

## Your response

<b>Introduction</b>	
<p>Background information on and main view from Shyam Telecom UK.</p>	<p>Confidential? No</p> <p>Shyam Telecom UK is a 1800 MHz CSA license holder. The company is connected to a network infrastructure supplier that is specialized in small or medium mobile service roll-outs.</p> <p>In general STUK endorses the initiative to open frequency bands for local services. This will enable business as well as technical innovations and development and will likely trigger other national telecom regulators to move in the same direction.</p> <p>International perspective. For the success of shared spectrum international acceptance is necessary. The development of network components and services are usually dependent on a larger market than one country. Is the initiative connected or coordinated with other countries? (In Sweden 3.7-3.8 GHz is considered for local networks, with 3.8-4.2 GHz and the second option.)</p> <p>The time synchronisation requirements will be important, in TDD systems new entrants may not choose to use unsynchronized systems due to the risk of MS to MS interference within the band filter.</p>
<b>Question</b>	<b>Your response</b>
<p><b>Question 1:</b> (Section 3) Do you agree with our proposal for a single authorisation approach for new users to access the three shared access bands and that this will be coordinated by Ofcom and authorised through individual licensing on a per location, first come first served basis? Please give reasons supported by evidence for your views.</p>	<p>Confidential? No</p> <p>Yes. Parallel use of more than one out of the three bands in one location will be relevant. From the STUK perspective we see that it is important to avoid defragmentation in terms of special rules for each service and each band. A simple and transparent scheme for all is preferred.</p>
<p><b>Question 2:</b> (Section 3) Are there other potential uses in the three shared access bands that we have not identified?</p>	<p>Confidential? No</p> <p>Table 1 covers well the expected use of the respective bands. The table should however</p>

	<p>not prevent the usage, such as 3.8-4.2 GHz for indoor coverage. Another way the express it is that voice, MBB and all forms of IoT (Narrowband, Wideband, Low latency, Low Power, etc) covers the services that are envisaged for all three bands.</p>
<p><b>Question 3:</b> (Section 3) Do you have any other comments on our authorisation proposal for the three shared access bands?</p>	<p>Confidential? No</p> <p>The first come, first served per location principle should also contain the option for several service providers at the same location. This could be enabled by separation in bands or allocation of parts of the band, as for the CSA license where GSM channels may be distributed to license holders at the same location.</p>
<p><b>Question 4:</b> (Section 3) What is your view on the status of equipment availability that could support DSA and how should DSA be implemented?</p>	<p>Confidential? No</p> <p>STUK envisage that DSA will be a reality in the future. This will as mentioned, take time although the radio equipment more or less supports this method already now. Full DSA could be introduced step by step to match the market developments. For instance by allocating short term licenses for renewal in the Ofcom data base, such as months.</p>
<p><b>Question 5:</b> (Section 4) Do you agree with our proposal for the low power and medium power licence? Please give reasons supported by evidence for your views.</p>	<p>Confidential? No</p> <p>Agree, spectrum usage in rural areas is low thus it is relevant to allow larger range. It is difficult to set the exact rules, business and technology will develop. The conditions ought to be reviewed at defined intervals such as every 4 years.</p>
<p><b>Question 6:</b> (Section 4) Are there potential uses that may not be enabled by our proposals? Please give reasons supported by evidence for your views.</p>	<p>Confidential? No</p> <p>The proposal is an extension of the present CSA and thus endorsed by STUK. It is important for the development that pre commercial tests and demo licenses should be easy to access.</p>
<p><b>Question 7:</b> (Section 4) Do you agree with our proposal to limit the locations in which medium power licences are available? Please give reasons supported by evidence for your views.</p>	<p>Confidential? No</p> <p>Agree. As stated in Question 5, the conditions ought to be reviewed at defined intervals, such</p>

	as every 4 years.
<b>Question 8:</b> (Section 4) Do you have other comments on our proposed new licence for the three shared access bands?	Confidential? No  <u>International acceptance</u> is important for success. Obviously, it does not have to be identical conditions, but rather similar type of concepts.
<b>Question 9:</b> (Section 4) Do you agree that our standard approach to non-technical licence conditions is appropriate? Please give reasons supported by evidence for your views.	Confidential? No  Wireless services are in a rapid development (such as DSA), in view of this Ofcom ought to reserve periods for review and potential upgrade of the conditions such as every 4 years.
<b>Question 10:</b> (Section 4) Are you aware of any issues regarding numbering resources and Mobile Network Codes raised by our proposals which we have not considered here?	Confidential? No  We have 2 proposals regarding MNC: <ol style="list-style-type: none"> <li>1. Extend the MNC range from 2 to 3 digits. This is compatible with 3GPP and has been implemented in other markets.</li> <li>2. To support innovation and new “microbusiness” concepts allocation of a few open MNC’s as well as MNC’s for emergency purpose as well as test and demo should be allocated (ref: Post and Telecom Agency Sweden: MNC 65-69).</li> </ol>
<b>Question 11:</b> (Section 5) Do you agree with the proposed technical licence conditions for the three shared access bands? Please give reasons supported by evidence for your views.	Confidential? No  Agree with the following comments; <ol style="list-style-type: none"> <li>1. The requirements on synchronization should be stated in more technical detail, such as plus/minus 1.5 microseconds?</li> <li>2. As a long term goal, the bandwidth for 1800 should be increased from 2 times 3.3 MHz to 2 times 5 MHz to accommodate 5G in the future.</li> </ol>
<b>Question 12:</b> (Section 5) Are there other uses that these bands could enable which could not be facilitated by the proposed technical licence conditions? Please give reasons supported by	Confidential? No  The 10 meter antenna height limitation for 1800 and 2300 MHz should be considered. An

evidence for your views.	IoT application in rural landscape may call for high antenna position. This may be supported by separate applications on a per need basis to Ofcom.
<b>Question 13:</b> (Section 5) Do you agree with our proposed coordination parameters and methodology? Please give reasons supported by evidence for your views.	Confidential? No  We agree to the proposed methodology. The shared license locations are complex in the 3.8-4.2 GHz band due to existence of several other users. In view of this we foresee a possible need for adaptations over time. A time interval for review and potential coordination improvements should be set, such as every second year. We also foresee the requirements for adaptation of the 1800 allocation to support the 5 MHz slot praxis utilized in present 5G allocations.
<b>Question 14:</b> (Section 5) What is your view on the potential use of equipment with adaptive antenna technology (AAS) in the 3.8-4.2 GHz band? What additional considerations would we need to take into account in the technical conditions and coordination methodology to support this technology and to ensure that incumbent users remain protected?	Confidential? No  Not a detailed answer, but the AAS equipped systems are assumed to operate with relaxed spectrum mask requirements. Unless they fulfil existing requirements they should be regulated as a new generation separately. The AAS may also affect the new shared license holders in terms of intra- and inter system performance.
<b>Question 15:</b> (Section 5) Do you agree with our proposal not to assign spectrum to new users in the 3800-3805 MHz band and the 4195-4200 MHz band?	Confidential? No  We understand and agree to protect these bands from new entries.
<b>Question 16:</b> (Section 6) Do you agree with our fee proposal for the new shared access licence? Please give reasons supported by evidence for your views.	Confidential? No  We agree to the proposal of cost based licenses. We also understand the difficulties to predict the outcome. One identified risk in addition to the description in 6.23 would be that an incumbent operator may try to achieve additional licenses in attractive spots in order to prevent competition and at the same time use the extra bandwidth.
<b>Question 17:</b> (Section 7) Do you agree with our proposal to change the approach to authorising existing CSA licensees in the 1800 MHz shared spectrum? Please give reasons supported by evidence for your views.	Confidential? No  We agree to the proposal on shifting the DECT Guard Band licenses as described. STUK has earlier endorsed the initiatives in Sweden and

	<p>Netherlands on the same band, the Ofcom initiative is now opening the market for smaller initiatives for any provider which we see as positive.</p> <p>As a long term goal, we propose to extend the spectrum to 2 times 5 MHz to comply which the 4G/5G spectrum allocations.</p> <p>In detail there might be overlapping GSM allocations in the CSA. The set of rules developed in 2006 allowed this. This was supported by allocation of 200 kHz GSM carriers.</p>
<p><b>Question 18:</b> (Section 8) Do you agree with our proposal for the Local Access licence? Please give reasons supported by evidence for your views.</p>	<p>Confidential? No</p> <p>The proposal is encouraging initiatives in rural or remote areas. It can open new types of MNO/MVNO complements. As such STUK sees this as a good proposal which could pose an example for other nations to follow.</p>
<p><b>Question 19:</b> (Section 8) Do you have any other comments on our proposal?</p>	<p>Confidential? No</p> <p>The suggested process will be difficult if the incumbent in-band operators does not agree.</p>
<p><b>Question 20:</b> (Section 8) What information should Ofcom consider providing for potential applicants in the future and why would this be of use?</p>	<p>Confidential? No</p> <p>A dilemma is that an incumbent operator may or will claim the location of interest is included in potential future roll-outs. This must be balanced by the commercial upside seen from the incumbent operator in the form lease fees or traffic revenues from national roaming. In case there would be incentives from Ofcom (reduced fees or other) the incumbent operator may point at geographical locations that will not be served.</p>
<p><b>Question 21:</b> (Section 8) Do you agree with our proposal to have a defined licence period and do you have any comments on the proposed licence term of three years?</p>	<p>Confidential? No</p> <p>Three years is in general a short period in view of providing an installation and a service. This would create hesitation to launch. A mechanism to extend the license in 3 years steps should be indicated. LTE and NR synchronisation requirements for TDD (2.3 and</p>

	3.5 GHz bands) will more or less block usage on alternative technologies in the same bands.
<p><b>Question 22:</b> (Section 8) Do you have any other comments on the proposed Local Access licence terms and conditions?</p>	<p>Confidential? No</p> <p>Our expectation is that the initiative will improve service levels in rural areas.</p>
<p><b>Question 23:</b> (Section 8) Do you agree with our fee proposal for the new local access licence? Please give reasons supported by evidence for your views.</p>	<p>Confidential? No</p> <p>We agree to the proposed fee level. In case of extension after 3 years, the fee would likely correspond to the proposal for the three shared bands.</p>