



Vodafone Response to Ofcom Consultation: Proposed annual licence fees for 10GHz, 28GHz and 32GHz spectrum



Introduction

Vodafone welcomes the opportunity to comment on Ofcom's proposed annual licence fees for 10GHz, 28GHz and 32GHz spectrum.

We are not convinced that Administered Incentive Pricing (AIP) is justified for the spectrum in question. The purpose of applying AIP-based fees is to ensure that spectrum is used efficiently, and in particular to ensure that licensees do not retain spectrum that is being used inefficiently. Taking Vodafone's 28GHz holding as an example, Ofcom will know from the associated information gathering exercise to this consultation that we use this spectrum extensively, mainly for mast backhaul, in mostly rural or semi-rural locations. We have concentrated our usage in this band because when compared to obtaining individual link licences from Ofcom, there is no marginal licensing cost to us in using 28GHz (as we're licensed to use the band whether we deploy a single or ten thousand links) – we are therefore already incentivised to use the spectrum to the maximum extent. Whether Ofcom charges an AIP-based Annual Licence Fee (ALF) for 28GHz, or charges no fees for 28GHz, does not change the basic equation that use of the band incurs no marginal licensing cost, so the level of ALFs does change our incentives to use the spectrum more intensively; the incentives already exist. The only question mark can be whether anyone else could use the spectrum more intensively to secure even more efficient usage of it – but all of the principal alternative users already have their own block allocation of spectrum, so this is unlikely to be the case. This renders any AIP approach as a revenue generating exercise on Ofcom's part, making challenging network economics even more challenging. Ofcom could meet the goal of efficiency by setting a minimum usage requirement, with the AIP ALF payable only if the usage fell below that threshold.

Notwithstanding this, we acknowledge Ofcom's desire to apply AIP principles to the ALFs. The approach to setting these fees is, however, akin to a house-of-cards, with regulatory judgement being layered on regulatory judgement, using foundations that are decades old. For example, the proposed approach to setting the fees depends on existing pricing for individual links, which in turn are set on an AIP basis according to a formula developed almost 20 years ago. Ofcom sets itself an incredibly difficult exam question and given the level of fees involved¹ we do not suggest that it should go back to basics and start to rebuild the house with a new pack of cards. However, given the damage caused by overstating ALFs would be considerably greater than the damage caused by understating, it is incumbent on Ofcom to take a conservative approach when exercising regulatory judgement. We also note that Ofcom's AIP principles have yet to be re-calibrated to take account of the desires of both Ofcom and Government, i.e. to ensure that the spectrum charging regime contributes towards the investment goals highlighted in Ofcom's mobile strategy review, rather than acting to harm investment cases for wider and better coverage.

¹ The man on the Clapham omnibus would certainly consider the aggregate fees involved to be material, but when set against the ALFs levied for mobile access spectrum, for example, the overall levels are relatively small.



In this response, there are a series of areas where we question Ofcom's logic: we are conscious that a precedent approach is taken to regulatory judgement, so we must comment lest Ofcom consider silence to be tacit agreement with the logic adopted.

Answers to questions

1. Do you agree with our initial conclusion that fixed wireless services are the highest value alternative use for each of the 10, 28 and 32 GHz bands? If not, please provide evidence to support your answer.

We agree with the conclusion at the present moment in time.

We anticipate that there may be respondents who suggest that rather than fixed wireless services, satellite services could provide the highest alternative usage, in particular for the 28GHz band. We profoundly disagree: the concept of AIP is based on the highest value excluded user, but it has been demonstrated that satellite services have not been excluded by incumbent usage. Vodafone has proven willing to enter trade/lease deals to facilitate satellite usage, so satellite usage cannot be considered an alternative excluded use if it is already accommodated within the existing usage. ✕

2. Do you agree with our initial conclusion that there is likely to be excess demand for each of the 10, 28 and 32 GHz bands in future, if cost-based fees were applied and that therefore an AIP fee is appropriate? If not, please provide evidence to support your answer

We partially agree with the conclusion that there would be excess demand in a cost-based fee scenario. In an ideal world, everyone would like access to more spectrum and if, for example, Ofcom set the ALFs for 10GHz at a cost that solely recovered its costs, then as an alternate user we would welcome access to that spectrum, which would mean that there is excess demand.

However, as we set out in our response to subsequent questions, careful application of the AIP regime is required. Ofcom must remain mindful of the negative impact of ALFs on the provision of coverage to those areas where the cost to serve is already high and where there is a low concentration of users. These areas are already uneconomic to service – increasing backhaul fees further compromises this case.



3. Do you agree with our proposed market value for the national 10, 28 and 32 GHz spectrum? If not, please provide evidence to support your view.

We have some concerns around the logic used at various stages of the analysis.

Background

Before getting into the details it is worthwhile to consider what we mean by market value. The market value of one's house is not the price that you would be prepared to pay if an authoritarian state were to seize the asset and demand that you buy it back. Likewise, it cannot be credibly argued that the value of one's house is how much your neighbour would be prepared to pay if the state seized *their* house and demolished it, putting them in the position of needing to purchase your property if they wished to resume their existing life.

Rather, the market value of one's house is the amount that a current purchaser is willing to pay, without the market having been manipulated.

Returning to the spectrum licences, the analogy is that the market value of Vodafone's 28GHz holding is in no way related to the value that Vodafone places on its incumbency. Similarly, the market value of Vodafone's 28GHz holding cannot be said to be that which for example BT would place on it, if BT no longer had usage of the 32GHz band. What matters is the value placed by alternative usage in today's market conditions. Realistically this is the revenues that would be yielded if the band was instead used for individual fixed links administered by Ofcom. However, in carrying out this exercise Ofcom must assume existing demand for individually-licensed fixed links; for example there is no validity in an argument that if Vodafone was evicted from 28GHz then it would be forced to make greater usage of individually-licensed fixed links, hence demand for those would increase so the value of 28GHz for individually-licensed fixed links is higher. We need to be careful to not drop into a trap of circular logic.

Further, as the fees for individual fixed links administered are already set according to an AIP formula which itself is based on regulatory judgement, any further assumptions in this analysis must be conservatively applied.

Turning to the analysis in the consultation, we offer the following observations.

2008 Auction

On balance we agree that it would not be appropriate to use the outcome of the 2008 auction as a proxy for market value. However, we draw this conclusion on the basis that the data will be 15 years old by the time that ALFs are applied, and there is no evidence that it reflects current market value. As such, the 2008 data may over or under-state the value.

In contrast, Ofcom's logic for not using the auction information is that it would be inappropriate as the volume of data transferred over mobile networks has subsequently massively increased². This logic would imply that the 2008 information could only understate the value. However, the metric of data transferred is

² Para 3.21 of the consultation



irrelevant to the value of the spectrum; what is of greater importance is the *value* of the data transferred (i.e. MB transferred x retail pricing/MB). As mobile networks have on the whole been providing greater throughput for lower overall revenues, we are unconvinced that a properly-applied metric would point to a higher spectrum value than in 2008.

However, whilst disagreeing with the logic, we accept Ofcom's conclusion not to use the 2008 information, on the basis that the auction data can now be considered stale.

Overall methodology

In determining the alternative value of the spectrum bands, the analysis relies on the fixed link algorithm. However, care must be used when utilising this, because all of the underlying assumptions are now somewhat dated. It is unclear whether £88 is still a reasonable base case, whether the frequency band factors are still valid (more of which below) and whether the other factors reflect current radio equipment capability. We do not advocate reopening the algorithm to re-examine the values – particularly for the aggregate level of fees involved in the consultation – but it does reinforce the need to make conservative assumptions at all stages of the exercise.

We believe it would be appropriate for Ofcom to consider the public good benefit of the spectrum use within the calculation, for example taking due account of the spectrum's role in supporting uneconomic coverage in rural or semi-rural areas. This public benefit calibration should form an important part of the overall calculation, ensuring that the existing of ALFs does not itself act as an economic barrier to both the extent and quality of the coverage offered.

Multiplier

Overall we consider a multiplier of 200 reflects the maximum multiplier value that could be used in the calculation:

1. As we stated in the pre-amble to this question, the exercise should be seeking to identify the actual market value, not some theoretical market value if there were to be greater or displaced demand. The logic that an assigned spectrum block could theoretically support more utilisation than Ofcom achieves in its assigned bands³ is flawed without evidence of there being demand that will create the utilisation – returning to the house analogy, if there is only demand for three-bedroom houses, a four-bedroom house will not attract a price-premium and will only sell for what buyers of three-bedroomed houses are prepared to pay. The existence of other fully-occupied four bedroomed houses in the street is irrelevant to the question of whether there are potential purchasers requiring four bedrooms – all that matters is what purchasers desire. To say that a band is worth more because it will support greater utilisation, Ofcom must demonstrate that the additional demand for that utilisation exists.

³ Para 3.39(b) of the consultation



2. The utilisation achieved by Ofcom in individually-licensed bands represents an absolute cap. If the block-assigned spectrum was repurposed to accommodate the excluded user, this would imply that the excluded user which would be accommodated by the exercise would either be a third-party block assignee, or instead be Ofcom (i.e. the block-assigned spectrum would be migrated to become a band assigned on an individual link basis by Ofcom).
 - Considering a new third party block assignee, then per the house analogy, we cannot manipulate the market, e.g. by evicting 28GHz assignees in order to artificially create demand for 32GHz – as such, any potential purchaser of the block-assigned spectrum must either be migrating their demand from being accomplished via individually-licensed links into the newly acquired block, or represent new demand which is currently unfulfilled (which we can discount as implausible).
 - However, it is highly improbable that a new third party assignee's aggregate requirement migrating from all individually assigned bands would be greater than the best fill rate achieved by Ofcom in a given individually-licensed band (across all users)⁴.
 - As such, the highest alternative value is most probably that the block-assigned band be migrated to becoming an individually-licensed band.
3. When considering what fill rate Ofcom could then achieve on the band that has been migrated to individual assignment, the best proxy available is current fill rates on individually-licensed bands. However, we contend that rather than examining the *maximum* fill rate achieved across frequencies in the individually-licensed bands, Ofcom should instead be using the *median* fill rate – the maximum could not be replicated into multiple bands without a growth in demand.
4. The fill rate achieved by block-assigned licensees⁵ is irrelevant to this exercise.
 - Per (2), the alternative user is not going to be another block-assignee⁶, the alternate user will be Ofcom assigning links individually; and
 - Even if we are wrong in that assumption, the fill rate achieved in our current block assignment is irrelevant - for example no matter how efficiently Vodafone fills its 28GHz block assignment, this can have little bearing on the utilisation we could make of BT's 32GHz block were we to be considered the excluded user for that spectrum.

⁴ For example, looking at 32GHz and examining the alternative usage that could be made of that band, it is highly unlikely that e.g. Vodafone's current aggregate usage across 23GHz and 26GHz and other similar bands would generate a greater requirement/value than the alternative of Ofcom administering the band on an individual link basis for a multitude of users - it is therefore the repurposing of 32GHz as an individual link-licensed band administered by Ofcom that should be assumed as the counterfactual alternative case, and the current fill rate of 23GHz or 26GHz provides the best proxy for that scenario.

⁵ Referenced at 3.41(b) of the consultation

⁶ Absent an existing block-assignee being evicted, which we have already concluded would be a wrong assumption



We do not have the detailed dataset to derive the median values on the same basis that the analysis derives the maximum, but expect that the usage of a 200 figure is not unreasonable.

Modification/discounting of the AIP fee

We are disappointed in Ofcom's removal of the 50% modifier discount. It is instructive to look at the chronology behind this discount:

- The 2004 AIP approach incorporated a modifier to encourage applicants to use higher frequencies where possible.
- In May 2015, independent research carried out for Ofcom by Plum Consulting indicated that the frequency gradient used in the modifier was incorrect, and that higher frequencies should attract a greater discount. Ofcom's intention was to review fees in light of this analysis.
- As the timing of the first tranche of 28GHz fees was such that the review was incomplete, in October 2015 Ofcom took a view of the reasonably likely outcome and applied a 50% discount to the 28GHz fees that would otherwise have been payable.
- In November 2016, Ofcom subsequently abandoned its review of fixed link fees⁷. However, none of the reasons cited for not continuing the activity (i.e. the identification of 3.6GHz, 1.4GHz and 26GHz for mobile) have any relevance to the block-assigned bands being considered in this consultation.

To summarise, Ofcom applied a discount based on the likely (almost certain) outcome of an ongoing wider review of fees, then stopped that wider review for matters unrelated to the 28GHz spectrum band in question, and now proposes to remove the discount because the review it stopped itself didn't reach any conclusions. To those of a certain age, it is a position that is worthy of Sir Humphrey Appleby in Yes Minister.

Having re-examined Plum's analysis⁸, considering subsequent developments, we have not found any reason to challenge their conclusions that spectrum above 20GHz should be relatively cheaper than that below (outside the narrow case of spectrum that has been designated as a 5G pioneer band). We can accept that it may not be an administrative priority for Ofcom to recommence a review of fixed link fees, but it seems unfair to penalise 28GHz licensees for the review being suspended. We therefore urge Ofcom to incorporate the 50% modifier in both the 28GHz and 32GHz calculation.

⁷ To be technically correct, the review was suspended (said suspension currently ongoing for almost 5 years).

⁸ https://www.ofcom.org.uk/data/assets/pdf_file/0030/79464/plum_report.pdf



4. Do you agree with our proposed calculation of the regional 28 GHz ALFs set out in detail in Annex A6, including our proposed calculation of fees for specific locations in part of a region? If not, please provide evidence to support your view.

We agree with the approach, but note the considerable volatility in the regional calculation when compared to similar analysis in 2015: another example that the house of cards is shaky, to say the least. We note that the 28GHz regional distribution has been based on 26GHz, which itself has been subject to some uncertainty with the potential repurposing for 5G mm-wave services. In order to use the conservative assumptions demanded by this exercise, we therefore suggest repeating/auditing the exercise using the regional distribution of 23GHz – in order to apply the analysis conservatively, the fee to be payable in any region to be the lower of the outcome using 23GHz and outcome using 26GHz distribution.

We note that the approach taken for location-specific licences uses a simple proportion of the overall region licence fee⁹. This does not accurately assess an AIP calculation of excluded users, as it fails to consider the nature of fixed links. Consider the extremely simplified example below, of a 25km² region, with a 1km² licence “hole-punched” out of the main regional licence, and that main regional licence then being returned to Ofcom for usage on an individually-licensed basis (with the “hole-punch” remaining with the third party). The question is, which usage does the existence of that “hole-punch” exclude? If the “hole-punch” was in cell A1, then the only fixed links that would be precluded by the location-specific licence are those involving cell A1 itself, i.e. assuming uniform distribution of demand, 4% of links would be precluded, which is in-line with Ofcom’s simple area-proportion approach. However, if the “hole-punch” was in cell C3, then this would prevent links from A1 to D3/4/5, A1 to E4/5, B1 to D4/5, C3 to A/B/C/D/E5 etc etc – in this extreme hypothetical case, the single cell C3 remaining in the third party’s hands would block (exclude) 20-30% of links.

	A	B	C	D	E
1					
2					
3					
4					
5					

We therefore believe that the approach set out in the consultation significantly understates the true AIP effect of the location-specific licences.

⁹ Consultation, para A6.8



However, notwithstanding that Ofcom's proposal understates the AIP, on balance we believe that the approach set out by Ofcom for location-specific licences is practicably appropriate:

1. There would be considerable complexity involved in moving from a simple theoretical example as above, to the specifics of the 28GHz hole-punch licences. However, even if the outcome is to double or treble the fees, the difference would amount to less than £1000/yr. From an administrative priority perspective, the effort cannot be justified.
2. It is unlikely that the difference in fees would make any difference to Arqiva's incentives to utilise or trade the spectrum.
3. As UK Broadband's (UKBB's) regional fees will be discounted by the level of Arqiva's location-specific fees, then increasing the location-specific fees would result in a greater discount for UKBB. However, UKBB has presumably already received recompense from Arqiva for creating the hole-punch licence that blocked their usage, so this would represent a double-benefit.

5. Do you agree with our initial conclusion that fees set based on our estimate of market value will best meet our statutory duties?

Once again, the consultation repeats the mantra that the aim of setting spectrum fees based on market value is to provide users with a long-term signal of spectrum value, therefore giving incentives to use it in a way that maximises benefits to society over time. In brief, the theory is that the application of ALFs means that licensees will either use spectrum efficiently, or trade it away. However, the evidence simply does not back this thesis up:

- There has been extensive trading of 28GHz licences, in large part to unpick the mess of regional licensing and create [near] national licences. Critically, all of the trades happened long before the introduction of ALFs for the band, proving that ALFs are not necessary to incentivise trading.
- Vodafone has provided location-specific leases in the 28GHz band. At the time of agreement of the leases, none of the regions concerned were subject to ALFs, once again demonstrating that ALFs are not required to incentivise trading. ✕
- With no ALFs applicable, Vodafone has achieved significant utilisation of the 28GHz band, demonstrating that ALFs were not required to incentivise this.

In summary, the evidence indicates that ALFs are not required to incentivise spectrum efficiency.

It cannot be escaped that licensees have finite funds, and every penny paid in licence fees is a penny that cannot be made available for investment in networks and services. If there is evidence that ALFs result in better spectrum efficiency outcomes we acknowledge that the exercise is worthwhile, but the evidence for these bands is far from compelling.

As is common with regulatory decisions, Ofcom faces a conflict between fulfilling its statutory duties. On the one hand, there is a need to ensure that spectrum is used efficiently, but on the other, Ofcom has the



fundamental role of furthering the interests of citizens in relation to communications matters. In providing a national mobile service, we accept that there are some Vodafone masts which are profitable and some which are not: initiatives such as the Shared Rural Network (SRN) increase the volume of the latter. Vodafone's usage of 28GHz for mast backhaul is significantly greater in areas of lower/negative profitability, and any fees levied for backhaul spectrum further compromise the commercial viability of providing these sites. Whilst Ofcom may have admirable aims in using charging mechanisms to encourage efficient usage of spectrum, it must recognise that this could conflict with its role of encouraging widespread deployment of communications networks. Market mechanisms may well result in the most efficient usage of spectrum, but regulatory intervention (by consent) to introduce coverage obligations means that there has already been intervention in the market, meaning that the "pure" economic incentives are already compromised. There is an argument to say that given mobile network operators are being required by access spectrum licence terms to provide coverage in uneconomic areas, the backhaul spectrum required to facilitate this should be excluded from the "market rate" regime.

We therefore remain unconvinced that the current approach to spectrum charging does actually further Ofcom meeting its statutory duties, when examined holistically.

6. Are there any other comments that you wish to make in respect of the proposals that we make in this consultation?

We support the concept of aligning the payment dates for the 28GHz regional licences, and will work with Ofcom to determine the best approach to achieve this. ✕

Vodafone UK
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