Ericsson response to Ofcom consultation

Expanding access to the 6 GHz band for mobile and Wi-Fi services

About Ericsson

Ericsson is one of the leading providers of Information and Communication Technology (ICT) to service providers. We enable the full value of connectivity by creating game-changing technology and services that are easy to use, adopt, and scale, making our customers successful in a fully connected world.

Ericsson welcomes the opportunity to respond to the Ofcom consultation "Expanding access to the 6 GHz band for commercial mobile and Wi-Fi services" published 13 February 2025.

Response Summary

Ericsson strongly supports the allocation of the entire 700 MHz in the Upper 6 GHz band for licensed mobile (Mobile/Fixed Communication Network (MFCN) and International Mobile Telecommunications (IMT)) use. This spectrum is critical for the evolution of 5G-Advanced and the successful launch of 6G, offering a unique combination of wide bandwidth and favourable propagation characteristics that enable high-capacity, wide-area coverage.

Ericsson supports Ofcom's suggested "alternative approach" of waiting for full European harmonization of the entire band, rather than adopting a phased approach.

While Ericsson recognizes Ofcom's efforts to assess coexistence and explore phased approaches, we have significant concerns regarding the early introduction of licence-exempt use, and the authorisation of any unlicensed devices in the Upper 6 GHz band.

It is essential that the future spectrum needs of both IMT and Wi-Fi in the UK are clearly defined and quantified to provide a sound basis for any decision on exclusive or shared use of the Upper 6 GHz band. If Ofcom chooses to move ahead of CEPT with a phased approach, it should ensure any early authorisation is reversible to maintain flexibility for alignment with a future harmonised European solution, however, we don't see this possible with the current proposal.

Ericsson has strong concerns regarding the potential for interference from Low Power Indoor (LPI) and Very Low Power (VLP) devices to incumbent Fixed Services (FS), as has also been raised within the ongoing CEPT process. Although some preliminary observations suggest that interference has not yet materialized in the lower 6 GHz band, this is primarily due to the currently limited global deployment of Wi-Fi in that range. As the number of LPI and VLP devices increases, the likelihood of interference with FS systems is expected to rise. It is therefore premature to conclude that coexistence will remain without issues, and careful, evidence-based consideration is required before proceeding.

Ultimately, unlocking the Upper 6 GHz band for mobile use is a strategic requirement to enable the UK and Europe to remain at the forefront of mobile innovation. Wi-Fi performance targets can continue to be met using existing licence-exempt bands with the adoption of advanced Wi-Fi technologies, eliminating the need to prioritize Wi-Fi in this band.

Ericsson Response to the Consultation 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.

No comment

Question 2:
Are you interested in providing or developing AFC databases for use in the Lower 6 GHz band in the UK?

No comment

Question 3:
Do you have any views on the operational considerations of setting up and running AFC databases?

No comment

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?

No comment

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.

Ericsson remains concerns of the implementation of an AFC database to protect FS.

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

Ericsson propose that the entire 700 MHz of the Upper 6 GHz frequency band should be made available for MFCN/IMT use, enabling full base station EIRP mobile operations without being constrained by the need to share the band with licence-exempt services. This is critical to ensure that Mobile Network Operators (MNOs) can achieve comparable performance to current macro site deployments in the 3.5 GHz band.

Ericsson supports Ofcom's suggested "alternative approach" of waiting for full European harmonization of the entire band, rather than adopting a phased approach. The phased approach effectively prioritizes Wi-Fi over mobile, rather than placing both connectivity solutions on an equal footing. Contrary to Ofcom's assertion, a phased approach could disincentivize the Wi-Fi industry from participating in the development of potential sharing mechanisms, further complicating coexistence strategies.

Should a sharing mechanism be pursued, Ericsson stresses that it must guarantee protection from harmful interference to MFCN/IMT services, both indoors and outdoors, to foster long-term investment. Furthermore, any such mechanism should be mandatory for all devices in the market (including any potentially "pre-authorized" equipment) to ensure compliance and prevent fragmentation.

Ericsson also believes that Ofcom's phased proposal directly contradicts its stated goal to "provide both industries with as much certainty as possible about their future access to this spectrum" (section 1.9). The lack of a coordinated, harmonized solution at the European level risks creating a fragmented regulatory environment that could threaten the development of a viable device and equipment ecosystem. A UK-specific solution would jeopardize the scale benefits that come from alignment with European markets.

Moreover, Ofcom's suggestion that indoor Wi-Fi use will minimize interference risk does not adequately consider the importance of indoor mobile broadband services. Indoor MFCN/IMT usage is a key component of mobile networks, and any interference from WAS/RLAN services could severely impact service quality.

Ofcom's plan to pre-authorize LPI Wi-Fi or any other unlicensed usage across the entire Upper 6 GHz band carries a substantial risk. It would compromise future MFCN/IMT deployments, including the UK's innovation ambitions, due to co-channel interference between MFCN/IMT and Wi-Fi services. This interference would undermine the band's long-term utility for advanced mobile technologies.

Given the uncertainties surrounding the sharing mechanisms analyzed by CEPT and the absence of a harmonized European framework, Ericsson strongly advocates against national pre-authorization of Wi-Fi. Instead, the UK should align with the CEPT process and authorize use of the Upper 6 GHz band only once a comprehensive and harmonized solution has been agreed upon at the European level.

This approach would uphold the principles of technology neutrality and ensure that both mobile and Wi-Fi technologies can access the band on a fair and equal basis, supported by a robust and scalable ecosystem.

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

As Ofcom acknowledges, the Wi-Fi devices proposed for authorization under Phase 1 from 2025 onwards would operate across the entire Upper 6 GHz band without the technical capability to support future sharing mechanisms that may eventually be developed and harmonized at the European level. These devices would also lack the ability to dynamically vacate or avoid the band if MFCN/IMT deployments is introduced. Ericsson notes that the draft ECC Report 366 outlines three potential signal sensing type sharing mechanisms:

- MFCN/IMT systems broadcasting a specific beacon-like signal for Wi-Fi detection.
- Wi-Fi systems detecting a 3GPP-like mobile control signal.
- Wi-Fi systems detecting a different signal not based on Wi-Fi or 3GPP technologies.

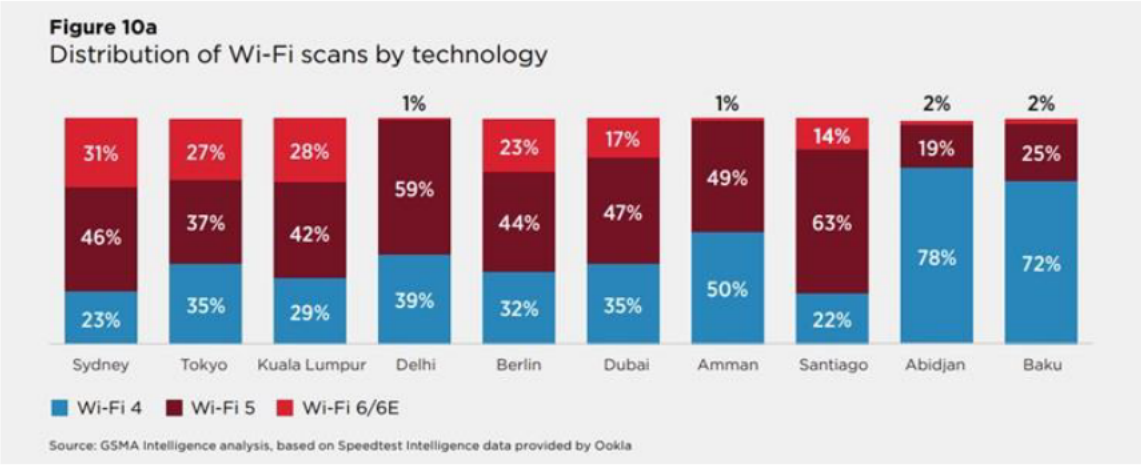
Ofcom has shown a preference for the first approach, whereby mobile networks would transmit a beacon signal detectable by Wi-Fi. However, technical analysis has demonstrated that this is the least effective of the three in managing interference. Ericsson therefore strongly caution against adopting this mechanism as a basis for spectrum policy.

Relying solely on the natural replacement cycle of legacy Wi-Fi equipment is not a viable strategy to mitigate the risk of harmful interference between future MFCN/IMT and WAS/RLAN deployments. This approach risks undermining certainty for mobile network investments and creates long-term technical and commercial liabilities that may hinder the full utilization of the band for mobile.

Ofcom has stated that "the likelihood of interference in practice should only become material in much later stages of adoption." Considering this, Ericsson questions whether pre-authorizing Wi-Fi use at this stage is justified, particularly when a harmonized European solution is still under development.

Furthermore, the pace of Wi-Fi device replacement is demonstrably slow. Legacy technologies such as Wi-Fi 4 remain in widespread use many years after their introduction. As such, Ofcom's assumption that "the overlap in time between the use of first-generation legacy Wi-Fi devices and mobile rollout should be short", does not reflect observed market behaviour and may lead to long-term coexistence challenges. This is described in the GSMA document Mobile Evolution in 6GHz from September 2024.

The table below is an extract from the GSMA document GSMA_Mobile-Evolution-in-6-GHz.pdf September 2024.



Clarity is needed on how Ofcom intends to manage the eventual withdrawal or modification of rights for legacy devices. Specifically, what mechanisms or regulatory levers would be used to compel

devices, in particularly unmanaged access points to cease transmission in all or parts of the Upper 6 GHz band, unless their continued operation is explicitly authorized.

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.

Spectrum in the Upper 6 GHz band is essential for the evolution of 5G-Advanced and the successful launch of 6G. The Upper 6 GHz band enables significantly larger spectrum blocks, such as 200 MHz per mobile network operator, which are not achievable in currently harmonized bands. This capacity is critical for delivering advanced services and applications that demand high bandwidth.

Moreover, the propagation characteristics of the Upper 6 GHz band allow for coverage comparable to that of the 3.5 GHz band, supporting a cost-effective and scalable network rollout.

Ericsson has also studied Wi-Fi performance in existing licence-exempt bandsachieving-gigabit-connectivity.pdf, and found that, *with current spectrum assets (5 GHz and lower 6 GHz and* with effective frequency planning and the adoption of next-generation Wi-Fi technologies, high capacity and bitrates, well beyond the 1 Gbps European fixed connectivity target[1] can be achieved without needing access to the Upper 6 GHz band.
Ericsson did not yet see any evidence of additional spectrum needs for RLAN and suggests the efforts should be made to utilize existing spectrum by ensuring that up-to-date technology is deployed and that efficient frequency planning is used. Ofcom refers to evidence of the need for an additional 320 MHz for Wi-Fi but does not provide any details that can be verified.
Therefore, Ericsson sees no compelling spectrum requirement that would justify prioritizing license-exempt use in the Upper 6 GHz.

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

See our response above to Q6 and Q7 on our concerns regarding Ofcom's plans for Phase-1.

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?

Ericsson acknowledges that this is not Ofcom's preferred approach. However, given our clear position in favor of MFCN/IMT use of the band, we see no benefit in "seeding" the market through the

[1] The Gigabit connectivity target is defined for fixed broadband connections delivered to the home. Fixed broadband connectivity is typically delivered to households via fiber or fixed wireless access. This is then connected to a Wi-Fi router, which distributes the connection within the home/enterprise. Wi-Fi plays a key role in maximizing the capacity that reaches the consumer.

proposed Phase 1 alternative and therefore do not support it. The uncertainties outlined above would persist and only be deferred to a later stage.

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

Without access to additional mid-band spectrum, operators will struggle to deliver new services at scale in a cost-efficient manner, especially across cities. In the long run, this constraint would limit the UK's ability to fully realise the socio-economic benefits of advanced mobile connectivity.

The upper 6 GHz provides a valuable opportunity to deliver both high capacity and wide area coverage to support the evolution of 5G-Advanced and enable the launch of 6G in the UK. Contributions from the mobile industry to the CEPT studies including the draft ECC Report 366, clearly demonstrate that coverage comparable to 3.5 GHz is achievable. This also enables the re-use of sites, offering significant cost benefits an important financial aspect.

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.

Ericsson primarily supports the entire Upper 6 GHz band for mobile use. Additionally, Ofcom should consider supporting further IMT identification within the 7125–8400 MHz range (beyond 7125-7250 MHz) through the WRC-27 process, to enable future 6G expansion.

Ericsson notes that several key international markets, including China, India, and Brazil, have already committed to using the full 700 MHz of the Upper 6 GHz band for IMT services, specifically under 3GPP band n104. These decisions underscore a growing global consensus around the importance of allocating the entire band for full-power mobile use. We strongly encourage Ofcom to align with this direction to benefit from global device ecosystem synergies and economies of scale that would arise from harmonized spectrum use.

In paragraph 2.27 of the consultation, Ofcom references mobile data traffic growth projections, including figures from the Ericsson Mobility Report (EMR). While these figures are valuable for understanding broad usage trends, they are not sufficient to determine future spectrum requirements. The EMR provides average data usage estimates aggregated over 24-hour periods and across diverse geographic areas. In practice, network capacity planning must be based on peak-hour traffic in specific locations, particularly in urban environments the growth rates far exceed rural averages.

Ericsson would be pleased to support Ofcom with additional analysis tailored to the UK context to better assess future spectrum needs, particularly with respect to demand scenarios where Upper 6 GHz is expected to be deployed.

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

The Upper 6 GHz band is expected to be deployed using the same network grid as the 3.5 GHz band, offering similar performance characteristics. This alignment enables efficient reuse of existing infrastructure, significantly reducing deployment costs and accelerating time to market. With its ability to deliver high capacity and reliable wide-area coverage, the band is especially well-suited for city environments where demand for data is highest.

Deployments are also expected in other areas where population density justifies services such as Fixed Wireless Access (FWA). In addition, this spectrum can support enterprise use cases where mobile broadband is not the primary requirement. Ericsson therefore emphasizes the critical importance of permitting full power deployments across the entire band to maximize its utility and support a broad range of use cases.

Ericsson also notes Ofcom's reference to a previous consultation in which Ericsson, Three, and Vodafone highlighted that the Upper 6 GHz band could provide comparable coverage to the 3.4–3.8 GHz band, assuming the use of higher radiated powers. This view is reinforced by new technical findings in the draft ECC Report 366, which confirm similar conclusions. Notably, ECC Report 366 includes analysis on the negative performance implications of restricting power levels in the Upper 6 GHz band, reinforcing the case for authorizing full power use to ensure efficient and effective deployment.

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?

There is a strong concern that enabling licence-exempt Wi-Fi use now without a robust and validated sharing mechanism could significantly undermine the long-term usability of the band for mobile services. Such an approach risks constraining future mobile innovation and investment.

Ericsson does not support Ofcom's proposed phased approach for the following key reasons:

- Pre-authorizing unlicensed use of the band would effectively prioritize Wi-Fi over mobile, which contradicts Ofcom's stated objective "to provide both industries with as much certainty as possible about their future access to this spectrum" as described in paragraph 1.9.

- Authorizing Wi-Fi access in advance would lead to the deployment of legacy devices that cannot accommodate or respond to future sharing mechanisms, thereby introducing long-term interference risks in any shared-use scenario.

- Early unlicensed deployment would complicate ongoing CEPT discussions around coexistence, increasing the risk of both co-channel and adjacent-channel interference. Notably, there is currently no harmonized European standard for WAS/RLANs operating above 6425 MHz, and future device requirements may be significantly affected by the outcomes of CEPT's sharing studies.

In contrast, Ericsson strongly supports Ofcom's proposed "Alternative approach", to await the outcome of the CEPT process and authorize use of the band only once a harmonized European solution is available. This aligns with the principle set by the European Commission in its mandate to CEPT to study feasibility of and develop least restrictive harmonized technical conditions for the potential shared use if the 6425 7125 MHZ frequency band, which states that *"Within the scope of*

studies of this Mandate, terrestrial systems capable of providing WBB ECS and WAS/RLANs should be treated equally and without any prior constraints or order of preference"

Any sharing framework developed for the Upper 6 GHz band must be harmonised across CEPT member countries. Fragmentation would lead to inefficiencies and complicate cross-border coordination. If Ofcom chooses to proceed with early authorisation ahead of a CEPT decision on the usage of the upper 6 GHz band, it is essential that such a step is reversible. This would allow the UK to adapt quickly should a CEPT-wide harmonised solution later emerge and be deemed more appropriate for national interests.

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?

Ericsson has strong reservations regarding the Phase 1 authorization of any licence-exempt equipment, including both LPI and VLP devices. The introduction of VLPs raises additional concerns, as their expected use in outdoor and nomadic scenarios increases the likelihood of widespread mutual interference with IMT systems operating in the Upper 6 GHz band.

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?

See earlier responses above with regards to concerns to the Phase 1 introduction of Wi-Fi equipment in the Upper 6 GHz band as outlined in question 14.

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

See the answer to question 14.

Ericsson is concerned that enabling any licence-exempt use in the Upper 6 GHz band before a robust, harmonized sharing mechanism is in place could seriously undermine the long-term potential of the band for mobile services. The proposed phased approach by Ofcom would prioritize unlicensed Wi-Fi over mobile, contradicting the stated goal of providing both sectors with equal certainty. It would also result in the widespread deployment of legacy Wi-Fi devices unable to accommodate future sharing arrangements, creating long-term interference risks.

Furthermore, early authorization risks fragmenting the European landscape and complicating CEPT's ongoing work, especially given the lack of a harmonized standard above 6425 MHz. Instead, Ericsson supports Ofcom's "Alternative approach", to await the outcome of CEPT harmonization in line with the European Commission's principle of equal treatment for mobile and Wi-Fi technologies given in the EC Mandate to CEPT. Should the UK move forward independently, it is essential that any early decisions remain reversible to allow alignment with future European frameworks.

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

Ericsson believes that a harmonized standard is needed before placing unlicensed equipment on the market. See response to Question 14.

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

See response to Question 7.

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.

No Comment.

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

OFCOM indicates that CEPT SE45 analysis concluded that interference from low power indoor Wi-Fi is unlikely except in a few isolated corner cases. Ericsson notes that the analysis included in the reports by SE45, are statistical and therefore based on a certain power distribution, Building Entry Loss, etc. In particular, studies do not consider the Wi-Fi beacon signal[2] which is always sent at highest power.

Contrary to these conclusions, measurements presented in SE45 have shown that interference will happen in real world scenarios, references:

- https://cept.org/documents/se-45/78519/se45-23-info006_info-document-on-rlan-vs-fs-field-measurements
- https://cept.org/documents/se-45/84104/se45-24-057a1_measurements-analysing-the-interference-effect-of-a-rlan-ap-to-a-fs-link-at-6-ghz
- https://cept.org/documents/se-45/78474/se45-23-035_rlan-vs-fs-interference-measurements

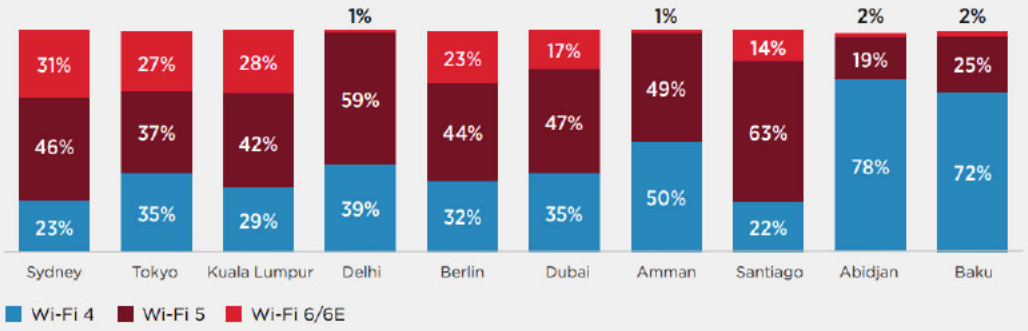
Furthermore, global Wi-Fi penetration in the lower 6 GHz remains low, as shown in the figure below from the GSMA report, September 2024, GSMA_Mobile-Evolution-in-6-GHz.pdf. As a result, it is

[2] A beacon signal is always transmitted at maximum power. Even though it transmits less than 1% of the time, it can still completely disrupt the FS system if its peak power causes the instantaneous SNIR to drop below the 10^{-6} threshold — this will result in system failure 100% of the time

premature to conclude that LPI and VLP will not cause to interference to FS systems once Wi-Fi deployments start to scale up.

The table below is an extract from the GSMA document, GSMA_Mobile-Evolution-in-6-GHz.pdf September 2024.

Figure 10a
Distribution of Wi-Fi scans by technology



Source: GSMA Intelligence analysis, based on Speedtest Intelligence data provided by Ookla

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?

Ericsson notes that the potential interference concerns in urban centres are limited, with Ofcom identifying around 100 FS links in high-density areas out of a total of 500 in the Upper 6 GHz band. Rather than focusing solely on the cost of relocating these links, we suggest that coordination between mobile networks and existing FS links should be considered as a first step as a more cost-effective and pragmatic alternative.

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?

Ericsson in general agrees with Ofcom's initial assessment regarding the likely approach to coexistence between future mobile use and existing users in the Upper 6 GHz band. The overall direction appears sound. However, with regard to the protection of Radio Astronomy Services (RAS), Ericsson recommends that coexistence measures take into account site-specific propagation characteristics and antenna parameters, rather than applying overly conservative blanket assumptions. This would help avoid unnecessarily restrictive technical conditions that could hinder the efficient deployment of mobile networks.

In relation to FS, Ericsson recommends that Ofcom undertake further analysis on the feasibility of coordination between mobile networks and existing FS deployments before considering any relocation of fixed links. A well-designed coordination framework may allow continued operation of

FS services alongside mobile use in certain areas, reducing disruption and preserving spectrum efficiency.

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