



The UK Wireless Internet Service Providers Association

# Response to Call for Input to '5G spectrum access at 26 GHz and update on bands above 30 GHz'

Response from UKWISPA

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## 1 Introduction

UKWISPA are pleased to be able to respond to this call for input. Our understanding of the case for 5G using this spectrum is in order to be able to provide advanced video services in entertainment environments such as sports matches, where video could enable the consumer to see replays of recent action on the field or to see the action from a different point of view.

Examples might include: in cricket seeing the action from the bowler's perspective or looking at run outs from the side of the pitch; or, in football replaying the build up to a goal in wide or narrow perspective.

Looking at today's mobile users the costs and facilities may seem far fetched, but 10 years ago there were no smartphones and so predicting ahead 10 years is really difficult.

Another application of this technology is for Fixed Wireless Access in the urban and suburban areas. Since the devices will be Line of Sight, coverage is obtained by each

area being covered from multiple directions, increasing the probability of covering each property.

We must not forget the use of this band for PTP applications in the rural areas.

## 2 WISP usage

WISP usage of this band is currently for PTP backhaul. The backhaul is mainly in the rural areas and thus would not normally impinge upon the city operators. However some of the backhaul may go in to cities. As an example one WISP has 10×26 GHz links delivering service to more than 300 properties.

An opportunity for technology in this band may be to be able to use it for PMP backhaul. There could be a cost benefit and a spectral efficiency benefit. Spectral efficiency can be improved because of MuMiMo and because of the lower blocking effect of wider channels.

If the band was licensed appropriately and 5G technology and volume brought the cost down to the level WISPs can afford, WISPs may use this band for suburban deployment where there is no fibre to the home. VDSL from BT has typical throughput of 40 Mbps. VDSL is one of the main delivery methods for broadband in suburban. Another method is by Cable where fibre is delivering service to the Cable cabinet, we already see these properties receiving more than 200 Mbps. An opportunity may exist for wireless delivery of higher throughputs using this band.

## 3 The Questions

**Question 2.1** *What are your planned timelines for commercial availability of network equipment and devices for the 26 GHz band? When will equipment for testing and trials be available? Please specify the specific mmWave tuning ranges supported and their timing.*

UKWISPA companies already use this frequency range for point to point applications mainly backhauling point to multipoint networks at lower frequencies. Equipment is also available for use in this frequency range and thus may use the frequency range in suburban areas almost immediately. It is more likely that WISPs would wait until the cost of 26 GHz Point to Multi-point (PMP) equipment achieved the economies of scale predicted by the mobile device industry adopting this band.

**Question 2.2** *Given the 3GPP studies into NR-based operations in licence-exempt spectrum, when (if ever) do you expect to support licence exempt operation and/or coordinated sharing in the 26 GHz band in your products?*

We would expect WISPs to use the spectrum for FWA very soon after NR is delivered in a cost effective manner. WISPs are used to licence exempt spectrum because they have no spectrum that is exclusively theirs.

**Question 2.3** *When do you expect to support standalone New Radio in the 26 GHz band in your products?*

Unknown, but unlikely to be nearer than 2021.

**Question 3.1** *Are there any other aspects related to the existing use of 26 GHz not covered in this CFI that you believe need to be considered?*

None at this point but may become more opinionated when products become available.

**Question 3.2** *What options for the existing services in the 26 GHz band do you believe need to be considered to allow for the introduction of new 5G services? Please give as detailed a response as possible along with all relevant information and explain how you would see any potential option you provide working in practice.*

It is clear that this pioneer band will be even more local than 3.4-3.8 GHz thus it may be possible to continue with existing links where they are located in rural areas.

**Question 3.3** *Should a moratorium be placed on issuing new licences in the 26 GHz band for existing services? E.g. to ensure that the 26 GHz band is not unnecessarily encumbered prior to the development of a new authorisation / licensing approach for 5G services?*

It is clear that new licences should be avoided in areas associated with the urban population. It is not so clear that they should be avoided in rural locations, particularly if other frequencies cannot be used to achieve particular link objectives.

**Question 4.1** *What service would be delivered and to which consumer and/or organisations?*

The new service to end users is higher speed suburban broadband. The existing service is backhaul and this will be required to increase in throughput from the existing spectrum which might be achieved using MuMIMO in the backhaul to deliver multiple streams to different locations in the same expanded channel. Another important service will be broadband service to SMEs where there is a need for higher speeds. This service would be applicable in suburban and rural areas where Gigabit services have not yet been provided by other means.

**Question 4.2** *Where in the UK would the 26 GHz spectrum be used to deliver services? For example, will deployments be focussed on:*

- a. Areas of existing high mobile broadband demand?*
- b. Rural areas?*
- c. Rail and road corridors?*
- d. Specific types of enterprise or industrial sites?*
- e. Indoors or outdoors?*
- f. Specific nations or regions of the UK?*

UKWISPA believe that in rural areas the use is likely to be backhaul and in suburban the use could be Fixed Wireless Access.

**Question 4.3** *Where 5G cells are deployed, are they expected to be individual cells or as clusters of cells required to give wider areas of contiguous coverage? What would be the area of a typical contiguous coverage cell cluster?*

UKWISPA is not directly able to answer except to say that in stadia the likely need is for devices to be able to access multiple base stations in order to deliver a reasonable quality of service. The same consideration probably applies to high streets and stations.

**Question 4.4** *What capacity and bandwidth (i.e Channel Bandwidth in MHz) would be required at each cell to meet initial capacity requirements? How will this change over time?*

In the early stages FWA deployments will need channel sizes of 100 MHz or more and need the use of four channels to enable frequency reuse.

**Question 4.5** *What quality of service is required? How sensitive is the service being offered to variations in radio interference from other operator's 5G cells and other spectrum users?*

For Fixed Wireless Access, the service level agreements to fixed locations need the RF environment to be reliable. Backhaul for FWA is particularly sensitive to availabilities being greater than 99.99% for business and 99.9% for residential.

**Question 4.6** *Will end users be fixed or mobile?*

Typically a FWA user is fixed to the property but often mobile in the property using another technology to the device.

**Question 4.7** *What are the characteristics of 5G at 26 GHz which make this band particularly suited to the service you plan to deploy? What other spectrum*

*bands could be used as an alternative, or in preference to, the 26 GHz band? To what extent could carrier aggregation and other techniques reduce your reliance on 26 GHz?*

FWA providers would really like to be able to use the 3.4-3.6 GHz 5G band.

**Question 5.1** *Should Ofcom consider licencing options other than the 3 examples set out above (licence exempt, shared coordinated and area defined) for the 26 GHz band? If so, what other options do you consider should be included?*

UKWISPA agree with area defined deployments rather than license exempt. This is in order to enable high reliability services to be offered. Licence would only be useful to provide additional capability. WISPs are always looking for lower cost delivery methods and the current licence band link costs drive us to look for other methods. Take up would be significantly higher if this band had a light licensing option.

**Question 5.2** *What methodologies could be used to pre-define 'high demand areas' for area defined licences?*

The licences should be awarded on the basis of how much the operator is prepared to pay for the high value areas along with a reserve price for the lower value areas.

**Question 5.3** *What mechanism could be used to coordinate cell deployments by different operators in shared spectrum?*

In the 5.8 GHz bands operators generally work together to ensure that they do not obstruct each other's networks. Assuming a small number of operators this is very effective.

**Question 5.4** *What methodologies could be used for determining the proportion of spectrum to allocate using area defined licences and coordinated deployment?*

It is easier to move from license exempt to owned or coordinated rather than the other way around, so perhaps this should be progressive with time.

**Question 5.5** *Do you agree that the 26 GHz band should be released progressively? What risks do you envisage with such an approach and how can these be best mitigated?*

The band should be released progressively but with the understanding that individual allocations may change as more bandwidth becomes available. It is probable that individual operators want contiguous frequencies in order to make best use of the spectrum. The 5.8 GHz band has an unavailable 20 MHz segment in the middle of the band, as channel bandwidths have increased this obstruction has caused tremendous inefficiencies in the capacity of the band. The consideration to remove this 20 MHz will increase spectrum efficiency by a factor of approximately 2.