 6 GHz band before rolling out "Phase 2" for mobile authorisation as there is a potential to disrupt existing wireless services.
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.	Confidential – N N/A
Question 13: Do you have any evidence or views about the geographical extent of mobile networks' likely deployment in Upper 6 GHz?	Confidential – N N/A
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?	Confidential – N IEEE 802 LMSC supports Ofcom's proposed phased approach for authorizing both Wi-Fi and mobile in the upper 6 GHz band. Expedited 6 GHz Wi-Fi deployment would meet urgent consumer demand for high-speed connectivity and allow operators to utilize expanded capacity while mobile coexistence strategies are defined. This phased approach stimulates innovation, prevents delays caused by waiting for complete European harmonisation, and safeguards early Wi-Fi investments. Balancing emerging mobile requirements with current market needs ensures that the Wi-Fi industry remains competitive and responsive. Overall, this phased approach supports sustainable growth and delivers enhanced user experiences across the connected ecosystem.

Question	Your response
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?	Confidential – N IEEE 802 LMSC emphasizes the importance of authorizing very low power (VLP) portable devices in the upper 6 GHz band and requests Ofcom to consider the same. Since Ofcom's 2020 decision[15] on allowing VLP devices in the lower 6 GHz band, the VLP ecosystem has grown and the demand for enabling VLP in the upper 6 GHz band has also materialized. Since VLP devices operate at lower power levels (25 mW) than LPI, there are not any technical reasons to not include VLP operation under "Phase 1" of the proposed phased approach. In fact, authorizing VLP Wi-Fi in the upper 6 GHz band will enable UK consumers and enterprises to fully benefit from a rapidly increasing VLP device and use case ecosystems. IEEE 802 LMSC recommends that Ofcom enables VLP operation across the entire 6 GHz band similar to recently published FCC's R&O[16].
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?	Confidential – N Ofcom's proposal to authorize LPI Wi-Fi access points and client devices in the 6425 MHz to 7125 MHz band is strongly supported by IEEE 802 LMSC. This proposal is consistent with international policies in the U.S., Canada, South Korea, and Saudi Arabia, and reflects rapid advancements in the 6 GHz Wi-Fi ecosystems. Enabling LPI Wi-Fi in the upper 6 GHz band will deliver significant benefits to UK consumers, businesses, and public services by providing the spectrum needed for next-generation connectivity solutions.
Question 17: Do you have any comments on the proposed technical conditions?	Confidential – N IEEE 802 LMSC supports Ofcom's proposed technical conditions for LPI Wi-Fi access points and client devices in the 6425 MHz to 7125 MHz band. We believe it is crucial to align LPI Wi-Fi regulations across both the lower 6 GHz and upper 6 GHz bands for a unified approach. This consistency is essential to ensure seamless interoperability among devices, maximize economies of scale, and simplify the certification process. Harmonising these conditions will accelerate 6 GHz Wi-Fi deployments across the UK while enhancing network performance and advancing the nation's digital infrastructure, ultimately benefiting both consumers and industries.

[15] See Improving spectrum access for Wi-Fi: Spectrum use in the 5 GHz and 6 GHz bands, (https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-2-6-weeks/189812-improving-spectrum-access-for-wi-fi----spectrum-use-in-the-5-and-6-ghz-bands/associated-documents/6ghz-statement.pdf?v=325088) [Accessed: 17 April 2025].

[16] Third Report and Order, Federal Communications Commission, United States of America, 13 December 2024, (https://docs.fcc.gov/public/attachments/FCC-24-125A1.pdf) [Accessed: 17 April 2025].

Question	Your response
Question 18: Do you have any comments on the proposed VNS draft?	Confidential – N N/A
Question 19: Do you have any suggestions for an appropriate mechanism for enhanced sensing, or comments on the proposed solution above?	Confidential – N See the response to Question 7 above.
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.	Confidential – N IEEE 802 LMSC supports protecting RAS in the 6650 MHz to 6675.2 MHz band but considers a full ban on Wi-Fi transmissions overly restrictive. As Ofcom notes, RAS observatories are typically remote, and unlikely to experience interference from LPI or VLP Wi-Fi devices. SP devices using AFC systems can further prevent interference by creating exclusion zones. Experience from the US and Canada, where 6 GHz Wi-Fi operation following FCC's and ISED's design decisions has caused no reported issues, shows that coexistence with RAS is feasible. We urge Ofcom to adopt a policy that enables spectrum use while safeguarding RAS operations.
Question 21: Do you agree with our assessment of Wi-Fi coexistence with existing users of the band? If not, please provide details.	Confidential – N IEEE 802 LMSC supports Ofcom's assessment that Wi-Fi can co-exist effectively with incumbents in the 6 GHz band. Extensive CEPT studies, including ECC Reports 302[17] and 364[18], confirm that the risk of interference from LPI Wi-Fi to incumbent services (fixed satellite and fixed service operations), is minimal. These findings are reinforced by real-world deployments in multiple countries, including the UK's own experience with Wi-Fi usage in the lower 6 GHz band. Together, this evidence highlights that Ofcom's proposed coexistence framework is sound, enabling efficient spectrum sharing while protecting incumbent services.
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?	Confidential – N N/A

[17] See Sharing and compatibility studies related to Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the frequency band 5925-6425 MHz, (https://docdb.cept.org/download/1397) [Accessed: 17 April 2025]
[18] See Sharing and compatibility studies related to Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the frequency band 6425-7125 MHz, (https://docdb.cept.org/download/4610) [Accessed: 17 April 2025]

Question	Your response
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?	Confidential – N N/A
Question 24: Do you have any other comments on our policy proposals or any of the issues raised in this document?	Confidential – N N/A

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