

# Consultation response form

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## Nokia

Nokia welcomes the opportunity given through Ofcom's statement and further consultation to provide further comments and views on the evolution of the Shared Access Licencing framework in the UK. Industry 4.0 has advanced quickly. Digitalization has expanded dramatically through technology advancements in automation, robotization, data analytics, virtualization, artificial intelligence (AI), machine learning (ML) and devices. Shifting from process automation to a human-centric, collaborative and more sustainable approach, Industry 5.0 is set to take us further and faster. Industry 5.0 builds on Industry 4.0 integrating resilient, sustainable, and human-centric technologies, organisational concepts and management principles to improve ecosystems, supply chains and operations across industries. Thus, it is important for Ofcom to consider the evolution of the SAL framework as a continuous process which follows the advancements of technology and the requirements of the industry, enabling in that way Industry 5.0 to take up across the UK industrial landscape.

As a brief Nokia reflection to Ofcom's decisions presented in this statement, for Low Power licences, the EIRP increase by 3dB and the decision not to increase the licence fees are steps towards the right direction, taking into consideration the needs of Low Power local area networks and fostering further adoption of the band. Similarly, the inclusion of Medium Power licences in urban areas in the SAL framework, waiving the requirement of going through the exception process, as well as the decision not to increase the licence fees in rural areas also contribute towards the increased adoption of the band. Nokia also welcomes the addition of 20 MHz in the 2320-2340 MHz band in the SAL framework as well as the revision of the BEL value from 12 dB to 14 dB and the development of an antenna database as an effort to introduce more realism in the coordination process. From a technical perspective, even though Nokia has expressed concerns and highlighted risks that are likely to result from the newly adopted coordination process (i.e. BS to Terminal), Ofcom's decision to consider the more conservative protection thresholds, address to some extent, but unfortunately do not eliminate our concerns about the new process.

## Your response

Question	Your response
<p><b>Question 1: Do you have any comments on our proposal to make Medium Power licences (42 dBm EIRP, up to 10m height) commonly available in urban areas across most of the UK, for the 3.8-4.2 GHz and 1800 MHz bands?</b></p>	<p>Confidential? – N</p> <p>Nokia welcomes the proposal from Ofcom to allow Medium Power licences in urban areas across most of the UK. From the way the question is asked, it is not entirely clear whether Ofcom suggests to allow Medium Power BS in urban areas with the same EIRP levels as in rural areas or whether only a 42dBm EIRP is proposed to be permitted. Nokia is of the view that it is important that the licence conditions for Medium Power BS in urban areas continue to enable innovation in the band and thus, we are supportive of permitting Medium Power licences in urban areas with at least the same licence conditions as in rural areas i.e. EIRP 42dBm/carrier for carriers up to 20MHz and 36dBm/5MHz for carriers greater than 20MHz, while ensuring the protection of existing services in the same and the adjacent bands.</p> <p>We also understand Ofcom’s concern that permitting antenna heights higher than 10m might increase the sterilisation areas in urban environments. However, clutter higher than 10m can be common in urban environments, therefore, while applications of higher heights can still be considered through the exception process, we suggest Ofcom to re-assess this limitation for both Low and Medium Power licences in future revisions of the SAL framework.</p>
<p><b>Question 2: Do you have any comments on our proposed balancing measures:</b></p> <p><b>i) to continue to only grant Medium Power licences in the Greater London area (as defined in our mm Wave work) by exception, applying the ‘premises sterilisation’ test?</b></p> <p><b>ii) to apply a 100 MHz limit to the amount of spectrum a licensee can</b></p>	<p>Confidential? – N</p> <p>i) Ofcom states that the premises sterilisation test is a proxy for potential demand (par. 4.40) while it might not entirely reflect the total number of premises that wish to use the SAL framework. In that sense, the premises which a rejected Medium Power licence could sterilise, might in fact never deploy or seek to deploy a local licence. This will result</p>

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<p>transmit at Medium Power in a particular urban area?</p> <p>iii) to apply a new price as part of this liberalisation, set at £160 per 10 MHz for Medium Power licences in urban areas?</p>	<p>in rejecting Medium Power even if there is no other demand for local licences.</p> <p>Regarding the sterilisation test thresholds, we understand that those have been derived based on the newly adopted BS – terminal coordination process. We note that the sterilisation premises thresholds (44,200 and 57,000 for 3.8-4.2 GHz and 1800 MHz respectively) which were introduced at the November 2023 consultation, were derived by Ofcom’s <i>“analysis of average premise sterilisation for an equivalent Low power deployment in an urban area”</i> (par. 6.7 of November 2023 consultation). These thresholds were initially proposed to be applicable for the exception process in all urban environments. In Table 5.3 of the November 2023 consultation, the tests performed indicate that for the same Medium Power licence the premises sterilised in London are at least 4 times higher than any other urban environment tested. Therefore, unless the previously proposed thresholds of 44,200 and 57,000 premises were derived entirely based on tests made for London, then our view is that since the above levels are proposed to be applicable in Greater London, while London shows to be at least 4 times more dense than other urban areas, the proposed levels would probably need to be increased and adjusted to be specifically applicable for Greater London.</p> <p>ii) The way we understand the proposal from Ofcom to limit Medium Power licences to 100MHz in urban areas is that a licensee can hold multiple Medium Power licences in the same area, as long as the total frequency range of the acquired spectrum range does not extend beyond 100 MHz in the 3.8-4.2 GHz band. To our understanding this means that a licensee can hold e.g. six 20 MHz licences in e.g. 4000-4020 MHz in a specific urban area (total of 120 MHz of spectrum, spanning across only 20MHz within 3.8-4.2</p>

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	<p>GHz), but cannot hold simultaneously a single 100 MHz licence in e.g. 3900-4000 MHz and a single 20 MHz licence in e.g. 4000-4020 MHz (which also is 120 MHz of spectrum in total but spanning across 120 MHz in 3.8-4.2 GHz) in a specific urban area. We have in general no specific concerns towards this proposal, considering that 100 MHz should be sufficient to cover the needs of Medium Power licences, however enough consideration (e.g. through exceptions) should be given in the cases where the desired specific parts of the 3.8-4.2 GHz spectrum to satisfy the 100 MHz requirement may not be available in a given urban location.</p> <p>iii) Nokia welcomes Ofcom’s reconsideration of fees which led to proposing no increase in the prices of licences in rural areas and of Low Power licences in urban areas. While for Medium Power licences in urban areas we acknowledge that Ofcom revisited the initially proposed fee changes from £10,000 for 100 MHz (November 2023) to £1,600 for 100 MHz, we also would like to note that the proposed increase of the licence fee in urban areas is in fact double the price compared to that of a rural area. To better understand the effect of such increase, we recommend that Ofcom should monitor the number of applications and evaluate over time the actual demand and take-up of Medium Power licences in urban areas, since affordability remains key for the enhanced adoption of the SAL frequencies.</p>
<p><b>Question 3: Do you agree with our proposal to remove the TRR in relation to Low Power outdoor base stations in 3.8-4.2 GHz?</b></p>	<p>Confidential? – Y / N</p>

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<p><b>Question 4: In relation to our impact assessment, do you agree with our assessment of the potential impact of the further proposals we are making?</b></p>	<p>Confidential? – Y / N</p>
<p><b>Question 5: In relation to our equality impact assessment, do you agree with our assessment of the potential impact of the further proposals we are making on specific groups of persons?</b></p>	<p>Confidential? – Y / N</p>
<p><b>Question 6: In relation to our Welsh Language impact assessment, do you agree with our assessment of the potential impact of our further proposals on the Welsh language?</b></p> <p><b>Do you think our further proposals could be formulated or revised to ensure, or increase, positive effects, or reduce/ eliminate any negative effects, on opportunities to use the Welsh language and treating the Welsh language no less favourably than English?</b></p>	<p>Confidential? – Y / N</p>
<p><b>Question 7: Do you have any further comments on our proposals?</b></p>	<p>Confidential? – N</p> <p>We would like to stretch the importance of Ofcom establishing sufficient measures to ensure minimal operational disruption resulting from the new coordination process that Ofcom decided to adopt. While we acknowledge that the majority of licences in 3.8-4.2 GHz may follow the 3:1 frame structure, Ofcom’s newly adopted coordination assumption, which considers all licences to be synchronised, may result to interference issues being raised in cases when neighbouring local area networks are in practice not synchronised. In those cases, and if no bilateral agreements are reached, Ofcom proposes that an agreed frame-structure e.g. 2:2, would be imposed. Changing the frame-structure of a Base Station is not a straightforward process and requires technical intervention to the system by technical experts. In an example where a local area network follows an e.g.</p>

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	<p>3:1 frame structure and another network follows an e.g. 1:3 frame-structure then imposing a 2:2 frame structure for both networks to avoid interference would result in both networks requiring technical intervention, causing additional operational and network management burden for both licensees. At the same time, imposing a frame structure such as 2:2 which is not aligned with the 3:1 frame structure of public mobile networks below 3.8 GHz, might increase the total interference the public mobile networks experience, especially when those licences are deployed in lower parts of the 3.8-4.2 GHz band. Similarly, altering the frame-structure of an existing local network to minimise interference with a new local area network, might also cause interference issues to other existing neighbouring local area networks, generating domino-like interference events. Therefore, Ofcom should carefully assess the mitigation processes resulting from the need to balance the default assumption of synchronisation for coordination purposes and whether the local area networks are in fact synchronised. One reasonable suggestion for Ofcom would be to consider imposing the frame-structure of the more senior network, considering that the band is authorised on a first-come-first-served basis, or/and to impose the synchronised 3:1 frame structure, especially in the lower part of the band, to avoid the risk of interference to public mobile networks.</p> <p>An additional comment, which has been highlighted by Nokia in previous Ofcom consultations is that the CEPT has consulted on permitting up to 51dBm/100MHz EIRP for Medium Power licences. While Ofcom has decided to adopt a 3dB higher power for Low Power licences, our view is that also an increase of the EIRP of Medium Power licences, as per the draft ECC Decision (24)01 could be adopted by Ofcom.</p> <p>Finally, regarding the database of available antennas, we see that in Ofcom's limited pool of antenna patterns, there is no reference to AAS antennas. While we have highlighted the difficulties of AAS antennas to meet the EIRP based out-of-band unwanted emissions as defined in the SAL framework, Ofcom seems to not have taken</p>

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	into consideration the potential of AAS antennas being available for the 3.8-4.2 GHz band in the future.