
Ofcom's decision on licence fees for 10 GHz, 28 GHz and 32 GHz spectrum

STATEMENT:

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1. Overview

In this statement we set out our decision on the level of annual licence fees for 10 GHz, 28 GHz and 32 GHz spectrum.

This decision is in line with our spectrum pricing policy set out in our [Strategic Review of Spectrum Pricing](#) (“SRSP”) in 2010, which explains our approach to setting licence fees based on the opportunity cost of spectrum.

Our decision follows a [Consultation](#) on the proposed fees which we published on 19 July 2022. The Consultation closed on 27 September 2022 and we received eight [responses](#), two of which were confidential. We did not receive any stakeholder comments in relation to the drafting of the proposed Regulations, which were published in Annex 9 of the Consultation. Our decision also takes account of the [Update](#) to the Consultation that we published in December 2022, to which we received one stakeholder [response](#).

What we have decided – in brief

We confirm that, following our consultation on proposals to set annual licence fees for 10 GHz, 28 GHz and 32 GHz spectrum (and to make new regulations to give effect to these), we have decided the following:

- to set a national annual licence fee of £5,676 per 2 x 1 MHz for 10 GHz spectrum;
- to set a national annual licence fee of £3,432 per 2 x 1 MHz for 32 GHz spectrum;
- to set regional and location-specific annual licence fees for 28 GHz spectrum based on a national rate of £3,432 per 2 x 1 MHz of spectrum;

These fees are 25% lower than those on which we consulted at the national level. This decision was made in light of stakeholder comments, updated evidence, the degree of uncertainty around future demand for this spectrum, and our view that there are greater risks of Ofcom setting fees that are too high than too low.

We have also decided:

- that the proposed annual licence fees should apply from 17 April 2023, with an option to pay across ten equal monthly instalments;
- to align (with effect from 5 January 2024) the regional annual licence fees for 28 GHz licences awarded in 2000, with the regional annual licence fees we have decided to set for 28 GHz licences awarded in 2008; and
- to make new regulations (the “Regulations”) that will amend the Wireless Telegraphy (Licence Charges) Regulations 2020 (the “[2020 Regulations](#)”) to implement the above policy decisions.

2. Introduction

Background

- 2.1 This decision relates to ALFs that will apply to spectrum licences that we previously awarded by auction, and which have reached the end of their initial licence term.
- a) In 2000, 42 lots of 28 GHz spectrum (three 2 x 112 MHz blocks in each of 11 English regions and the 3 devolved Nations) were made available, of which 16 were awarded.
 - b) In 2008, we awarded the remaining regional 28 GHz lots. We also awarded two 2 x 112 MHz lots of national 28 GHz spectrum as well as national licences for 10 GHz and 32 GHz spectrum.
- 2.2 The initial term of the regional 28 GHz licences awarded in 2000 expired in 2016 and these licences have been subject to annual licence fees set in 2015 and payable from January 2016. The initial term of the 10, 28 and 32 GHz spectrum awarded in 2008 expired in February 2023 and, from that date, the licences may be subject to annual licence fees.¹
- 2.3 On 19 July 2022 we published our [Consultation](#) setting out proposals on the level of ALFs payable for 10 GHz, 28 GHz and 32 GHz licences awarded in 2008.² We also set out proposals to revise the fees for 28 GHz licences awarded in 2000.³

Our spectrum pricing policy

- 2.4 The proposals set out in our Consultation were in line with our spectrum pricing policy set out in our Strategic Review of Spectrum Pricing (“SRSP”)⁴ in 2010, which explains our approach to setting licence fees based on the opportunity cost⁵ for spectrum.
- 2.5 We say in the SRSP that we will set licence fees based on administrative incentive pricing (“AIP”), for spectrum which is expected to be in excess demand, from existing and/or feasible alternative uses, if cost-based fees were applied. Following the convention of more recent Ofcom documents, we typically refer to annual licence fees (“ALFs”) and any references to AIP should be read as equivalent to ALFs.

¹ We also implemented recently a substantial change to one of the licences awarded in 2008. On 7 February 2023, Arqiva requested that the geographical scope of its 2 x 224 MHz block spectrum licence in the 28 GHz band be amended from nationwide to three locations before ALFs were incurred, and that the licence term end on 31 July 2026. On 15 February we published a further Consultation (the “Arqiva consultation”) setting out our proposals in relation to Arqiva’s request and our provisional view that we were minded to agree to the request. That consultation closed on 15 March 2023. We confirmed our decision to approve the request on 24 March 2023.

² The initial licence term for the 40 GHz spectrum also expired in February 2023. Ofcom has decided to start the statutory process to revoke all of the block-assigned licences in this band.

https://www.ofcom.org.uk/data/assets/pdf_file/0015/255030/03-23-statement-and-consultation-mmwave.pdf

³ On 8 December 2022 we published an Update which corrected data errors in the Consultation.

⁴ Ofcom, *SRSP: The revised Framework for Spectrum Pricing, Our policy and practice of setting AIP spectrum fees*, December 2010, https://www.ofcom.org.uk/data/assets/pdf_file/0024/42909/srsp-statement.pdf.

⁵ Opportunity cost in this context is the value of alternative spectrum use forgone by society due to the current spectrum use.

2.6 The purpose of setting AIP is to provide licence holders with a long-term signal of the opportunity cost, or market value, of the spectrum, in order to promote the optimal use of spectrum in line with our duties. As discussed in more detail in our SRSP, when we refer to opportunity cost as we mean the value to the next highest value use or user that is denied access to the spectrum.

Relevant legal framework

2.7 Ofcom has the power pursuant to the Wireless Telegraphy Act 2006 (the “**Wireless Telegraphy Act**”) to require spectrum licensees to pay fees to Ofcom on the grant of a licence and subsequently. This includes the power to set fees at an amount that is higher than the cost to us of carrying out our radio spectrum functions, if we think this is appropriate in light of our statutory duties.

2.8 These duties include having regard to:

- a) the extent to which the electromagnetic spectrum is available for use, or further use, for wireless telegraphy;
- b) the demand for use of the spectrum for wireless telegraphy;
- c) the demand that is likely to arise in future for the use of the spectrum for wireless telegraphy; and
- d) the desirability of promoting:
 - i) the efficient management and use of the part of the electronic electromagnetic spectrum available for wireless telegraphy;
 - ii) the economic and other benefits that may arise from the use of wireless telegraphy;
 - iii) the development of innovative services; and
 - iv) competition in the provision of electronic communications services.

2.9 Ofcom also has a number of statutory duties under the Communications Act 2003 (the “**Communications Act**”) which are relevant to its spectrum management functions. These include its principal duty to further the interests of citizens and consumers (where appropriate by promoting competition) and its duty to secure the optimal use for wireless telegraphy of the electro-magnetic spectrum. It is also required to have regard to the desirability of encouraging investment and innovation in relevant markets and encouraging the availability and use of high-speed data transfer services throughout the UK.

2.10 Further detail on the relevant legal framework is set out in Annex 4 of this decision.

Structure of this document

2.11 The rest of this document is set out as follows:

- **Section 3** sets out our view on the expected long-term demand, next highest value alternative use or user and estimate of market value in the relevant bands.
- **Section 4** sets out our assessment of ALFs based on market value in light of our statutory duties
- **Section 5** summarises our conclusions and outlines implementation

2.12 Supporting material is set out in the following separate annexes:

- **Annex 1** sets out our response to stakeholders' responses to the consultation
- **Annex 2** provides background information on the 2000 and 2008 awards in the 28 GHz band and regions covered by the licences
- **Annex 3** sets out our methodology for calculating regional and location specific ALFs for 28 GHz spectrum
- **Annex 4** sets out the relevant legal framework
- **Annex 5** contains an unofficial copy of the Regulations that we have made in order to set ALFs in accordance with this document. The final version of these Regulations will be published at <https://www.legislation.gov.uk/> and come into force on 17 April 2023.

3. Setting Annual Licence Fees in the 10 GHz, 28 GHz, and 32 GHz bands

Introduction

- 3.1 In this section, we set out:
- a) our view that spectrum in the relevant bands is expected to be in excess demand in future if cost-based fees were applied.
 - b) our view that fixed links are currently the highest-value alternative use in each of the relevant bands.
 - c) our estimate of the market value of the spectrum in the relevant bands (and the annual licence fees that would be payable if AIP-based fees applied).

Excess demand

- 3.2 In considering whether there is likely to be excess demand if cost-based fees were applied, we will take account of current and feasible alternative uses. For the reasons set out below, and in Annex 1, we remain of the view that there is likely to be excess demand in future for spectrum in the 10 GHz, 28 GHz and 32 GHz bands if they were subject to cost-based fees.

Stakeholder views and our response

- 3.3 In our Consultation we considered that there is likely to be excess demand in each of the 10, 28 and 32 GHz bands if cost-based fees were applied.
- 3.4 Whilst SpaceX and Amazon suggested that AIP should not apply to the 10, 28 and 32 GHz spectrum, they did not disagree with our view that there would be excess demand in the long-term for this spectrum if it were priced at cost. Vodafone said that there would be excess demand if cost-based fees were applied, including excess demand from themselves for the 10 GHz spectrum, but did not agree this is a reason to apply AIP.
- 3.5 However, other respondents to our Consultation suggested that demand for the 10, 28 and 32 GHz block-assigned spectrum may not be as high in future as Ofcom had suggested and that there would not be excess demand for the spectrum even if cost-based fees applied. Amongst other things, they referenced the fact that the number of fixed links in Ofcom-assigned bands has fallen since 2016, that Ofcom does not have specific evidence of pent-up demand for the block-assigned bands and that some existing licensees have not received significant interest to date for trading of their spectrum. We have summarized their detailed submissions, and provided our response on the particular points that they raised, in Annex 1.

3.6 We recognise that there is uncertainty about the level of long-term demand for the 10, 28 and 32 GHz block-assigned spectrum, and that there has been a decline in the number of fixed-link licences in Ofcom-assigned bands since 2016. Some existing licensees say they haven't seen significant interest for trading of their spectrum to date. However, in our view, this does not demonstrate that in the long-term, and if cost-based fees applied, there would be no excess demand for that spectrum. Further, we consider that the overall (historical) volume of licences should be interpreted with caution as an indicator of future excess demand. In particular, increased demand for higher-capacity links for mobile services could lead to an increase in demand for spectrum even if the number of fixed links continues to fall (see, for example, paragraph A1.20 below).

3.7 Taking account of the above, and Consultation responses (as discussed in Annex 1), our view remains that there would likely be excess demand for the block-assigned 10, 28 and 32 GHz spectrum in future if cost-based fees applied to that spectrum because:

a) It is likely that there would be excess demand in future for these licences from fixed link users alone.

Current licensees also hold a substantial number of licences in Ofcom-assigned fixed wireless spectrum, suggesting there is more demand from current licensees themselves than can be accommodated in block-assigned spectrum. In addition, we have decided to start the statutory process to revoke fixed links licences in the 26 GHz band which are likely to receive harmful interference from new uses, and all of the block assigned licences in the 40 GHz band. Existing links in these bands may need to be moved to other bands. Finally, increasing demand for mobile services including 5G will require wider channels and could increase demand for block assigned spectrum if priced at cost.

b) There would likely be additional demand for these licences from other users, and long-term potential for some new uses to emerge and grow.

In response to our Consultation, a number of stakeholders emphasised the increasing importance of spectrum – including the 10, 28 and 32 GHz spectrum - to a variety of sectors. For example, (i) JRC emphasised the growing spectrum needs of UK energy network providers as they shift to “Smart Grids”, and (ii) Amazon Kuiper and SpaceX emphasised the growing importance of the 28 GHz band both at present and in the future for satellite use, in particular for provision of satellite broadband to homes and offices. There is also potential growth in demand for Fixed Wireless Access (**FWA**) (see Annex 1). These are instances of a wider trend we noted in our Spectrum Strategy – technology developments lead to innovative applications (eg smart grids and satellite broadband), which lead to greater demand for spectrum.

3.8 We recognise that some potential sources of excess demand may be focused on specific bands, however our view is that considering the evidence in the round there is likely to be excess demand for all three bands in future if cost-based fees applied.

- 3.9 We have however carefully considered stakeholders' submissions about the evidence of future demand and explain below how we have taken account of this in our estimation of the market value of the spectrum.

Highest value alternative use

- 3.10 Our view is that the current highest value alternative use of the 10 GHz, 28 GHz and 32 GHz bands is fixed wireless services.⁶ This was our view at the Consultation and it remains unchanged after review of responses as summarised below and detailed in Annex 1. However, we recognise that there is also likely to be demand in future from FWA for the 28 GHz and 32 GHz bands, and from satellite services for the 28 GHz band.

Stakeholder views and our response

- 3.11 In the Consultation we set out our initial view that the next highest value use for each of the 10 GHz, 28 GHz and 32 GHz bands will be from fixed wireless services.
- 3.12 SpaceX said that the 28 GHz band was essential for next generation satellite operators, while FWA deployment in the band was speculative. Amazon agreed that the growth of Ka-band satellite services means that use of spectrum will increase in the 28 GHz band.
- 3.13 Vodafone said that satellite services were not the highest value alternative use for the 28 GHz band, because their ability to lease spectrum in the band meant these services were not excluded at present.
- 3.14 While we recognise the potential demand for this band from satellite, we note that to date this has been limited to a small number of locations. We also note that some 28 GHz licensees, and licensees in other block-assigned bands including 10 GHz and 32 GHz, have deployed extensive fixed links in these bands. Therefore, we have decided that the current highest value alternative use of the 10 GHz, 28 GHz and 32 GHz bands is fixed wireless services.

Estimation of market value

- 3.15 For the reasons set out below, our view remains that it is appropriate to estimate the market value of the block-assigned spectrum in each of the 10, 28 and 32 GHz bands based on current fixed links fees in functionally substitutable bands. However, also as discussed below, we have decided to reduce our forward-looking estimate for those bands by 25% compared to the values in our Consultation.

⁶ In this document 'fixed wireless services' has the same meaning as 'fixed links'.

Stakeholder views, additional evidence and our decision

Relevance of 2008 auction data

- 3.16 Our Consultation considered whether to use the results of the 2008 auction of 10 GHz, 28 GHz and 32 GHz licences to inform our view of the forward-looking market value of these bands. Our provisional view was that this would not be appropriate, in particular because of the considerable changes in the market since 2008. We noted in our Consultation, in particular, that the volume of mobile data transferred over the UK's mobile networks increased forty-fold between 2007 and 2010.
- 3.17 BT said that the 2008 auction should be taken into account in estimating market value, whilst both Vodafone and BT noted that the increase in mobile data traffic since 2008 did not necessarily imply a corresponding increase in the market value of spectrum.
- 3.18 For the reasons set out in our Consultation, we remain of the view that we should not use the 2008 auction result to inform our assessment of market value. As set out in Annex 1 (paragraph A1.37), our view is that the mobile sector has changed greatly since 2008, and we agree with Vodafone that there is no evidence that the 2008 auction results reflect current market value. We agree that the increase in mobile data traffic does not necessarily imply a corresponding increase in the value of spectrum.
- 3.19 We have therefore focused, in the remainder of this Section, on how the fees for Ofcom-assigned fixed link licences could be used to inform our estimate of market value for the block-assigned bands.

Relevance of fixed link fees in functionally substitutable Ofcom-assigned bands

- 3.20 As we explained in our Consultation, the fee for Ofcom-assigned fixed links licences is set according to an algorithm which is designed to reflect the market value (opportunity cost) of the spectrum.⁷ We therefore estimated the market value of the block-assigned spectrum in each of the 10, 28 and 32 GHz bands based on current fixed links fees in functionally substitutable Ofcom-assigned bands.
- 3.21 We used this algorithm to calculate the fee for a typical fixed link. We then multiplied the resulting figure by an estimate of the number of times a given channel could be used nationally (called the 'multiplier'), and then multiplied the result by the number of channels of that size that could fit inside the spectrum band concerned.
- 3.22 Our proposed calculation of regional and location-specific fees for the 28 GHz block-assigned band was set out in Annex 6 of the Consultation.

⁷ The starting point for this fee calculation is a reference fee for a 2x1 MHz bi-directional link. This reference fee is based on an estimated average incremental cost to an operator of reducing its need for spectrum by adopting more spectrally-efficient technology. The reference fee is then adjusted to reflect a number of factors, including the spectrum band used, the path length of the link, and the operator's required availability of the link.

- 3.23 In response to our Consultation, some stakeholders suggested that our estimate of the market value of the spectrum was too high, and they provided detailed comments on our methodology. For example, some stakeholders suggested that:
- a) The reference fee used to set Ofcom-assigned fixed link fees may no longer be reasonable / reflective of costs, and should be lower.
 - b) The multiplication of the fixed link fee by a maximum re-use rate is not appropriate, and that this will likely overstate the market value of the spectrum.
 - c) The number of Ofcom-assigned fixed link licences has been dropping and there is uncertainty about the forward-looking market value of the block-assigned spectrum. They submitted that we were not sufficiently conservative in our Consultation.
- 3.24 We discuss stakeholders' responses, together with our detailed responses, in Annex 1.
- 3.25 Since publishing our Consultation, we have also received further information about the number of links in the Ofcom-assigned and block-assigned bands. Specifically:
- a) We requested data from stakeholders on their fixed links in block-assigned bands as of September 2021 and September 2022. Across the 10 GHz, 28 GHz and 32 GHz bands, the number of links had declined over the past year, with a slight increase in the number of links in the 28 GHz band and a decrease in the other two bands.
 - b) In light of an error in our data, identified in BT's response to our Consultation, we published an update of our count of fixed link licences in Ofcom-assigned bands in December 2022.⁸ In addition to updating the Ofcom-assigned fixed-link counts to November 2022, our update removed duplicate entries from the data, and added confidential fixed links which were not reflected in the figures presented in our Consultation. The update showed a lower number of fixed links in some bands than those reported in the Consultation (the latter were based on May 2022 figures).
 - c) Based on the updated fixed link numbers, we restated the level of our proposed regional fees (using the national fees proposed in our Consultation together with the restated fixed link licence numbers referred to in the Update). We explained that we were still considering responses to our Consultation and had not reached a final decision on the market value (and level of either national or regional fees), but that we would take account of the revised fixed link numbers in our final decision.

Conclusion

- 3.26 For the reasons set out in Annex 1, we do not agree with a number of the submissions made by stakeholders about the methodology we proposed to estimate the market value of the block-assigned spectrum. In particular:
- a) we remain of the view that the use of Ofcom-assigned fixed link fees as the basis for estimating the market value of the block-assigned spectrum is appropriate and proportionate, and have not seen evidence that the reference rate which underpins

⁸ https://www.ofcom.org.uk/_data/assets/pdf_file/0037/248968/alf-10-28-32-ghz-update.pdf.

those fees is too high. Indeed, because the reference fee is not adjusted for inflation, it has by definition fallen in real (inflation-adjusted) terms by the amount of inflation since 2004. We therefore consider the reference fee to be conservative.

- b) we remain of the view that the use of a multiplier based on the highest re-use rate within an Ofcom-assigned band is appropriate. Whilst this implies more extensive use than is currently observed in the (Ofcom-assigned) band as a whole, it reflects the capacity of a block of spectrum, even if that capacity may not always be fully utilised in Ofcom-assigned bands. Further, as we explained in our Consultation, actual use of block-assigned bands suggests that use of the maximum re-use rate in an Ofcom-assigned band is conservative. Whilst some stakeholders disagreed with our use of the maximum re-use rate, they did not engage with the substantive points put forward by us in our Consultation.

3.27 However, taking account of Consultation responses, evidence on future demand, and the restated fixed link numbers provided in our Update, we have decided to reduce our estimate of market value for each of the 10, 28 and 32 GHz block-assigned bands by 25%.

3.28 We recognise that the evidence of future demand is somewhat mixed.

- a) There are a number of reasons why we expect the relevant bands to be in demand in the long-term (see, in particular, paragraphs 3.6 to 3.8 above).
- a) However, there has also been a substantial decline in the number of Ofcom-assigned fixed links in recent years, and this decline appears to be continuing, while the number of block assigned links declined overall between 2021 and 2022. The decline in the number of fixed links in Ofcom-assigned bands, reported in our Consultation, appears to have continued based on the updated November 2022 data.⁹

3.29 While data on the use of Ofcom-assigned fixed links informs our calculation of the ALF (i.e. through the choice of multiplier) we recognise (as discussed at paragraph 3.6 above) that historical changes in the number of fixed links, including in Ofcom-assigned bands, have some limitations as an indicator of the forward-looking market value of block-assigned licences.

3.30 Based on corrected (and updated) evidence from the Ofcom-assigned bands, we also recognise that our proposed multiplier of 200x is less conservative than it appeared in the context of the re-use rates we reported in our Consultation.¹⁰

3.31 Estimating the market value in these circumstances necessarily involves an exercise of regulatory judgment. Taking the above considerations in the round, and in light of our

⁹ The figures we presented in the Consultation indicated a 44% decrease from June 2016 to May 2022, while the updated figures indicated a 46% decrease from June 2016 to November 2022. While the published update presented figures for the number of fixed links in these bands in May 2022, we have subsequently determined that we are unable to determine the precise number of licences for confidential links that were in use at that time. However a comparison which excludes confidential links shows a continuing decline from May to November 2022.

¹⁰ While the May 2022 data presented in our Consultation suggested a multiplier in a range from 200x to 325x, the corrected data imply a narrower range of around 230x to 280x (based on the highest-rate uses in the five comparator Ofcom-assigned bands we considered). The average highest re-use rate across the five bands was around 280 in our Consultation, but has fallen to 250 based on corrected November data.

conservative approach to setting ALFs, we have decided to reduce our estimate of the market value of the 10 GHz, 28 GHz and 32 GHz block-assigned bands by 25% relative to the estimate in our Consultation. This would imply the following market values:

- a) **£5,676 per 2 x 1 MHz** for the national 10 GHz spectrum
- b) **£3,432 per 2 x 1 MHz** for the national 32 GHz spectrum; and
- c) **£3,432 per 2 x 1 MHz** for the 28 GHz spectrum on a national basis.

- 3.32 To calculate regional 28 GHz ALFs, we took 26 GHz as a reference band, and calculated the relative density of 26 GHz fixed links (weighted by channel bandwidth) in each region. We then apportioned the national 28 GHz fee to each region based on the relative density of fixed links in that region. For example, 15% of 26 GHz fixed links are in Scotland, so the fee for the Region L (Scotland) 28 GHz licence is 15% of the national licence fee, while 2% of 26 GHz fixed links are in Northern Ireland, so the fee for the Region N (Northern Ireland) licence is 2% of the national licence fee.
- 3.33 Arqiva holds 28 GHz licences at several specific locations with radius up to 5 km. We calculate location-specific ALFs based on the regional ALFs described above. In particular the ALF for a location is the ALF for the region, multiplied by the ratio of the area of the location to the area of the region.
- 3.34 Annex 3 provides a more detailed account of our calculation of 28 GHz regional and location-specific ALFs, and sets out the ALFs for each region and location.

4. Assessment of ALF in light of our statutory duties

Introduction

- 4.1 For the reasons explained in Section 3 above, we have estimated that:
- a) the market value of national 10 GHz spectrum and 32 GHz spectrum (and corresponding ALF, if set based on that estimate) is **£5,676 per 2 x 1 MHz** and **£3,432 per 2 x 1 MHz** respectively; and
 - b) the market value of 28 GHz spectrum on a national basis is **£3,432 per 2 x 1 MHz**.
- 4.2 We explain in Section 2 above that as set out in our SRSP, our existing spectrum pricing policy is to set fees for spectrum holdings to reflect the market value of the spectrum (based on its opportunity cost) in order to promote the optimal use of spectrum.
- 4.3 We explained in the SRSP that we would need to take account of the particular circumstances of the frequency bands and licence types under review. In this section, we therefore present our assessment (in light of all our statutory duties) of setting ALFs for 10, 28 and 32 GHz spectrum based on our estimates of the market value of the spectrum.
- 4.4 As explained in Section 2 (and in more detail in Annex 4 of this decision), when we exercise our powers in relation to setting spectrum fees, a number of statutory duties are relevant. Broadly speaking, these can be categorised as follows:
- a) *Optimal use of spectrum*: The Communications Act requires Ofcom to secure the optimal use for wireless telegraphy of the electro-magnetic spectrum. The Wireless Telegraphy Act also requires Ofcom to have regard to: (i) the desirability of promoting the efficient management and use of spectrum, and (ii) the extent to which spectrum is available for use, and the demand (current and likely future) for use of the spectrum.
 - b) *Furthering the interests of citizens and consumers*: Ofcom's principal duty in the Communications Act is to further the interests of citizens in relation to communication matters and of consumers in relevant markets, where appropriate by promoting competition.
 - c) *Encouraging investment and innovation*: Ofcom is required by the Communications Act to have regard to the desirability of encouraging investment and innovation in relevant markets and to encouraging the availability and use of high-speed data transfer services throughout the UK. It is also required by the Wireless Telegraphy Act to have regard to the desirability of promoting the development of innovative services.
 - d) *Promoting competition*: Ofcom is required by the Communications Act to promote competition when managing the radio spectrum, and to have regard to the desirability of promoting competition in relevant markets. It is also required by the Wireless

Telegraphy Act to have regard to the desirability of promoting competition in the provision of electronic communications services.

- 4.5 We therefore consider in this section the specific effects of setting ALFs at the market values set out above on:
- a) securing the optimal use of spectrum;
 - b) consumers;
 - c) investment and innovation; and
 - d) competition.
- 4.6 We note stakeholder responses to our Consultation on these issues under each heading. Stakeholder responses are considered in more detail in Annex 1.

Securing the optimal use of spectrum

- 4.7 The aim of setting spectrum fees based on market value is to provide users with a long-term signal of spectrum value, therefore giving them incentives to use spectrum in a way that maximises benefits to society over time.¹¹ In our view, spectrum priced to reflect the forward-looking opportunity cost of spectrum captured by market value should ensure that the licensees have sufficient incentives to use all spectrum efficiently and only hold the spectrum that they value as highly as the highest value alternative user or use.
- 4.8 Spectrum users can trade or acquire spectrum licences and in theory this creates incentives for users to only hold licences for which they are the highest value users. However, our SRSP recognises that there is a risk that users may be less responsive to the opportunity cost of holding spectrum (i.e. forgoing the revenue from trading it) than to ALFs based on market value, implying that trading by itself may not be sufficient to ensure that spectrum is allocated most efficiently.
- 4.9 The SRSP identified several general barriers which might prevent spectrum trading from being sufficiently effective to promote the optimal use of spectrum, including high transaction costs or lack of price information.¹²
- 4.10 As we have noted in previous decisions,¹³ we also consider that even if licence holders can assess the opportunity cost of their spectrum licence, and identify potential buyers for

¹¹ Operators may be incentivised to use spectrum they currently hold as efficiently as possible even without fees set at market value. However, this does not necessarily mean that they are the highest value user of this spectrum (i.e. even if they are incentivised to maximise the value of their use of that spectrum, they are not necessarily the most efficient user).

¹² SRSP, paragraphs 4.189–4.212

¹³ Ofcom, Annual Licence Fees for 900 MHz and 1800 MHz frequency bands, December 2018, paragraphs 5.36-5.49 https://www.ofcom.org.uk/_data/assets/pdf_file/0020/130547/Statement-Annual-licence-fees-900-MHz-and-1800-MHz.pdf;

Ofcom, Annual licence fees for 2100 MHz spectrum, December 2021, paragraph 5.20.

https://www.ofcom.org.uk/_data/assets/pdf_file/0027/229428/1900_2100-mhz-statement.pdf.

their spectrum, they may not respond to these opportunity costs by trading unwanted spectrum.¹⁴

- 4.11 In response to our Consultation, some licensees submitted that ALFs were not needed to secure optimal use of the spectrum in these bands, on the basis that their licences had been awarded by auction, that they were making significant use of their licences, that the licences were tradable and trading had occurred in the past, and that use of the spectrum could be or was being leased to third parties.
- 4.12 We recognise that some spectrum trading and leasing has occurred in the 10 GHz, 28 GHz and 32 GHz bands in the past.¹⁵ However, trading has not been a feature of these bands in recent years, despite some licensees making very limited use of the spectrum. For the reasons set out above, and in Annex 1, we do not consider that stakeholders have demonstrated that trading and leasing by themselves are sufficient to secure optimal use of the 10 GHz, 28 GHz or 32 GHz spectrum in the future.
- 4.13 We therefore remain of the view that setting ALFs for the 10 GHz, 28 GHz and 32 GHz spectrum based on our conservative estimate of market value is in line with our statutory duty to secure optimal use of spectrum.

Impact on citizens and consumers

- 4.14 In general, we consider that setting ALFs in accordance with market value will provide efficient price signals for the use of scarce spectrum, which will overall benefit consumers by ensuring that spectrum is used in the most efficient way for the provision of downstream services for which there is greatest value. If the price of spectrum is below the opportunity cost, there is a risk that it will continue to be held by current licence holders even if they are not the highest value users of that asset. This could be harmful to consumers and society more widely.
- 4.15 The SRSP sets out our view that:

1.1 “We believe that if it is considered that a subsidy should be provided to support wider policy objectives, it is more efficient for those services to be explicitly subsidised by government from general taxation, leaving those providing them to have the same incentives to use resources, such as spectrum, efficiently, rather than seeking to provide such services through concessions on the fee charged. For these reasons, socially beneficial but un-commercial services do not generally receive goods, services or resources at a concession but, as a general rule, pay the market price.”

¹⁴ This could happen because i) managers making the decisions may lack the incentives to act on opportunity costs of holding spectrum, e.g. if an organisation considers minimising costs a greater priority, and places less weight on realising untapped revenues from existing spectrum holdings; and/or ii) managers’ response to opportunity costs could also depend on whether outcomes are framed in terms of losses or gains – managers may respond more easily to the direct cost of a licence fee than the foregone revenues from trading spectrum.

¹⁵ Details of licence trades of tradeable licences can be viewed on Ofcom’s [Spectrum information portal](#)

- 4.16 In response to our Consultation, some stakeholders commented that ALFs would have a negative impact on citizens and consumers if their cost was passed on to end users, or made it uneconomic to provide certain services. In particular, JRC commented that the ALFs would result in higher costs to Distribution Network Operators which would be passed on to UK households. JRC said that given the importance of 10 GHz spectrum in furthering government energy policy, Ofcom should consider the social value of spectrum use in assessing the impact of ALF fees. SpaceX and Amazon noted the impact of ALFs if passed through to satellite providers, which in SpaceX's view could 'result in less service provided to consumers, including in rural and remote locations'.
- 4.17 As noted above, we consider that setting ALFs in accordance with market values will overall be of benefit to consumers. In light of the principle that uses of spectrum that deliver wider social value do not generally justify AIP fee concessions, we disagree with JRC that we should take account of Government energy policy in setting ALFs. In addition, in practice we have not seen any evidence to suggest that setting ALFs based on our conservative estimate of market value will have a material impact on satellite providers. We therefore remain of the view that setting ALFs at market value is in line with our primary duty to further the interests of citizens and consumers.¹⁶

Impact on competition

- 4.18 Our view on spectrum fees and competition, is that fees are unlikely to introduce distortions to competition in downstream markets when they reflect the opportunity cost of spectrum. However, in the SRSP, we said that we would consider the potential effect of spectrum fees on a case-by-case basis.
- 4.19 In response to our Consultation, BT commented that, at the ALF rates proposed, competition could be distorted as owners of the bands in question would face much higher average spectrum costs per link than the costs of individual equivalent link licences from Ofcom.
- 4.20 We do not consider that BT has demonstrated that ALFs based on our conservative estimate of market value risk distorting competition. The average cost per link for a block-assigned band depends on the number of links the licensee deploys. If it deploys a large number of links, it may have a lower average spectrum cost per link than that of an Ofcom-assigned link (depending on the number of links and the level of ALF).¹⁷ If it deploys a relatively small number of links, a licensee may have an incentive to return its licence and instead deploy links in Ofcom-assigned bands, for which it would face the same average spectrum cost per link as a competitor who was also using Ofcom-assigned licences.

¹⁶ We have also considered the impact of our proposals on vulnerable consumers, including those with protected characteristics under the Equality Act 2010. We consider that our proposed ALFs would have an over-arching positive impact on all consumers and citizens, given that our objective is to secure the optimal use of spectrum for the benefit of society as a whole. We do not therefore consider that our proposals would have any equality implications. Our legal obligations relating to equality are set out in paragraphs A7.16-A7.19.

¹⁷ Net of any revenues from leasing.

- 4.21 We do not in any case consider that the ALFs are likely to distort competition, particularly as they reflect a conservative estimate of market value.
- 4.22 Taking account of consultation responses, we have not identified any reasons why it might be appropriate to discount any of the 10 GHz, 28 GHz or 32 GHz spectrum below market value in order to promote downstream competition. Setting ALFs below market value would effectively be providing licence holders with a subsidy which could potentially distort competition in downstream markets. Therefore, our view is that setting ALFs for this spectrum based on our estimate of market value is consistent with promoting competition.

Impact on investment and innovation

- 4.23 Our SRSP explains that investment decisions should reflect the true cost of inputs. This is achieved where ALFs are set based on market value, as operators are required to pay the opportunity cost of their spectrum holdings.
- 4.24 In the SRSP we noted that:¹⁸
- 1.2 *“If the cost of spectrum reflects its true opportunity cost, and the cost of equipment also reflects its true value (as would be expected in a well-functioning market for equipment) then business will make the trade-off between investment in spectrum and equipment in a way that maximises benefits generated from their use.*
- 1.3 *If spectrum appears cheaper than its true opportunity cost, businesses will rationally use more spectrum, and invest less in equipment than the efficient balance. The result of this would be that fewer users overall will be able to access spectrum to generate benefits for society.”*
- 4.25 In response to our Consultation, some licensees commented on the potential for ALFs to reduce the level of investment, particularly in the provision of mobile and satellite coverage in rural, semi-rural and remote areas. We consider these submissions in Annex 1.
- 4.26 We recognise that setting ALFs at market value could in theory reduce the ability of existing licence holders to make investments that they otherwise would have made. However, we consider that setting ALFs at market value is consistent with supporting *efficient* investment as indicated by the SRSP.
- 4.27 Therefore, our view remains that setting ALFs for this spectrum based on our estimate of market value is consistent with our duties in relation to investment and innovation.
- 4.28 We also remain of the view that investment decisions should reflect the true cost of inputs, and that we should not seek to pursue wider policy objectives through concessions on the fee charged.

¹⁸ SRSP statement, paragraphs 3.34-3.35.

Our decision

4.29 We conclude that it is appropriate, taking account of our statutory duties and the assessment set out above, to set ALFs for 10, 28 and 32 GHz spectrum based on our conservative estimates of the market value of the spectrum as set out in in the previous section. Setting fees on this basis:

- a) will secure the optimal use of spectrum;
- b) will benefit citizens and consumers by ensuring that spectrum is used in the most efficient way for the provision of downstream services for which there is greatest value;
- c) is consistent with promoting competition; and
- d) is consistent with promoting efficient investment and innovation.

5. Conclusion and implementation

Level of ALF

- 5.1 As set out in Section 4, we consider that it is appropriate, taking account of our statutory duties, to set the ALFs for the 10, 28 and 32 GHz spectrum awarded in 2008 based on our estimate of market value. We are therefore setting the following ALFs:
- a) a national annual licence fee of £5,676 per 2 x 1 MHz for 10 GHz spectrum;
 - b) a national annual licence fee of £3,432 per 2 x 1 MHz for 32 GHz spectrum;
 - c) regional annual licence fees for 28 GHz spectrum based on a national rate of £3,432 per 2 x 1 MHz of spectrum;
- 5.2 The remainder of this section sets out how we have decided to implement the revised fees, including phasing in, and application of the revised fees.

Phasing-in

- 5.3 We explained in the Consultation that we had considered whether, in this case, it would be appropriate to phase in the new fee rates over time. Our provisional view was that there should not be a phase-in period for these new fee rates, and that the full fees should become payable from the fee payment date.¹⁹
- 5.4 We received no stakeholder comments on our approach to phasing-in, and we have therefore decided that there will be no phasing-in of the fees.

Application of revised fees

Fees for 10, 28 and 32 GHz spectrum awarded in 2008

- 5.5 In our Consultation, we proposed that the licence fees for the block-assigned 10, 28 and 32 GHz spectrum awarded in 2008 would be payable on 21 February 2023.
- 5.6 Whilst no stakeholders commented on the proposed payment date of 21 February 2023, we explained in our December Update to the Consultation, that our final decision (and accompanying fees regulations) would not be published in January as expected, but instead that they would be published in Q1 2023. As a result, the ALFs that we have decided to set in this document in respect of the 2008-awarded licences will become payable on **17 April 2023**. An unofficial copy of the revised fee regulations is provided in Annex 5.²⁰

¹⁹ See paragraph 5.56 of our Consultation.

²⁰ As proposed in our Consultation, these regulations will implement the new ALFs by amending the existing Wireless Telegraphy (Licence Charges) Regulations 2020/1068 (“2020 Regulations”) which set fees for other Spectrum Access licence classes including the ALFs for the regional 28 GHz spectrum awarded in 2000.

5.7 We note that, consistent with our consultation, we are providing licensees with the option to pay the ALFs across ten equal monthly instalments.²¹ We would encourage licensees to contact us as soon as possible, and in any event, before 6 April 2023, should they wish to avail themselves of this option.

Fees for 28 GHz spectrum awarded in 2000

5.8 In our Consultation, we proposed to align the fee and payment date for the 28 GHz licences awarded in 2000 and 2008 with effect from 5 January 2024 (i.e., the next licence payment date for those 28 GHz licences awarded in 2000). We also explained that, to effect this, we were proposing to revoke the 28 GHz licences awarded in 2008 and vary the 28 GHz licences awarded in 2000 (subject to licensees' consent). This would streamline administration and billing to a single annual invoice per licensee, which would be invoiced in January 2024.

5.9 Whilst stakeholders agreed with our proposal to align the fees and payment date, some stakeholders commented on our approach to alignment. Specifically:

a) H3G suggested that we should bring forward the date of the alignment (so that it takes effect immediately rather than from 5 January 2024). It noted that - under the aligned fees - its UK Broadband 28 GHz licence awarded in 2000 would benefit from a fee reduction, and suggested that a delay in alignment would simply extract more money than is necessary from UKB; and

b) ✂

5.10 We have considered H3G's suggestion that we bring forward the date of alignment of the 28 GHz fees, but do not consider it appropriate to do so. We do not consider that it would be appropriate for Ofcom to use its powers to (retrospectively) amend the relevant fee regulations to reduce fees that were incurred by licensees before our decision.²² Our view remains that alignment of the fees should take place from 5 January 2024. This is reflected in regulation 2(5) of the Regulations (which incorporates a new regulation 7 into the Wireless Telegraphy (Licence Charges) Regulations 2020).

5.11 Whilst a number of licensees were content for their existing 28 GHz authorisations to be merged into a single licence, we explained in our Consultation that this would be subject to licensee consent. We will therefore engage with affected licensees in due course to confirm whether they consent to the revocation of their 28 GHz licences awarded in 2008 (and the variation of their licences awarded in 2000). To be clear, fees for the regional 28 GHz spectrum awarded in 2000 (and the associated payment date) will be aligned with the 28 GHz spectrum awarded in 2008 irrespective of whether licensees consent to the merger of their licences into a single licence.

²¹ This is subject to the conditions set out in Regulations 4(6) and (7) of the Wireless Telegraphy (Licence Charges) Regulations 2020 (as modified by the Regulations).

²² The holders of a licence authorizing the use of 28GHz spectrum awarded in 2000 were required to pay ALFs annually, under the existing Wireless Telegraphy (Licence Charges) Regulations 2020, from 5 January 2016.

Period for which the new fees will remain in force

- 5.12 The fee set in these regulations will remain applicable until we amend or revoke them. This means that, in effect, the ALF is set for an indefinite period and is not time limited. We consider that there is benefit in a period of relative certainty for licensees. We would therefore be unlikely to review the ALF in the next five years save in very exceptional circumstances and would also propose to retain it beyond that date unless the evidence suggests that a review would be justified, including evidence of a material misalignment between the level of the ALFs and the value of the spectrum, in keeping with our general policy on fee reviews.

Fees per licensee

- 5.13 The fees which will be due in 2023 and in subsequent years for each licensee are set out in Table 5.1. The fees per licensee differ depending on the band or bands for which they hold spectrum, whether they hold national or regional licences and, in the case of 28 GHz licensees, when their licences were originally awarded, and whether they are also subject to location-specific licence fees. For 28 GHz licensees, fees due in 2023 include pro-rated regional ALFs for licences originally awarded in February 2008, and location-specific fees. Fees due in subsequent years also include regional ALFs for licences originally awarded in December 2000.

Table 5. 1 Total fees per licensee for 10 GHz, 28 GHz and 32 GHz spectrum

Company	Fees due in 2023	Fees due in subsequent years
10 GHz and 32 GHz licensees:		
JRC Limited	£113,520	£113,520
MBNL	£1,318,944	£1,318,944
EE	£864,864	£864,864
BT	£432,432	£432,432
MLL 32	£432,432	£432,432
28 GHz licensees:		
Arqiva	£1,236	£32,704
Vodafone	£173,264	£373,397
UK Broadband	£323,631	£537,251
Telefonica	£0	£201,387

Note: Fees for 10 GHz and 32 GHz licences will be payable on 17 April 2023 and annually on the same date thereafter. Fees for 28 GHz licences originally awarded in February 2008 will be payable on 17 April 2023 and annually from 5 January thereafter. Fees for 28 GHz licences originally awarded in 2000 have already been incurred for 2023 (in January 2023) – they were therefore not added to the “fees due in 2023” column. However, fees for all 28 GHz awarded blocks (from the 2000 and 2008 awards) were included in the totals under “fees due in subsequent years”.

A1. Consultation responses

Excess demand

- A1.1 In our Consultation, we considered that there was likely to be excess demand in each of the 10, 28 and 32 GHz bands if cost-based fees were applied, on the basis that:
- a) Current licensees also held a substantial number of Ofcom-assigned licences, suggesting there was potential demand that could not be accommodated in existing block-assigned spectrum. We noted that acquiring additional block assigned spectrum would be more attractive to licensees than continuing to use Ofcom assigned spectrum, particularly given that use of the block assigned spectrum entails lower transaction costs and the flexibility to deploy without having to coordinate with other users.
 - b) Potential use of the 26 GHz and 40 GHz band for mobile technology meant that some links in these bands may need to be moved to other bands, increasing demand for block-assigned spectrum.
 - c) Increasing demand for mobile services including 5G would require wider channels for fixed links.
 - d) There was potentially increasing demand for last mile provision and FWA.²³
- A1.2 Stakeholders commented on each of these points, as summarized below.

Current licensees' use of Ofcom-assigned spectrum for fixed links

Stakeholder views

- A1.3 Some stakeholders suggested that there may be other reasons (beyond excess demand) for existing licensees also holding a number of Ofcom-assigned fixed link licences:
- a) BT said that Ofcom-managed licences were mainly historical licences that have not been switched over to self-managed bands because of the costs of switching, or because the Ofcom-assigned band is a lower frequency that supports longer path lengths at the required availability.
 - b) H3G said there may be technical advantages of the Ofcom-assigned bands that cannot be replicated in the block-assigned bands, or licensees may keep links in the Ofcom-managed bands to avoid potential disruption in migrating to block-assigned bands.
 - c) ✂
- A1.4 BT said that the fees for the Ofcom-assigned bands were likely to be too high, as they were set in 2004 when alternative options were more expensive, and that this may be creating artificial demand for the block-assigned bands. ✂

²³ Consultation, paragraph 3.18.

- A1.5 H3G said that Ofcom had not published data on the current use of the block-assigned bands relative to their capacity, so licensees cannot understand the extent to which there may currently be surplus capacity in the bands. H3G commented that demand for these bands would likely fall below current levels if cost-based fees were introduced. H3G noted the decline in the number of fixed links in Ofcom assigned bands in recent years, and said that Ofcom should assess the likely future levels of use in the Ofcom-managed bands.
- A1.6 Vodafone said that ‘all the principal alternative users already have their own block allocation of spectrum’, so it was unlikely to be the case that anyone else could use the spectrum more intensively and efficiently. However, Vodafone also said that it ‘partially agreed’ that there would be excess demand if cost-based fees were applied, and noted that ‘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.’²⁴

Our response

- A1.7 Some stakeholders said that Ofcom should consider reasons, such as historical circumstances, technical advantages or flexibility, why holders of block-assigned spectrum also hold links in Ofcom-assigned bands. We recognise that there may be other reasons as to why the holders of block-assigned spectrum also hold links in Ofcom-assigned bands, but are not persuaded that these explain why so many links have been acquired by the holders of block-assigned spectrum in Ofcom-assigned bands.
- A1.8 As explained in paragraph A1.35 below, several block-assigned licensees each have between 500 and 2,000 licences in the Ofcom-assigned bands that were acquired since the start of 2016. On the basis of the evidence provided, we therefore remain of the view that current licensees’ use of Ofcom-assigned spectrum for fixed links indicates excess demand.
- A1.9 In relation to H3G’s comments on surplus capacity in block-assigned bands, we consider that assessing the extent of unused capacity in block-assigned bands through an analysis of current deployments would not be likely to provide reliable evidence on the likely extent of excess demand in the long-term if cost-based fees applied. We have had regard to the decline since 2016 in the number of fixed links in the Ofcom-assigned bands in our Consultation and in this Decision.
- A1.10 As regards Vodafone’s comment that all the principal alternative users already have their own block allocation of spectrum, we consider that the potential drivers of future demand we have identified could well result in existing licensees having greater demand than they can accommodate in their current spectrum holdings, in addition to the potential that new or emerging applications will have demand for this spectrum.

²⁴ Vodafone qualified its view by commenting on this impact of ALFs on coverage. We consider this point in paragraphs A1.94-A1.95.

Other aspects of excess demand

Stakeholder views

Effect of enabling mmWave bands for mobile

- A1.11 BT agreed that clearing mmWave bands could lead to additional demand for fixed links in the ALF bands but said that, given the number of links concerned and the amount of spectrum available across bands, it seemed unlikely that this could be categorized as excess demand.
- A1.12 H3G said that any links which vacated the mmWave bands could move to Ofcom-assigned bands, noting that the number of links in the 26 GHz band had reduced in recent years and could reduce further if revocation were delayed. It said that it had proposed an approach to the 40 GHz band which could reduce the number of fixed links that needed to be moved to other bands.

A1.13 ✂

Wider channels

- A1.14 BT said that when looking at the much higher number of fixed links (i.e., demand) that was supported by Ofcom-assigned bands in the past compared to today, it seems unlikely that the additional demand from the trend towards wider bandwidth would be “excess demand”.
- A1.15 H3G said that the rationale that increased demand for mobile services including 5G, necessitating wider channels, would increase demand for block-assigned spectrum was contradicted by the fact that the number of links in Ofcom-assigned channels has fallen while mobile demand has increased.

A1.16 ✂

Fixed Wireless Access (FWA)

- A1.17 H3G said that the adoption of FWA has grown over time while the number of Ofcom-assigned links has fallen, and that ‘any potential interest in using 28GHz and/or 32GHz for FWA is yet to be proven, and we believe Ofcom may be placing too much weight on licensees’ interest in deploying such services.’ SpaceX said that the deployment of FWA in 28 GHz remained speculative.

A1.18 ✂

Our response

- A1.19 We remain of the view that potential use of the mmWave bands for mobile technology is likely to lead to increased demand from fixed links for block-assigned spectrum. We consider that operators will continue to prefer use of a block-assigned band where possible over the use of Ofcom-assigned spectrum, given the greater flexibility of block assigned spectrum to the licensee. While it is possible that such demand will focus more on the 28 GHz and 32 GHz bands than on the 10 GHz band, we do not have clear evidence on this

point, and we consider that increased demand to accommodate more fixed links in block-assigned bands will also tend to increase demand for the 10 GHz band.

- A1.20 We also remain of the view that a requirement for wider channels could increase demand for block-assigned spectrum if priced at cost. Changes in the number of fixed links over time do not necessarily reflect how demand is changing, as a trend towards wider channels could be consistent both with a reduction in the number of links and with an increase in demand for fixed link capacity. In any event, we note that consultation respondents have not produced any new evidence or reasoning on this point.
- A1.21 We note that in response to Ofcom’s recent mmWave Consultation, H3G said that in its view consumers would increasingly value the benefits of FWA, and that FWA was also attractive from a provider’s perspective.²⁵ While we recognise that there is some uncertainty as to the future use of FWA in the band, it remains a potential source of excess demand among others. We recognise that some potential sources of excess demand may be focused on specific bands, however our view is that considering the evidence in the round there is likely to be excess demand for all three bands in future if cost-based fees applied.

Highest value alternative use

Stakeholder Views

- A1.22 Vodafone said that while some respondents may suggest that satellite services are the highest value alternative use, particularly for the 28 GHz band, it disagreed. It said that ‘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.’ ✕
- A1.23 SpaceX submitted that “while the 28 GHz band is essential for next generation satellite operators now and into the future, the deployment of 5G fixed wireless access in the band remains speculative. At the very least, Ofcom should assess the extent to which terrestrial licensees have deployed networks in the band or plan to deploy in the band (rather than simply leasing the spectrum to other operators).”²⁶
- A1.24 Amazon said it “generally agrees with Ofcom’s expectation set out at section 3.12 of the consultation statement that the growth of Ka-band LEO NGSO FSS satellite services means that use of spectrum will increase in the 28 GHz band”.
- A1.25 JRC did not agree that fixed wireless services should be considered as the highest value alternative use for 10 MHz spectrum. It said that it was not possible to identify a single highest value use of this spectrum because of the need to balance economic and social value.

²⁵ https://www.ofcom.org.uk/data/assets/pdf_file/0025/243556/three.pdf

²⁶ SpaceX also called for Ofcom to publish a database of 28 GHz deployments. In our view, it is not clear that the benefit of such a database would justify the burden on licensees.

Our Response

- A1.26 We asked licensees to provide details of their current and recent leasing arrangements and for any offers to purchase their spectrum. These responses show that, ✕.
- A1.27 We consider this evidence to be relevant (in principle) to our assessment of the opportunity cost of 28 GHz spectrum since ✕ it reflects the willingness to pay for spectrum of the lessees, and supports our view that there is demand for the spectrum from satellite providers. However, we have not used these market data as the basis for our ALFs.
- A1.28 SpaceX and Amazon’s responses highlighted the importance of the 28 GHz band for satellite applications. We have recognised in our discussion of excess demand in Section 3 the growing needs of satellite operators in the longer-term and how satellite will likely be an additional source of demand in future. However, we note that to date this has been limited to a small number of locations. We also note that some 28 GHz licensees, and licensees in other block-assigned bands including 10 GHz and 32 GHz, have deployed extensive networks in these bands. Our view therefore remains that the highest value alternative use is likely to be fixed wireless services.
- A1.29 We note that while JRC did not consider fixed wireless services to be the highest value use of 10 GHz spectrum, it did not identify any higher value uses. Rather, its response on this point essentially reiterated its view that we should take account of the wider social value of spectrum use, which we have responded to below.

Estimation of market value

Approach to setting ALFs

Stakeholder Views

- A1.30 Vodafone agreed with us that it would not be appropriate to use the 2008 auction results as a proxy for market value, because the data will be 15 years old by the time we set fees, and there is no evidence that it reflects current market value. However, it said that the large increase in mobile data since 2008 did not imply that the auction data could only understate the market value of the spectrum, as this depended on the value of mobile data rather than its volume.
- A1.31 BT submitted that the 2008 auction evidence should be taken into account in estimating market value. It commented that while mobile data traffic had increased dramatically since the auction, the spectral efficiency of fixed links and the availability of fibre had also improved over this period.
- A1.32 BT suggested that it might be appropriate to wait until the decision is taken on 40GHz, and if fees need to be set for 40 GHz, to make revised proposals for 10 GHz, 28 GHz, 32 GHz at the same time as proposals for any 40 GHz band fees.

- A1.33 Vodafone commented that in assessing market value '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.'
- A1.34 BT said that our proposed approach to setting ALFs reflected our view of the average incremental cost savings from using more efficient fixed link equipment 'set decades ago', rather than the market value. It said that when Ofcom previously used this approach, it did not have the evidence of 'dramatically reducing demand for fixed link licences' that was available today.

Our Response

- A1.35 In assessing the demand for block-assigned licences we have not, as Vodafone suggests, assumed that any licensee would be evicted from its current licence. Rather we consider that the fact that some block-assigned licensees in the 10, 28 and 32 GHz spectrum bands also hold a substantial number of licences in functionally substitutable Ofcom-assigned fixed wireless spectrum suggests that there is potential demand from those licensees that could not be accommodated in their existing block-assigned spectrum. In particular, we note that several operators (Airwave, Telefonica, MBNL and Vodafone) each have between 500 and 2,000 licences in the Ofcom-assigned bands that were acquired since the start of 2016.
- A1.36 We recognize that the reference rate is a cost-based measure which has not been updated (including for inflation). However, in the absence of direct market evidence we consider it is appropriate to consider the potential cost of alternatives to fixed links as the basis for estimating the value of fixed links to network operators.
- A1.37 In our Consultation²⁷ we did not consider it appropriate to use the 2008 auction result to inform our forward-looking view of the market value of the 10 GHz, 28 GHz and 32 GHz bands, in particular noting that the volume of mobile data transferred over the UK's mobile networks increased forty-fold between 2007 and 2010. We remain of the view that we should not use the 2008 auction result in this way. To be clear, our position is not that the auction data could only understate the market value of spectrum. As BT and Vodafone point out, the value of the spectrum depends on other factors besides the volume of mobile data transferred. Rather, our view is that the mobile sector has changed greatly since 2008, and we agree with Vodafone that there is no evidence that the 2008 auction results reflect current market value.
- A1.38 In our view, we already have sufficient evidence on which to reach a reasonable estimate of the market value of the spectrum and future possible developments in the 40 GHz band are not a sufficient reason to delay setting ALFs in the 10 GHz, 28 GHz and 32 GHz bands.

²⁷

Consultation, paragraph 3.21

Reference fee

Stakeholder views

- A1.39 H3G said that while our consultation noted that the reference fee has not increased in line with inflation, we had not considered that the costs on which the fee is based may have fallen in nominal terms over the period ‘which is very plausible over nearly 20 years’. As such it said there was a risk that we were overstating the value of the spectrum.
- A1.40 Vodafone noted that our approach was based on a formula set nearly 20 years ago. It said it was ‘unclear whether £88 is still a reasonable base case, whether the frequency band factors are still valid and whether the other factors reflect current radio equipment capability’. However, given the relatively small level of fees involved (for example compared to ALFs for mobile access spectrum), it did not suggest ‘reopening the algorithm to re-examine the values’. However, as the risks of overstating ALFs were greater than those of understating it, Vodafone stated that it is incumbent on Ofcom to take a conservative approach.

Our response

- A1.41 Because the reference fee is not adjusted for inflation, it has by definition fallen in real (inflation-adjusted) terms by the amount of inflation since 2004. We agree with Vodafone that there is some uncertainty as to how closely the reference fee and adjustment factors reflect the current reality, but also that it is not an administrative priority to attempt to recalculate these parameters in the present case. On the basis of the evidence provided, we consider that the reference fee is conservative (as the resulting ALFs are significantly lower than they would be if based on a reference fee which was adjusted for inflation²⁸) and, as explained in Section 3, we have taken a conservative approach in setting ALFs more generally in this case.

Level of multiplier

Stakeholder views

- A1.42 BT said that the Wireless Telegraphy Act required Ofcom to have regard to the current and future demand for spectrum in carrying out its spectrum functions, and that basing the multiplier on the maximum number of times that a channel was re-used in a substitutable band did not reflect the demand for, or opportunity cost of, the spectrum bands concerned. It said that Ofcom should instead consider basing AIP on the aggregate licence fees in substitutable Ofcom-assigned bands.
- A1.43 H3G said that “the theoretical maximum number of links that a band could support is not the driver of its market value – only its actual use is. If a band is not being used to the

²⁸ As noted in our Consultation (Footnote 23).

extent technically possible, this is because such use is not economic and is therefore not a driver of market value.”

- A1.44 H3G proposed a multiplier based on ‘average use’ of 173 for the 10 GHz band, and of 129 for the 28 GHz and 32 GHz bands.
- A1.45 Vodafone said it was ‘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). As such, the highest alternative value is most probably that the block-assigned band be migrated to becoming an individually-licensed band.’ It said 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, because the maximum could not be replicated into multiple bands without a growth in demand.
- A1.46 However, Vodafone said it expected ‘that the usage of a 200 figure is not unreasonable’.

Our response

- A1.47 In our Consultation²⁹ we considered whether a multiplier based on the highest re-use rates might understate or overstate the likely actual re-use in a block assigned band. On the one hand, we note that focusing on the highest use rate in a single channel within an Ofcom-assigned band, and applying this use rate across all channels in the band implies more extensive use than is currently observed in the (Ofcom-assigned) band as a whole. On the other hand, we noted that the multiplier reflects the capacity of a block of spectrum, even if that capacity may not always be fully utilised in Ofcom-assigned bands. We also consider this range to be consistent with the extensive use of block-assigned spectrum by some licensees.
- A1.48 One reason for more extensive use in block-assigned bands is that the licence holder has the flexibility to optimise how it uses the spectrum for its own fixed-link requirements, without any need for coordination between operators, and another possible reason could be that the holder of a block-assigned licence does not face any incremental licence-fee costs from adding further fixed links to the band. We considered that our proposed approach of focusing on use in the most extensively used channels in Ofcom-assigned bands was appropriate, particularly in the light of the trend to larger channel widths.
- A1.49 While BT, H3G and Vodafone disagreed with our use of the maximum re-use rate in Ofcom-assigned bands, in our view they did not engage with our reasoning, set out above, for why we considered this approach to be appropriate.
- A1.50 We disagree with Vodafone’s view that an individual licensee would be unlikely to have a greater demand for fixed links than the highest fill rates currently seen in Ofcom-assigned bands. As noted above, a number of operators have acquired large numbers of Ofcom-assigned licences in recent years. Individual licensees already account for a substantial number of all the licences in some bands, and in addition, an operator which gained access

²⁹ Consultation, paragraph 3.39.

to a block-assigned licence would have the option of adding more fixed links as an alternative to other backhaul solutions such as fibre, without facing the incremental cost of Ofcom-assigned licence fees. As we noted in our Consultation, there is potentially increased demand for block-assigned spectrum as a result of future use of the 26 GHz and 40 GHz bands for mobile technology, and increasing demand for fixed links with wider channels.

- A1.51 On this basis we disagree with BT's proposal to base ALFs on the aggregate licence fees in Ofcom-assigned bands, which we consider would risk understating the value of block-assigned licences. To H3G's comments, we note that regardless of the introduction of licence fees (whether cost-based or AIP) to block-assigned licences, existing licensees (or a new licensee of a block-assigned band) would continue to face zero incremental licence fee costs from adding more fixed links. As regards H3G's proposals for the multiplier, again we note that it has not engaged with our reasons for considering that focusing on highest re-use rates is appropriate.
- A1.52 As noted in Section 3 above, we have decided to set ALFs at a level which is 25% lower than we proposed in our Consultation. This reduction reflects the corrected and updated data on the level of re-use rates, as well as the updated data on the change in fixed links use over time, and the level of uncertainty regarding future demand for fixed links.

Downward modification

Stakeholder views

- A1.53 Vodafone disagreed with our proposal not to apply a 50% downward modification to ALFs (its comments related to the 28 GHz and 32 GHz bands). It said that '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.' It said that 'Having re-examined Plum's analysis...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.'

Our response

- A1.54 We disagree with Vodafone's characterization of our proposals relating to the 50% downward modification. This downward modification was informed by Plum's analysis of trends in demand based on the information available in 2015. Our present decision is based on current evidence of demand for spectrum in the 10 GHz, 28 GHz and 32 GHz bands. In addition, we note that the 50% discount was applied to a higher multiplier than we proposed in our Consultation (i.e., a multiplier of 400 in 2015, against a multiplier of 200 in our Consultation). In addition, as noted above, our decision to reduce by 25% the

level of ALFs relative to those proposed in our Consultation reflects the uncertainty regarding future demand for fixed links.

Fees for future “location based” sites

Stakeholder views

A1.55 Amazon Kuiper said that we should consider creating a mechanism where new location-specific ALFs could be predictably calculated and imposed under spectrum access licences for greenfield sites. Amazon also noted that location-specific fees only cover 6 of the existing teleport sites and queried why the other 7 were not included.

Our response

A1.56 This Statement presents our decisions on our July 2022 consultation (i.e., on fees for the 10, 28 and 32 GHz bands). Fees for other licences, or future licences, were not part of that consultation and are not covered in this decision. We will take into account Amazon Kuiper’s request for a predictable approach to location-based fees in our future work, for example as we consider how to re-authorise the spectrum which can be re-allocated because of Arqiva’s licence variation.

A1.57 Amazon Kuiper also asked about the fees for teleport sites other than those operating under Arqiva’s (28 GHz) location-based licences. Different teleport sites have been authorized in different ways for historical and market reasons, and the way fees are set depends on the way they were authorized. For example, the spectrum access authorisation for a teleport site is in some cases leased from licensees who hold a licence for a much greater area (and who will pay fees accordingly). The fees payable by the lessee in this case are a matter for commercial negotiation with the licensee. Ofcom does however grant a number of licences specifically for satellite earth stations – including, for example, Permanent Earth Station licences.³⁰ The fees for these are set out clearly in the Wireless Telegraphy (Licence Charges) Regulations 2020.

Other aspects of AIP calculation

A1.58 BT submitted that using existing AIP for the nearby bands as a benchmark for fees to be charged for national licences significantly over-estimates the opportunity costs, because in many areas of the country there are very few links and there is no congestion or likely future congestion.

A1.59 Vodafone agreed with our method of calculating regional fees, but said that there was considerable volatility in the results compared to the 2015 regional allocation for 28 GHz, and that the 26 GHz band, which was used as the basis for our regional allocation, had been subject to some uncertainty as to whether it would be repurposed as a 5G band.

³⁰ See <https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/satellite-earth/earth-stations>

Vodafone suggested repeating the exercise using the 23 GHz band, with the fee to be payable in each region to be the lower of the 23 GHz or 26 GHz allocation.

- A1.60 Vodafone also commented that our calculation of location-specific fees significantly understated the effect of these licences because, depending on where such a location is situated it could prevent fixed links across a wider area than the area of the location itself. However, it considered our approach to be practically appropriate.
- A1.61 BT noted the interference constraints that are particular to the 10 GHz band and commented that, this should also be taken into account when setting an appropriate level of fees.

Our response

- A1.62 Having considered these stakeholder comments, we are nevertheless of the view that the approach we have taken to estimating the market value of spectrum, including in regional and location-specific areas is appropriate and proportionate. Moreover we have taken a conservative approach in setting ALFs, and we do not consider that the proposed adaptations would necessarily lead to a more accurate measure of market value.³¹
- A1.63 As regards specific comments by stakeholders:
- a) While it is correct that there will be areas of the country with few links, the frequency of re-use of a channel across the country (or region) is reflected in the observed re-use rates which we use in our calculation of ALFs.
 - b) In our view it is not clear that uncertainty relating to the 26 GHz band will have affected the regional distribution of links in this band. We also note that Vodafone's proposed approach would result in regional fees which did not sum to the national market value of the spectrum.
 - c) We are not persuaded, on the basis of the submissions made by BT, that the scale of any interference to the 10 GHz band would be such that the estimated market value of the 10 GHz spectrum should be significantly reduced. In addition we note that we have set ALFs at a conservative estimate of market value.

Assessment of ALFs in light of our statutory duties

General

Stakeholder views

- A1.64 BT submitted that setting licence fees at full market value is likely to go against Ofcom's statutory duties, and that we should set cost-based fees, rather than ALFs, for these bands. Even if Ofcom were right that ALFs are necessary, it considered that the proposed level of

³¹ In the case of BT's first point, we also note that the multiplier reflects the use of links within a channel in Ofcom-assigned bands, and the fact that these bands may not be congested in many areas of the country.

ALFs will not benefit citizens and consumers as they are too high and could lead to unused spectrum and reduced investment.

- A1.65 SpaceX commented that ‘a fee structure based on uncertain economic valuations in a rapidly evolving market will lead to unintended and potentially harmful consequences for consumers. It said that to address potential excess demand, ‘Ofcom should instead seek to drive spectral efficiency through well-designed spectrum policies that encourage sharing between co-primary users on a co-equal basis’.
- A1.66 Amazon “... encourage[d] Ofcom to apply a predictable fee structure for use of the 28 GHz band that solely permits the recovery of administrative costs. Such an administrative cost-based fee is appropriate for spectrum access for FSS NGSO systems and geo-stationary networks, where spectrum is shared between different systems.”
- A1.67 Amazon also noted that there are four 28 MHz guard bands in the 28 GHz band which are currently not authorised for any use, and said it would be beneficial for operators if Ofcom made the 28 GHz guard band frequencies available for satellite earth station use.

Our response

- A1.68 We do not agree with BT that setting licence fees at full market value is likely to go against Ofcom’s statutory duties. Rather, for the reasons discussed in the following subsections and in Section 4 above, we consider that setting fees which reflect the market value (opportunity cost) of the underlying spectrum will best achieve our statutory duties, including our duty to secure the optimal use of the spectrum.
- A1.69 While we recognize the growing importance of 28 GHz for satellite use, the possibility of sharing solutions is not within the scope of our Decision. We also do not consider the sharing of spectrum between different systems is a basis for limiting licence fees to recovery of administrative costs. We will consider issues of this nature as we develop the implementation of our Space Spectrum Strategy.
- A1.70 In our Space Spectrum Strategy³², we acknowledged that four 28 GHz guard bands located between 28 GHz and 29.5 GHz are currently not authorised for satellite Earth station (or other) use. Access to these could provide a small increase in capacity for satellite systems operating across these bands. We said we will consider providing access to these guard bands, although this may be dependent on stakeholders securing commercial arrangements with 28 GHz licence holders in adjacent frequencies.

Optimal use of spectrum

Stakeholder views

- A1.71 BT said that “The 10 GHz, 28 GHz and 32 GHz bands were assigned by the market mechanism of an auction. These spectrum access licences are tradable in a variety of ways and leasing of the spectrum is permitted. If another party had higher value use for the

³² Ofcom’s [Space spectrum strategy](#) (see paragraph 4.9)

spectrum then these mechanisms would allow a more optimal and efficient use of the spectrum to be achieved. To date we are not aware of any demand to do this and we consider the spectrum to be optimally assigned.”

- A1.72 BT said that leasing was a much simpler way to make spectrum available to another operator where they can use it more efficiently than the primary licence holder. Limited trading in the bands was a result of lack of demand for the spectrum, given the availability of spectrum in similar bands.
- A1.73 Similarly, Vodafone submitted that ALFs are not required to incentivise efficient use of spectrum in the 28 GHz band, on the basis that:
- a) There has been extensive trading of 28 GHz licences, largely to create near-national licences from regional licences, and this has happened in the absence of ALFs.
 - b) Vodafone has created location-specific leases in the band, again in the absence of ALFs.
 - c) Vodafone has made significant use of the band.
- A1.74 BT said there is no evidence that AIP creates a greater incentive to use spectrum efficiently when trading and leasing are possible.
- A1.75 BT’s views on optimal use of spectrum also reflected its view of the level of ALFs we proposed in the Consultation. In particular BT said that:
- a) ALFs at the level proposed will make trading less likely, because these ALFs assume a re-use that is not seen in Ofcom-managed bands, and ‘[e]ven if such channel frequency re-use were achievable, it would take years for an acquirer of traded spectrum to re-use channels to the level Ofcom assumes possible.’
 - b) At the fee levels Ofcom proposes to apply, it is more likely that licensees may hand the spectrum back to Ofcom than be incentivised and able to trade it to other parties. This would not support investment or efficient use of spectrum given the low demand seen by Ofcom for equivalent fixed links spectrum.
- A1.76 Vodafone said that Ofcom could meet the goal of efficiency by setting a minimum usage requirement, with ALFs payable if a licensee’s usage fell below that level.

Our response

- A1.77 We do not agree with BT and Vodafone’s submissions that we can consider the bands to be optimally allocated, on the basis that the licences were originally auctioned, and can be traded or leased.
- A1.78 One of the principles set out in the SRSP is that many secondary markets are unlikely to be sufficiently effective to promote the optimal use of the spectrum without the additional incentives provided by AIP. Therefore AIP will likely continue to be needed to play a role complementary to spectrum trading for most licence sectors.
- A1.79 We do not consider that we can rely on trading and leasing by themselves to ensure an efficient allocation of spectrum in the relevant bands.

- a) The original licences were auctioned in 2000 and 2008, and there have not been any licence trades since 2013, despite significant changes in the mobile sector in recent years. Moreover, it is not clear that current licensees are the highest-value users of the spectrum in every case. Some licensees currently make very limited use of their licences and have only a relatively small number of links, while others have thousands of links, with some regional licences being used much more intensively than national licences. For example, we note that ~~✗~~. In our view, this suggests that there may be opportunities for efficiency-enhancing trade which the market has not taken.
 - b) We recognise that some leasing of the spectrum has occurred, and that leasing creates an opportunity for more efficient use of spectrum. However, leasing in the relevant bands has been largely limited to specific locations for satellite usage (in the case of 28 GHz).
- A1.80 As regards the question of whether AIP creates an incentive to use spectrum efficiently when trading is possible, we have considered this point in response to MNOs comments in our previous ALF decisions.³³ We consider that in the case of both trading and leasing, licensees may be less responsive to the opportunity cost of making their spectrum available to other providers, than to the direct cost of an ALF.
- A1.81 As regards BT's comments which relate to the proposed level of ALFs in the Consultation:
- a) We considered specific submissions regarding the proposed level of fees and the re-use rate earlier in this Annex. For the reasons set out there, we consider that the ALFs we have decided to set are a conservative reflection of the market value of the spectrum.
 - b) If a licensee is unwilling to pay the market value of the spectrum it holds, it may be more efficient for the licence to be returned, and the spectrum made available to a potential user with a higher valuation. In addition, we consider that competition and investment incentives should reflect the market value of spectrum as an input, and that setting ALFs materially below market value risks distorting competition and investment incentives.
- A1.82 We do not agree with Vodafone that it would be appropriate for us to set a minimum usage requirement. Doing so would require us to determine whether spectrum is being efficiently used, rather than providing appropriate incentives to the market to promote efficient use.

Impact on citizens and consumers

- A1.83 JRC said that the imposition of ALFs to the 10GHz band would result in additional costs being borne by the Distribution Network Operators, which in turn will lead to additional costs to UK households at a time when households are experiencing an energy price crisis.

JRC encouraged Ofcom to take account of the broader economic and social implications in its pricing decisions rather than limiting analysis to a purely economic value perspective.

- A1.84 JRC said there was a disconnect between the policy discussion on spectrum for utility operators and day-to-day spectrum management activity such as setting ALFs, which had the potential to lead to regulatory failure through inconsistent policy interventions. It noted recent work by Ofcom, BEIS and DCMS to support enhanced operational control for Energy Network Providers, including spectrum access arrangements. Given the use of the 10 GHz spectrum assigned to the JRC and its importance in the furthering of key government policies in the energy sector, JRC believed Ofcom must take account of this social value when determining how AIP fees would lead to allocation of spectrum.
- A1.85 SpaceX expressed a concern that 28 GHz ALFs would be passed through to satellite operators 'that will significantly increase the cost of doing business in the UK' potentially resulting in less service to consumers, including in remote and rural locations. More generally, SpaceX was concerned about its lack of direct access to spectrum in the 28 GHz band, and with the level of subleasing fees it is currently charged by licensees.
- A1.86 Amazon also asked Ofcom to "consider how its proposed ALF decisions will impact the users of the spectrum who must enter into commercial arrangements with spectrum access licensees".

Our response

- A1.87 The SRSP sets out the principle that uses of spectrum that deliver wider social value do not, as a general rule, justify AIP fee concessions, because direct subsidies and/or regulatory tools other than AIP are normally more likely to be efficient and effective. The SRSP also notes the importance of ALFs in ensuring that licensees have regard to the opportunity cost of their spectrum holdings when making long-term decisions.
- A1.88 In light of the principle that uses of spectrum that deliver wider social value do not generally justify AIP fee concessions, we disagree with JRC that we should take account of Government energy policy in setting ALF fees.
- A1.89 As regards SpaceX and Amazon's concerns about pass through of licence fees, we do not consider that a requirement to pay ALFs for a national or regional licence should have a material, if any, impact on the cost to licensees of providing services to satellite operators in specific locations (and hence on the price charged for such services). We note that we have previously issued location-specific licences where appropriate, and that the ALFs associated with these licences are minimal.

Investment

Stakeholder views

- A1.90 Vodafone submitted that ALFs should be set so as to promote other policy goals in addition to the efficient use of spectrum, and in particular that ALFs would increase the cost of providing coverage to rural or semi-rural areas. It said 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.'

- A1.91 BT said that the levels of ALFs proposed could deter investment in these bands in favour of other Ofcom bands or fibre solutions. The proposed fees could also have a negative impact on some licensees' ability to fund development and innovation.
- A1.92 Vodafone also said 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'.

Our Response

- A1.93 As noted above, the SRSP sets out the principle that uses of spectrum that deliver wider social value do not, as a general rule, justify AIP fee concessions. In light of this we do not agree that there is a need to 'recalibrate' ALFs, as Vodafone suggests. Our Mobile Strategy discussion paper noted that measures to increase the overall profitability of MNOs will not necessarily improve incentives for future investments or result in more investment.³⁴ In that context we were specifically considering a reduction in competition. However, a similar point can be made in relation to spectrum pricing – that allowing licensees to hold spectrum without paying opportunity cost-based fees risks introducing a market distortion, including in relation to investment decisions – without necessarily resulting in more investment.
- A1.94 We do not consider that coverage obligations in MNOs' spectrum licences are relevant to the question of what fees should be set for the fixed links bands – in any case, the MNOs agreed to the coverage obligations in their licences.
- A1.95 Fixed links are used throughout operators' networks, rather than specifically in areas where there is a low concentration of users. In addition, ALFs are paid at a national or regional level. The level of ALFs is unlikely to affect the licensee's marginal cost of extending a mobile network into a less populous area – rather it is likely that the required fixed links could use spectrum from the existing block-assigned licence.

³⁴ [Mobile Strategy Discussion Paper](#), paragraph 7.10.

- A2.6 The geographic areas in each of the three 2 x 112 MHz spectrum packages were consolidated into three 'sub-national' licences (Spectrum Access 1, 2 and 3 respectively) with a 28 MHz guard channel between each of them. These sub-national licences are currently held by Vodafone Limited (Spectrum Access 1) and UK Broadband Limited (Spectrum Access 2 and Spectrum Access 3). The national packages were without guard channels abutting each other and the original award allocations (the lower Spectrum Access 1 package). Both national packages were awarded to Arqiva and amalgamated into a single 2 x 224 MHz block national Spectrum Access licence.
- A2.7 UK Broadband has traded spectrum in six locations from its two licences (sub-national 2 and 3) to Arqiva, which now comprise a separate licence. Details of these six locations are shown in Table A2.2 below.
- A2.8 The spectrum was awarded with an indefinite duration and an initial period of 15 years which expired in February 2023, after which annual licence fees became applicable.
- A2.9 UK Interface Requirement 2048³⁹ details the minimum requirements for the use of Spectrum Access 27.8285 GHz to 28.4445 GHz paired with 28.8365 GHz to 29.4525 GHz.

Arqiva's licence variation

- A2.10 In 2023, Arqiva requested that the geographical scope of its 2 x 224 MHz block licence in 28 GHz be amended from nationwide to three locations before ALFs were incurred, and that the licence term end on 31 July 2026. Following consultation, we agreed to the request on [date].
- A2.11 The remaining locations in Arqiva's licence in that block are:
- a) a radius of 3 km around Goonhilly, Cornwall with NGR SU723214;
 - b) a radius of 2 km around Morn Hill, Hampshire with NGR SU516292; and
 - c) a radius of 2 km around Chalfont Grove, Buckinghamshire with NGR SU983917.

³⁹ Ofcom, *UK Interface Requirement 2048*, Jan2018, https://www.ofcom.org.uk/_data/assets/pdf_file/0025/84643/ir2048.pdf

Regions covered by the licences awarded in 2000 and 2008

A2.12 Figure A2. 1 below shows the licences awarded in 2000 and 2008 with the current licence holders, their respective licensed frequencies and the geographic area labels relating to each licence.

Figure A2. 1 Details of the 28 GHz licences awarded in 2000 and 2008

	27.8285 – 28.0525 GHz paired with 28.8365 – 29.0605 GHz	28.0525 – 28.1645 GHz paired with 29.0605 – 29.1725 GHz	2 x 28 MHz	28.1925 – 28.3045 GHz paired with 29.2005 – 29.3125 GHz	2 x 28 MHz	28.3325 – 28.4445 GHz paired with 29.3405 – 29.4525 GHz
	(2 x 224 MHz)	(2 x 112 MHz)		(2 x 112 MHz)		(2 x 112 MHz)
A	Previously Arqiva's national licence – now Arqiva has access to 3 locations	Telefónica UK		Arqiva		UK Broadband
B		Vodafone		Telefónica UK		UK Broadband
C		Telefónica UK		Vodafone		UK Broadband
D		Vodafone		UK Broadband (Spectrum traded to Arqiva Ltd at 6 locations)		UK Broadband (Spectrum traded to Arqiva Ltd at 6 locations)
E						
F						
G						
H						
I			Telefónica UK			
J		Vodafone		Vodafone		
K				UK Broadband		
L				Telefónica UK		
M				UK Broadband		
N		Telefónica UK				
Spectrum Access complying with IR 2048 – First awarded December 2000						
Spectrum Access complying with IR 2048 – First awarded February 2008						

A2.15 Figure A2. 2 below shows a map of the regions covered by the licences awarded in 2000 and 2008 with the corresponding geographic area labels. These regions were defined in the Schedule to the Wireless Telegraphy (Broadband Fixed Wireless Access Licences) Regulations 2000 by reference to descriptions of certain geographic areas labelled 'A' to 'N'. Licences were awarded in regions A, B, C, I, J, L and N in November 2000.

A2.16

Figure A2. 2 Map of the regions covered by Spectrum Access 28 GHz licences



A2.17 Table A2. 1 below lists the regions covered by the geographic area labels A – N.⁴⁰

Table A2. 1 List of regions authorised by the Spectrum Access 28 GHz licences

Region A:	Greater London
Region B:	Greater Manchester, Merseyside & Cheshire
Region C:	West Midlands, Warwickshire, Staffordshire, Worcestershire, Shropshire & Herefordshire
Region D:	Isle of Wight, Hampshire, Berkshire & Oxfordshire
Region E:	Essex, Hertfordshire & Buckinghamshire
Region F:	Suffolk, Norfolk, Bedfordshire, Cambridgeshire & Northamptonshire
Region G:	Derbyshire, Lincolnshire (other than North and North East Lincolnshire District Councils), Leicestershire, Nottinghamshire, & Rutland
Region H:	Kent, Surrey, East Sussex & West Sussex
Region I:	East Riding of Yorkshire, North, West, & South Yorkshire, North & North East Lincolnshire District Councils
Region J:	Tyne and Wear, Durham, Northumberland, Cumbria & Lancashire
Region K:	Bristol, Devon, Cornwall and the Isles of Scilly, Dorset, Somerset, Wiltshire & Gloucestershire
Region L:	Scotland
Region M:	Wales
Region N:	Northern Ireland

⁴⁰ These regions are identified in Part 1 of the Schedule to the Wireless Telegraphy (Broadband Fixed Wireless Access Licences) Regulations 2000.

A2.18 Table A2. 2 below lists the six locations UKB have traded from their two sub-national (2 and 3) licences to Arqiva.

Table A2. 2 List of locations which were traded from two of the 2008 licences by UK Broadband Limited Arqiva Limited

Number	Location
1	A radius of 5 km around Crawley Court, Hampshire with NGR SU 421 349
2	A radius of 2 km around Morn Hill, Hampshire with NGR SU 516 292
3	A radius of 4 km around Brookmans Park, Hampshire with NGR TL 260 049
4	A radius of 2 km around Chalfont Grove, Buckinghamshire with NGR SU 983 917
5	A radius of 5 km around Bedford Teleport, Bedfordshire with NGR TL 036 610
6	A radius of 4 km around Whitehill, Oxfordshire with NGL SP 487 186

Table A2. 3 List of locations remaining in Arqiva's licence for 2 x 224 MHz (previously national)

Number	Location
7	A radius of 3 km around Goonhilly, Cornwall with NGR SU723214;
8	A radius of 2 km around Morn Hill, Hampshire with NGR SU 516 292
9	A radius of 2 km around Chalfont Grove, Buckinghamshire with NGR SU 983 917

A2.19 Note that locations 2 and 8 are the same geographic location, but they appear in different licences, as shown above, in different blocks of spectrum. The same is true for locations 4 and 9.

A3. Calculation of regional and location specific ALFs in the 28 GHz spectrum

- A3.1 This section sets out the methodology for calculating the regional and location specific ALFs for 28 GHz spectrum.
- A3.2 For the regional 28 GHz ALFs, we used the same methodology as that used when setting fees for certain 28 GHz regions in 2015.

28 GHz regional ALFs

Methodology

- A3.3 In 2015, we apportioned the national 28 GHz fee to each region as identified in Table A2.1 based on the relative density of fixed links in that region and using the number of fixed links in the 26 GHz band as a reference band.
- A3.4 In order to reflect the relative demand for fixed links with different channel sizes, we assigned a weight to the different fixed link bandwidths. We used 28 MHz as a reference channel and assigned a weighting of 1 to the 28 MHz channel. A channel of 56 MHz has a weighting of 2 whilst a channel of 14 MHz has a weighting of 0.5, etc.
- A3.5 We recalculated the fee apportionment to the different regions using the current distribution of fixed links in the 26 GHz band, a reference channel of 28 MHz, and with the proposed national 28 GHz fee. Therefore, the regional fee is calculated as follows:
- A3.6 $\text{ALF in region (n)} = \frac{\text{Weighted number of fixed links in region (n)}}{\text{Weighted number of total fixed links}} \times \text{National ALF}$.⁴¹

Regional ALFs

- A3.7 Table A3.1 below shows the new regional fees for 28 GHz spectrum based on a national fee of £3,432 per 2x1 MHz.⁴²

⁴¹ These regional ALFs are rounded to the nearest 10 pence for the sake of easier division for stage payments.

⁴² The fees presented in Table A3.1 below are different from those set out in our 8 December Update because (a) we have identified an error in the regional allocation used for the Update (the figures were based on 26 GHz fixed links as of May 2022 rather than November 2022) and (b) the figures in the Update were based on the national rate of £4,576 per 2x1 MHz presented in our Consultation, rather than the national rate of £3,432 per 2x1 MHz which we have decided on as the value of 28 GHz spectrum.

Table A3. 1 Regional 28 GHz ALFs

Region	ALF for 2 x 1 MHz
Region A (Greater London)	£276.70
Region B (Greater Manchester, Merseyside and Cheshire)	£253.20
Region C (West Midlands, Warwickshire, Staffordshire, Worcestershire, Shropshire and Herefordshire)	£256.70
Region D (Isle of Wight, Hampshire, Berkshire & Oxfordshire)	£231.40
Region E (Essex, Hertfordshire & Buckinghamshire)	£292.60
Region F (Suffolk, Norfolk, Bedfordshire, Cambridgeshire & Northamptonshire)	£145.30
Region G (Derbyshire, Lincolnshire (other than North and North East Lincolnshire District Councils), Leicestershire, Nottinghamshire, & Rutland)	£224.80
Region H (Kent, Surrey, East Sussex & West Sussex)	£100.00
Region I (East Riding of Yorkshire, North Yorkshire, South Yorkshire, West Yorkshire and the areas of North Lincolnshire and North-east Lincolnshire District Councils)	£421.00
Region J (Tyne and Wear, Durham, Northumberland, Cumbria and Lancashire)	£256.00
Region K (Bristol, Devon, Cornwall and the Isles of Scilly, Dorset, Somerset, Wiltshire & Gloucestershire)	£167.40
Region L (Scotland)	£513.00
Region M (Wales)	£216.50
Region N (Northern Ireland)	£77.50

28 GHz location specific ALFs

A3.8 In addition to its national and regional 28 GHz licences, Arqiva holds 28 GHz licences at 6 specific locations defined as an area with radius up to 5 km from a defined national grid references (NGR).

- A3.9 Following a licence variation, their previously national licence now covers only three locations. Two of the locations are in areas where they also hold location-based licences. There is an additional location defined after the licence variation, a radius of 3 km around Goonhilly (see Table A3.2).
- A3.10 In total, there are seven unique locations among Arqiva's 28 GHz location-based licences.

Methodology

- A3.11 We calculate the ALF for each location as follows:
- ALF in a given location = (Area of the location / Area of the region) x ALF of the region in which the area authorised by the licence is located.
 - The area of the location is calculated as a circular area based on the size of the radius at each location.
 - The area of the region is calculated based on the OS Boundary Line data⁴³ for each unitary authorities making up each region as defined in Table A2.1 The area of each region is set out in Table A3.2 below.

Location specific ALFs

- A3.12 Table A3. 2 shows the ALF for each of the locations authorised to Arqiva.

Table A3. 2 28 GHz location specific ALFs

Locations	Region located (size of region)	ALF per 2 x 1 MHz
a radius of 5km around Crawley Court, Hampshire with NGR SU 421 349	Region D (8172 kmsq)	£2.22
a radius of 2 km around Morn Hill, Hampshire with NGR SU 516 292	Region D (8172 kmsq)	£0.36
a radius of 4 km around Brookmans Park, Hampshire with NGR TL 260 049	Region D (8172 kmsq)	£1.42
a radius of 2 km around Chalfont Grove, Buckinghamshire with NGR SU 983 917	Region E (7465 kmsq)	£0.49
a radius of 5 km around Bedford Teleport, Bedfordshire with NGR TL 036 610	Region F (16353 kmsq)	£0.70
a radius of 4 km around Whitehill, Oxfordshire with NGR SP 487 186	Region D (8172 kmsq)	£1.42

⁴³ <https://www.ordnancesurvey.co.uk/business-government/tools-support/boundaryline-support>

Locations	Region located (size of region)	ALF per 2 x 1 MHz
A radius of 3 km around Goonhilly, Cornwall with NGR SU723214;	Region K (24343 kmsq)	£0.19

A4. Legal framework

Ofcom's powers to set fees

- A4.1 Under Section 12 of the Wireless Telegraphy Act, Ofcom has power to require licensees to pay fees to Ofcom on the grant of a licence and subsequently. The requirement to pay fees at times after the grant of a licence must be imposed by way of regulations made by Ofcom. The timing of the fee payment must be set out in the regulations, and the amount of the fee can be prescribed in the regulations, or alternatively the regulations may provide for the amount to be determined by Ofcom in accordance with the regulations.
- A4.2 Section 12(5) of the Wireless Telegraphy Act provides that, where a licence has been awarded as part of an auction process, subsequent fees cannot ordinarily be charged for that licence. This is however subject to section 12(6) of the Wireless Telegraphy Act which provides that fees may be payable for auctioned spectrum in specific circumstances. This includes where provision has been included in the licence with the consent of the holder of that licence for subsequent fees to apply. Paragraph 8 of each of the 10, 28 and 32 GHz licences for which we are now setting ALFs states that, on or after 21 February 2023, annual licence fees will become payable in respect of those licences.
- A4.3 Section 13 of the Wireless Telegraphy Act provides that Ofcom can set fees at an amount that is higher than the cost to us of carrying out our radio spectrum functions, if we think that is appropriate, in particular in light of our statutory duties in section 3 of the Wireless Telegraphy Act.
- A4.4 Section 122 of the Wireless Telegraphy Act is a general provision about matters relating to Ofcom's powers to make statutory instruments (including fees regulations under section 12 of that Act). It includes a requirement that where we are proposing to make regulations we must publish a notice setting out the general effect of the regulations and give a period of at least one month within which representations on the proposed regulations may be made to us. This notice was set out in the Consultation.
- A4.5 The legal framework for the setting of fees derives from the Communications Act and the Wireless Telegraphy Act.

The duties imposed by the Communications Act

- A4.6 Section 3 of the Communications Act sets out Ofcom's general duties including its principal duty:
- to further the interests of citizens in relation to communications matters; and
 - to further the interests of consumers in relevant markets, where appropriate by promoting competition.
- A4.7 In carrying out its functions, section 3(2) provides that Ofcom is required, amongst other things, to secure the optimal use for wireless telegraphy of the electro-magnetic spectrum,

the availability throughout the UK of a wide range of electronic communication services and the availability throughout the UK of a wide range of television and radio services.

- A4.8 Section 3(3) of the Communications Act provides that in performing its duties, Ofcom must in all cases have regard to the principles of transparency, accountability, proportionality and consistency, as well as ensuring that its actions are targeted only at cases in which action is needed.
- A4.9 Section 3(4) of the Communications Act requires Ofcom, in performing its duties, to have regard to a number of factors as appropriate, including the desirability of promoting competition, encouraging investment and innovation in relevant markets, encouraging the availability and use of high speed data transfer services throughout the UK, the different interests of persons living in rural and in urban areas and the different needs and interests of everyone who may wish to use the spectrum for wireless telegraphy.
- A4.10 In performing our duty under Section 3 of furthering the interests of consumers, we must have regard, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money.
- A4.11 Section 4 of the Communications Act requires Ofcom to act in accordance with six requirements when carrying out certain specified functions, including our functions under the Wireless Telegraphy Act. These include a requirement to promote competition in relation to the provision of electronic communications networks and electronic communications services, and to take account of the desirability of carrying out its functions in a manner which, so far as practicable, does not favour one form of electronic communications network, electronic communications service or associated facility, or one means of providing these, over another.

The duties imposed by the Wireless Telegraphy Act

- A4.12 Section 3 of the Wireless Telegraphy Act imposes a number of further duties relating to spectrum management. Amongst other things, in carrying out its spectrum functions Ofcom is required to have regard to:
- a) the extent to which spectrum is available for use, or further use, for wireless telegraphy;
 - b) the demand for use of the spectrum for wireless telegraphy; and
 - c) the demand that is likely to arise in future for the use of the spectrum for wireless telegraphy.
- A4.13 Section 3 of the Wireless Telegraphy Act also requires Ofcom to have regard to the desirability of promoting:
- a) the efficient management and use of the part of the electromagnetic spectrum available for wireless telegraphy;
 - b) the economic and other benefits that may arise from the use of wireless telegraphy;
 - c) the development of innovative services; and

- d) competition in the provision of electronic communications services.

Impact Assessment

- A4.14 Section 7 of the Communications Act requires us to carry out and publish an assessment of the likely impact of implementing a proposal which would be likely to have a significant impact on businesses or the general public, or when there is a major change in Ofcom's activities. As a matter of policy Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions, although the form of that assessment will depend on the particular nature of the proposal.
- A4.15 The analysis presented in the Consultation constitutes our assessment of the impact of AIP-based fees for the purpose of section 7 of the Communications Act.

Equality Impact Assessment

- A4.16 Section 149 of the Equality Act 2010 (the "2010 Act") imposes a duty on Ofcom, when carrying out its functions, to have due regard to the need to eliminate discrimination, harassment, victimisation and other prohibited conduct related to the following protected characteristics: age; disability; gender reassignment; marriage and civil partnership; pregnancy and maternity; race; religion or belief; sex and sexual orientation. The 2010 Act also requires Ofcom to have due regard to the need to advance equality of opportunity and foster good relations between persons who share specified protected characteristics and persons who do not.
- A4.17 Section 75 of the Northern Ireland Act 1998 (the "1998 Act") also imposes a duty on Ofcom, when carrying out its functions relating to Northern Ireland, to have due regard to the need to promote equality of opportunity and regard to the desirability of promoting good relations across a range of categories outlined in the 1998 Act. Ofcom's Revised Northern Ireland Equality Scheme explains how we comply with our statutory duties under the 1998 Act.
- A4.18 To help us comply with our duties under the 2010 Act and the 1998 Act, we assess the impact of our proposals on persons sharing protected characteristics and in particular whether they may discriminate against such persons or impact on equality of opportunity or good relations. We fulfil these obligations by carrying out an Equality Impact Assessment ('EIA'), which examines the impact our policy is likely to have on people, depending on their personal circumstances. EIAs also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers, regardless of their background and identity.
- A4.19 We do not consider our decision will have equality implications under the 2010 Act or the 1998 Act.

A5. Unofficial copy of the Wireless Telegraphy (Licence Charges) (Amendment) Regulations 2023 (the “Regulations”)

A5.1 This is a copy of the Regulations made by the Office of Communication as submitted for registration and publication. The final version of these Regulations will be registered and published on legislation.gov.uk in due course.

STATUTORY INSTRUMENTS

2023 No. 0000

ELECTRONIC COMMUNICATIONS

The Wireless Telegraphy (Licence Charges) (Amendment) Regulations 2023

Made - - - - - *22nd March 2023*

Coming into force - - - - - *17th April 2023*

The Office of Communications (“OFCOM”), in exercise of the powers conferred by sections 12, 13(2) and 122(7) of the Wireless Telegraphy Act 2006⁽⁴⁴⁾ (“the Act”), makes the following Regulations.

Before making these Regulations, OFCOM have given notice of their proposal to do so in accordance with section 122(4)(a) of the Act, published notice of their proposal in accordance with section 122(4)(b) of the Act, and have considered the representations made to them before the time specified in the notice in accordance with section 122(4)(c) of the Act.

Citation and commencement

1. These Regulations may be cited as the Wireless Telegraphy (Licence Charges) (Amendment) Regulations 2023 and shall come into force on 17 April 2023.

⁽⁴⁴⁾ 2006 c. 36.

Amendments to the Wireless Telegraphy (Licence Charges) Regulations 2020

2.—(1) The Wireless Telegraphy (Licence Charges) Regulations 2020⁽⁴⁵⁾ shall be amended in accordance with paragraphs (2) to (6).

(2) In regulation 2 (interpretation), paragraph (1), at the appropriate place insert—

- (a) ““*the 2007 Regulations*” means the Wireless Telegraphy (Licence Award) (No. 2) Regulations 2007;” and
- (b) ““*Geographic Region*” means any one of the Regions A to N as described in Part 1 of the Schedule to the 2000 Regulations;”.

(3) In regulation 4 (licence charges and time of payment)—

- (a) in paragraph (1) for “, 6 and 7” substitute “to 10”;
- (b) in paragraph (6)(a) for “regulation 7(1) or regulation 8(1)” substitute “regulation 6A(1), regulation 7(1), regulation 8(1), regulation 9(1) or regulation 10(1)”;
- (c) in paragraph (6)(b)(vii) for “7(1)” substitute “6A(1) or regulation 7(1)”;
- (d) delete “or” at the end of paragraph (6)(b)(vii);
- (e) after paragraph (6)(b)(viii), insert the following sub-paragraphs—
 - “(ix) the class “Spectrum Access Licence 10 MHz Band” under regulation 9(1); or
 - (x) the class “Spectrum Access Licence 32 MHz Band” under regulation 10(1).”;
- (f) in paragraph (7)(a) for “or regulation 7(1)” substitute “, regulation 6A(1), regulation 7(1), regulation 9(1) or regulation 10(1)” and
- (g) in paragraph 7(b) for “or regulation 7(1)” substitute “, regulation 6A(1), regulation 7(1), regulation 9(1) or regulation 10(1)”.

(4) After regulation 6 (other licence charges), insert the following regulation—

“Licence Charges payable for the 28 GHz frequency band on 17 April 2023

6A.—(1) On 17 April 2023 each holder of a licence of the Spectrum Access 28 GHz licence class granted under the procedure set out in a notice made under the 2007 Regulations which authorises use of frequencies within the frequency bands 27.8285-28.4445 GHz and 28.8365-29.4525 GHz shall pay to OFCOM the sum specified in paragraph (2).

(2) The sum which must be paid in accordance with paragraph (1) comprises—

- (a) £199.40 for each 2 x 1 MHz channel which is authorised by the licence in Region A as described in Part 1 of the Schedule to the 2000 Regulations;
- (b) £182.40 for each 2 x 1 MHz channel which is authorised by the licence in Region B as described in Part 1 of the Schedule to the 2000 Regulations;
- (c) £185.00 for each 2 x 1 MHz channel which is authorised by the licence in Region C as described in Part 1 of the Schedule to the 2000 Regulations;
- (d) £166.70 for each 2 x 1 MHz channel which is authorised by the licence in Region D as described in Part 1 of the Schedule to the 2000 Regulations;
- (e) £210.80 for each 2 x 1 MHz channel which is authorised by the licence in Region E as described in Part 1 of the Schedule to the 2000 Regulations;
- (f) £104.70 for each 2 x 1 MHz channel which is authorised by the licence in Region F as described in Part 1 of the Schedule to the 2000 Regulations;
- (g) £162.00 for each 2 x 1 MHz channel which is authorised by the licence in Region G as described in Part 1 of the Schedule to the 2000 Regulations;

⁽⁴⁵⁾ S.I. 2020/1068, as amended by S.I. 2021/1117 and S.I. 2022/1310.

- (h) £72.10 for each 2 x 1 MHz channel which is authorised by the licence in Region H as described in Part 1 of the Schedule to the 2000 Regulations;
 - (i) £303.40 for each 2 x 1 MHz channel which is authorised by the licence in Region I as described in Part 1 of the Schedule to the 2000 Regulations;
 - (j) £184.50 for each 2 x 1 MHz channel which is authorised by the licence in Region J as described in Part 1 of the Schedule to the 2000 Regulations;
 - (k) £120.60 for each 2 x 1 MHz channel which is authorised by the licence in Region K as described in Part 1 of the Schedule to the 2000 Regulations;
 - (l) £369.60 for each 2 x 1 MHz channel which is authorised by the licence in Region L as described in Part 1 of the Schedule to the 2000 Regulations;
 - (m) £156.00 for each 2 x 1 MHz channel which is authorised by the licence in Region M as described in Part 1 of the Schedule to the 2000 Regulations;
 - (n) £55.80 for each 2 x 1 MHz channel which is authorised by the licence in Region N as described in Part 1 of the Schedule to the 2000 Regulations; and
 - (o) the amount in pounds sterling calculated in accordance with paragraphs (3) and (4), for each 2 x 1 MHz channel which is authorised by the licence in an area identified in the licence and comprising part of a Geographic Region.
- (3) The formula to calculate the amount mentioned in paragraph (2)(o) is—

$$S = R \times (LA \div RA)$$

Where—

“S” means the amount;

“R” means the sum specified in paragraph (2) for a 2 x 1 MHz channel in the Geographic Region in which the relevant area identified in the licence is located;

“LA” means the total size of the relevant area identified in the licence and comprising part of a Geographic Region; and

“RA” means the total size specified in Regulation 7(4) of the Geographic Region in which the relevant area identified in the licence is located.

(4) If the amount calculated in accordance with paragraph (3) is a fraction of a whole number, it shall be rounded to the nearest whole penny.”

- (5) For regulation 7 (licence charges payable for the 28 GHz frequency band) substitute—

“Licence charges payable for the 28GHz frequency band for each subsequent payment

7.—(1) On 5 January 2024 and on each anniversary of that date, each holder of a licence of the Spectrum Access 28 GHz licence class granted under the procedure set out in a notice made under the 2000 Regulations or the 2007 Regulations which authorises use of frequencies within the frequency bands 27.8285–28.4445 GHz and 28.8365–29.4525 GHz shall pay to OFCOM the sum specified in paragraph (2).

(2) The sum which must be paid in accordance with paragraph (1) comprises—

- (a) £276.70 for each 2 x 1 MHz channel which is authorised by the licence in Region A as described in Part 1 of the Schedule to the 2000 Regulations;
- (b) £253.20 for each 2 x 1 MHz channel which is authorised by the licence in Region B as described in Part 1 of the Schedule to the 2000 Regulations;
- (c) £256.70 for each 2 x 1 MHz channel which is authorised by the licence in Region C as described in Part 1 of the Schedule to the 2000 Regulations;
- (d) £231.40 for each 2 x 1 MHz channel which is authorised by the licence in Region D as described in Part 1 of the Schedule to the 2000 Regulations;

- (e) £292.60 for each 2 x 1 MHz channel which is authorised by the licence in Region E as described in Part 1 of the Schedule to the 2000 Regulations;
- (f) £145.30 for each 2 x 1 MHz channel which is authorised by the licence in Region F as described in Part 1 of the Schedule to the 2000 Regulations;
- (g) £224.80 for each 2 x 1 MHz channel which is authorised by the licence in Region G as described in Part 1 of the Schedule to the 2000 Regulations;
- (h) £100.00 for each 2 x 1 MHz channel which is authorised by the licence in Region H as described in Part 1 of the Schedule to the 2000 Regulations;
- (i) £421.00 for each 2 x 1 MHz channel which is authorised by the licence in Region I as described in Part 1 of the Schedule to the 2000 Regulations;
- (j) £256.00 for each 2 x 1 MHz channel which is authorised by the licence in Region J as described in Part 1 of the Schedule to the 2000 Regulations;
- (k) £167.40 for each 2 x 1 MHz channel which is authorised by the licence in Region K as described in Part 1 of the Schedule to the 2000 Regulations;
- (l) £513.00 for each 2 x 1 MHz channel which is authorised by the licence in Region L as described in Part 1 of the Schedule to the 2000 Regulations;
- (m) £216.50 for each 2 x 1 MHz channel which is authorised by the licence in Region M as described in Part 1 of the Schedule to the 2000 Regulations;
- (n) £77.50 for each 2 x 1 MHz channel which is authorised by the licence in Region N as described in Part 1 of the Schedule to the 2000 Regulations; and
- (o) the amount in pounds sterling calculated in accordance with paragraphs (3) to (5), for each 2 x 1 MHz channel which is authorised by the licence in an area identified in the licence and comprising part of a Geographic Region.

(3) The formula to calculate the amount mentioned in paragraph (2)(o) is—

$$S = R \times (LA \div RA)$$

Where—

“S” means the amount;

“R” means the sum specified in paragraph (2) for a 2 x 1 MHz channel in the Geographic Region in which the relevant area identified in the licence is located;

“LA” means the total size of the relevant area identified in the licence and comprising part of a Geographic Region; and

“RA” means the total size specified in paragraph (4) of the Geographic Region in which the relevant area identified in the licence is located.

(4) The total size of the Geographic Regions in accordance with paragraph (3) is—

- (i) 1,595 square kilometres for Region A
- (ii) 4,477 square kilometres for Region B;
- (iii) 13,014 square kilometres for Region C;
- (iv) 8,172 square kilometres for Region D;
- (v) 7,465 square kilometres for Region E;
- (vi) 16,353 square kilometres for Region F;
- (vii) 13,452 square kilometres for Region G;
- (viii) 9,414 square kilometres for Region H;
- (ix) 15,884 square kilometres for Region I;
- (x) 15,828 square kilometres for Region J;
- (xi) 24,354 square kilometres for Region K;

- (xii) 80,257 square kilometres for Region L;
- (xiii) 21,233 square kilometres for Region M; and
- (xix) 14,146 square kilometres for Region N.

(5) If the amount calculated in accordance with paragraph (3) is a fraction of a whole number, it shall be rounded to the nearest whole penny.”

(6) After regulation 8 (licence charges payable for the 412 MHz frequency band), insert—

“Licence charges payable for the 10 GHz frequency band

9.—(1) On 17 April 2023 and on each anniversary of that date, each holder of a licence of the Spectrum Access 10 GHz licence class which authorises use of frequencies within the frequency bands 10.125-10.225 GHz and 10.475-10.575 GHz shall pay to OFCOM the sum specified in paragraph (2).

(2) The sum is £5,676 for each authorisation under the licence of the use of a 2 x 1 MHz national channel.

Licence charges payable for the 32 GHz frequency band

10.—(1) On 17 April 2023 and on each anniversary of that date, each holder of a licence of the Spectrum Access 32 GHz licence class which authorises use of frequencies within the frequency bands 31.815-32.571 GHz and 32.627-33.383 GHz shall pay to OFCOM the sum specified in paragraph (2).

(2) The sum is £3,432 for each authorisation under the licence of the use of a 2 x 1 MHz national channel.”

22 March 2023

David Willis
Group Director, Spectrum Group
For and on behalf of the Office of Communications

EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations amend the Wireless Telegraphy (Licence Charges) Regulations 2020 (S.I. 2020/1068, as amended by SIs 2021/1117 and 2022/1310) (“the 2020 Regulations”). These Regulations provide for charges to be paid to the Office of Communications (“OFCOM”) in respect of wireless telegraphy licences granted under section 8 of the Wireless Telegraphy Act 2006 (c. 36) (“the Act”).

These Regulations amend and prescribe the charges – licence fees – for three classes of wireless telegraphy licence. In particular, they prescribe the fees payable in respect of 10 GHz and 32 GHz Spectrum Access licences awarded by Ofcom by way of auction in 2008, and in respect of 28 GHz Spectrum Access licences awarded by Ofcom by way of auction in 2000 and 2008 (together, the “Licences”).

Regulation 2(3) amends the 2020 Regulations to enable holders of the Licences to pay their fees by way of ten equal monthly instalments, should they wish to do so and provided they meet the criteria set out in regulation 4(6) or 4(7) of the 2020 Regulations.

Regulation 2(4) inserts a new regulation 6A into the 2020 Regulations. This prescribes one-off fees payable, on 17 April 2023, by the holders of a 28 GHz Spectrum Access awarded by auction in 2008.

Regulation 2(5) substitutes regulation 7 of the 2020 Regulations with a new regulation 7. This prescribes the fees payable, on 5 January 2024 and on each anniversary of that date, by the holders of a 28 GHz Spectrum Access licence, awarded by auction in 2000 or 2008.

Regulation 2(6) inserts new regulations 9 and 10 into the 2020 Regulations. These prescribe the fees payable, on 17 April and on each anniversary of that date, by the holders of a 10 GHz and a 32 GHz Spectrum Access licence respectively.

A full regulatory impact assessment of the effect of these Regulations has been prepared. Copies of this assessment are available to the public from the OFCOM library at Riverside House, 2a Southwark Bridge Road, London SE1 9HA (Tel: 020 7981 3000) and on OFCOM's website at www.ofcom.org. Copies of this assessment have also been placed in the libraries of both Houses of Parliament.