

Consultation title	Fixed wireless spectrum strategy: Consultation on proposed next steps to enable future uses of fixed wireless links
Organisation name	The UK Wireless Internet Service Providers Association

Response

<p>Question 1: Do you agree that we have identified the key drivers likely to have a significant impact on the spectrum demand for fixed wireless links? If not, please provide further detail and evidence to support your answer.</p> <p>Do you have other comments to make/points to raise with us on these issues?</p>	<p>Confidential? – N</p> <p>We believe that Ofcom have missed a key driver. Wireless Internet Service Providers (WISPs) need access to 3.4 to 3.8GHz spectrum for delivering broadband service in rural areas. Justification for this view is contained in Appendix 1.</p>
<p>Question 2: Do you agree with our conclusions on spectrum implications and our proposed strategy/next steps for each band?</p> <p>Are there any other considerations of significance that you feel we should have included or do you have other comments to make/points to raise with us on these issues?</p> <p>Please provide as much detail as possible to support your answer.</p>	<p>Confidential? – N</p> <p>1.4GHz – Most of our members are interested in high speed last mile services or deep rural broadband access. This band has merit for USC PtMP service in low density areas and equipment is currently available in the market, as this band is used in other domains. We would therefore like to see this band available to WISPs for fixed wireless broadband access in rural settings. We would welcome an opportunity to discuss this further with Ofcom and the potential merits of dynamic spectrum management to accommodate the needs of both mobile downlink and fixed rural broadband.</p> <p>60GHz V-Band – UKWISPA sees great value in unifying the 57-64GHz with the 64-66GHz band for the purposes of spectral efficiency and planning. We would like to see PtMP available in this band, as it will significantly improve the options for homes and businesses to receive gigabit-capable broadband services. Whilst the range is very short, currently available equipment is very low cost and light weight, and short effective range also means that high density delivery is quite feasible.</p> <p>70/80GHz E-Band – We agree to continuing access for fixed wireless links.</p> <p>W and D Bands – We consider these bands</p>

	<p>to be of very great interest to further enhance the ability for UKWISPA members to increase the speed and reliability of very fast broadband connections for citizens and businesses. We do not have information from manufacturers at this time to support these bands, but we are aware of various R&D and trial activity, so remain hopeful that equipment would soon follow if Ofcom will grant use of these bands for fixed wireless PtP and PtMP applications.</p>
<p>Question 3: Do you agree with the items we have identified for further consideration? Are there any other significant areas that you believe should be included? If so, please include all necessary evidence to support your view.</p>	<p>Confidential? – N</p> <p>We agree with the items identified for further consideration.</p> <p>In particular, we believe that 55GHz, W and D bands should be made available for fixed PtP and PtMP use. These bands will be extremely valuable in allowing ultrafast and hyperfast short range links.</p>
<p>Question 4: Do you agree with our proposal to change the authorisation regime in the 64 – 66 GHz band to licence exempt to create a common authorisation approach across the 57 – 66 GHz band for fixed outdoor installation use and that this would be a benefit to UK citizens and consumers?</p>	<p>Confidential? – N</p> <p>We do not consider Block Assignment to be at all helpful in these bands, for the reasons set out by Ofcom.</p> <p>We believe that moving to a license exempt model may well be best in the long run. However, given that new equipment with wider coverage antennas, as well as the potential for significantly larger numbers of devices entering the market presents a modest risk of interference. As such, we recommend a light licensed, self-coordinated approach for the first two years for both PtP and PtMP across the whole band. This will help Ofcom and operators to monitor and assess the effectiveness of this change.</p>
<p>Question 5:</p> <p>a) Do you agree with the proposed new technical conditions in Table 6 to facilitate equipment intended for fixed outdoor installation in the 57 – 66 GHz band? Please provide evidenced views /alternatives if you disagree with our proposal. Do you consider any</p>	<p>Confidential? – N</p> <p>a. a) We agree with Ofcom's proposed new conditions.</p> <p>b. b) We agree that these changes are appropriate and will have minimal impact on existing services.</p> <p>c. c) We do not believe that on</p>

<p>additional conditions should be mandated as part of a licence exemption to manage the interference environment?</p> <p>b) Do you agree with our assessment that the proposed changes in technical conditions will have minimal impact on existing use and are appropriate to manage the future outdoor interference environment?</p> <p>c) Are there likely to be any fixed outdoor installation use cases that will require operation at eirp levels above 55 dBm? If so, please provide evidence of how the coexistence with the different outdoor users could be ensured?</p>	<p>balance, other use cases presently exist that would justify higher than 55dBm EIRP at this time.</p>
<p>Question 6:</p> <p>a) What are the use cases and technical parameters envisaged for the 66 - 71 GHz band? Are they likely to be similar to those in the 57 – 66 GHz band? If so, what are your views on extending the same or similar technical conditions as described above for the 57 - 66 GHz band (both existing wideband data transmission (SRD) and new fixed outdoor technical conditions) to the 66 – 71 GHz band to facilitate both fixed and mobile use cases.</p> <p>b) Please provide your view on whether the technical parameters of wideband data transmission (SRD) as shown in Figure 4 are suitable to facilitate mobile/portable equipment including use outdoor? If you do not consider they are suitable, what alternative technical parameters do you think should be considered?</p> <p>Please provide as much detail to your answer as possible and your considerations on the co-existence aspects.</p>	<p>Confidential? – N</p> <p>a. a) UKWISPA believes that the use cases for 66-71GHz will be similar to those in the 57-66GHz band. The reduced atmospheric attenuation will naturally present the ability to maintain higher modulation rates or increased distances, which will be particularly helpful in fixed links.</p> <p>b. b) We consider these proposals to be suitable as set out.</p>
<p>Question 7: Do you agree that there is a continued need for future low capacity fixed link applications?</p> <p>If so, please provide information to support your view and what alternatives you would consider appropriate should the upper 1.4 GHz band no longer be</p>	<p>Confidential? – N</p> <p>We do consider that there will be a continued need for low capacity links to help achieve overall basic mobile coverage as well as to deliver the government's commitment to broadband USO. The 1.4GHz band may well play a helpful role in</p>

<p>available.</p> <p>Please provide clear evidence to support the reasons for your views.</p>	<p>this alongside TVWS. Equipment is available today that could be used by UKWISP members to provide low capacity broadband connections in excess of 10Mbps to very low density populations.</p>
<p>Question 8:</p> <p>Do you consider there is merit in considering making the bands 52 GHz and 55 GHz available under alternative authorisation approach(es) such as block assignment? If so, what would you consider to be the best approach(es)? Please provide detailed views to support your response.</p>	<p>Confidential? – N</p> <p>We have no views on the 52-55GHz band at present due to the non-availability of equipment.</p>
<p>Question 9:</p> <p>Do you think we should review our authorisation approach to any other band used for fixed wireless links?</p>	<p>Confidential? – N</p> <p>Yes, we believe Ofcom should consider reviewing authorisation in several bands: - 3.4-3.6GHz, 3.6-3.8GHz, 3.8-4.2GHz and 26GHz bands should specifically accommodate and encourage fixed wireless and spectrum sharing for rural fixed wireless deployments and mobile wireless urban applications.</p>
<p>Question 10:</p> <p>a) How do you envisage W band and D band will be used for mobile backhaul provision and the likely timescales? Please provide as much detail as possible on deployment scenarios and whether this would include indoor use. Are there any other types of applications (other than mobile backhaul) that could be suited for these bands?</p> <p>b) What are your views on the most appropriate authorisation approach for the W and D bands? Please provide as much detail and technical evidence as possible in your answer.</p>	<p>Confidential? – N</p> <p>a. a) UKWISPA is concerned that Ofcom only mentions Mobile Backhaul, as this reinforces the perception that Ofcom does not give reasonable consideration to the fixed wireless internet access market. We believe that these bands should be available for fixed point to point links and should be open to PtMP use cases for high speed last mile access if equipment vendors are able to develop products in these bands.</p> <p>b. b) It is relatively early to judge the best authorisation approach for these bands, so we cannot provide a view at this time.</p>
<p>Question 11: Which capacity enhancing technique(s) are you using or planning to use? Please provide detail / evidence and clearly explain why and how each technique is planned to be used and if you consider there are any other aspects that should be considered.</p>	<p>The capacity enhancement technologies that are used in 3.6 GHz spectrum include special antennas for both frequency reuse and MUMIMO. Cambium Networks company provides a system which enables 5.6 Gbps from 80MHz bandwidth in 4</p>

sectors. ie. 70 bps/Hz. [redacted]

Appendix to question 1 - Justification for access to 3.4 to 3.8 GHz spectrum in Rural

After many consultation responses, Ofcom remain stubbornly opposed the Wireless Internet Service Provider (WISP) industry having access to 3.4 to 3.8 GHz (hereafter called 3.6 GHz) spectrum in rural. The spectrum will not be used in rural areas by mobile operators for technical reasons which have been presented to Ofcom on many occasions. In our notes of the last meeting in December Ofcom did not disagree with our assertion that the mobile operators are unlikely to use this spectrum in rural because of the poor link budget to mobile phones particularly into houses and through trees. The mobile business case for deployment in rural is poor at 1.8 GHz and consequently we only see 4G deployments along roads. At 3.6 GHz the losses are perhaps 20dB greater due mainly to the extra losses in penetrating house walls and trees.

By contrast WISPs employ a different method of delivering much higher data rates to rural properties. The technology that is now commonly used is able to deliver 5.6 Gbps in 80 MHz bandwidth from a small four sector base station, well above the 5G wish list to which mobile are aspiring.

Using a different business model, WISPs deliver broadband service to about 9 million properties globally and 200 thousand properties in the UK. The UK number is rising very fast at the moment due to increased demand from consumers and assistance from BDUK. WISPs in the UK have been depressed in the past through the dominance of BT. In the past year BT seem to have given up deploying FTTC wherever WISPs deploy service (the village of Rattery is a recent example). The result is a more buoyant WISP industry in the UK. In Europe there is a vibrant WISP industry in Italy and Eastern Europe. In the USA there are 4 million WISP delivered properties from 2,000 WISPs. Cambium currently sell 3.6 GHz equipment to 60 countries for FWA purposes.

WISPs are able to use a larger number of neat low power, low cost base stations for delivering to high gain roof mounted antennas. This has the effect of a much higher Mbps/sq km than mobile could ever aspire to in rural leading to rural 5G.

It would be easy to think that all of this success by the WISP industry means that the WISPs have sufficient spectrum already but this is far from the truth. Most rural WISPs use 5.8 GHz and a few use Whitespace. Both spectra suffer from the WISP having no protection. In the case of Whitespace then a microphone can trump him and in the case of 5.8 GHz any other user can wreck his network. 3.6 GHz would be ideal since the WISP would be licensed in a particular area and also the power and propagation characteristics are more suitable than at 5.8 GHz. In the long term there is potentially enough spectrum in this band if Ofcom choose to consider WISPs as providing a public good. Providing 3.6GHz licensed rural spectrum could solve one of the important 5G planks for the government solving the digital divide.

We ask that the 3.6 to 3.8GHz band is licensed to rural WISPs at the earliest opportunity. We also ask that the 3.4-3.6GHz band should have a rural break clause after 5 years where the incumbents who will be the MNOs lose the rural areas if a) they have not deployed in rural and b) if the WISPs have shown success in 3.6 to 3.8GHz.

Why have Ofcom not considered WISPs and FWA as important? One answer can be found in various Ofcom commissioned studies by Analysys Masson and Cartesian. The Ofcom commissioned report by Cartesian “Universal Broadband: Geospatial Analysis and Cost Modelling” is simply using incorrect data for its modelling of Fixed Wireless Access (FWA) deployments used by WISPs. The annualised costing suggested for FWA base stations in figure 30 is stated to be £27,000. This number is astronomic and is much more than even the first year cost. Correcting this number alone would transform the conclusions of the document. If one also considers the speed of deployment of FWA and the minimal disruption in comparison to other methods then we can see that FWA is the method of choice for delivering broadband to areas where the property density is below 500 per sq. mile. INCA and UKWISPA would be happy to help Ofcom to come to a more accurate costing.

Ofcom are supposed to consider sharing, in this case a simple geographic sharing is appropriate where Mobile use would be in urban, stadia, shopping malls and stations. No other use is considered likely in urban and so the rest of the geography could be used by the WISP industry. An obvious consideration is interference. The WISP industry can show that simple rules could ensure that interference between the two uses is relatively simple to regulate.