



# Variation of UK Broadband's spectrum access licence for 3.6 GHz spectrum

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## Executive Summary

1. BT<sup>1</sup> considers that the licence variation request by UK Broadband Ltd (UKB) needs to be looked at in a wider context than Ofcom appears to have considered. Ofcom needs to take account of other considerations before reaching a conclusion which, as a minimum, could affect the timeframe in which the variation might be confirmed. The other considerations which Ofcom should take account of include (i) the 3.6 GHz auction design and how that could address contiguity of other spectrum assignments, including the other Three/UKB holdings; and (ii) the necessary competition assessment.
2. In the auction of 3.4 GHz earlier this year the opportunity to defragment the 3.4-3.6 GHz band was not taken up by Three/UKB. Ofcom ultimately did not require defragmentation of the 3.6-3.8 GHz band as a condition of Three/UKB entering the auction. As a consequence thereof, bidders faced the risk of winning a fragmented new assignment and faced constraints on where within the 3.4 – 3.6 GHz band they could be assigned. This situation was far from ideal for securing optimal and efficient use of spectrum. The possibility to improve this situation when 3.6 – 3.8 GHz is awarded should be considered in a wider sense than just the UKB 3.6 GHz licence frequencies, as explained below.
3. Having a contiguous 120 MHz block for award in the 3.6 – 3.8 GHz auction in 2019 is undeniably a potential advantage compared to the alternative of separate 5 MHz and 111 MHz blocks as it will reduce current fragmentation and increase the amount of new contiguous spectrum that is available to award. However, Ofcom needs to go further in tackling the fragmentation issue across the whole 3.4 - 3.8 GHz band in order to ensure that competition in 5G services is promoted to maximum extent following the auction of the remaining parts of the whole 3410 - 3800 MHz band in 2019.
4. The proposed licence variation would convey significant commercial advantage to Three/UKB in terms of improved network costs and service offerings that will arise from having a contiguous 100 MHz spectrum assignment in this pioneer band for 5G, with significantly increased power compared to the existing 3.6 GHz licence condition. The impact on competition of the change in frequencies and the increased power needs to be fully assessed against the capability of other MNOs and how that capability may change after the next auction. It therefore needs to be examined as part of the auction competition assessment and the measures that Ofcom may apply as part of the auction. Granting the requested licence variation before even consulting on 3.6 - 3.8 GHz auction proposals gives advantage to Three/UKB, whilst Ofcom cannot be sure of the status for other MNOs until it has carried out, and consulted on, the competition analysis for the 3.6 - 3.8 GHz auction.
5. Considering the licence variation proposal as part of the auction competition assessment could enable options to be identified within which granting the variation could be a scenario. This could be included as part of the auction consultation proposals and Ofcom should only make its decision on it once stakeholders have provided their views. This would still leave the 9 months that UKB says it needs to move to new frequencies<sup>2</sup> before new auction licences are granted following the auction. Whilst Ofcom hopes to conduct the award in late 2019 there is

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<sup>1</sup> BT including its subsidiary mobile operator EE Limited.

<sup>2</sup> See point b. on page 22 of the licence variation request.

the possibility it could be delayed, including by any legal appeals of Ofcom's decision. Ofcom should therefore issue its decision on all elements of the auction proposals at the same time, including a variation of existing assigned frequencies. This allows Ofcom the opportunity to conduct a proper competition analysis in the appropriate (much broader) context and it also affords the opportunity for any appeal that may be brought to be heard in the appropriate context.

6. In summary, we are opposed to the variation of the existing UK Broadband licence, including change of frequencies, at this time. We understand and agree that there are potential advantages to all stakeholders if the band can be defragmented. However, we believe that certain conditions need to first be met and that further considerations are needed by Ofcom, including the wider auction design and competition assessment, before such a variation could be confirmed.

## 1 Introduction

Ofcom proposes to vary UKB's 3.6 GHz spectrum access licence as requested, increasing its power in line with other 3.4 GHz licences and changing the assigned frequencies to achieve a 100 MHz contiguous assignment for UKB and a contiguous 120 MHz of spectrum for auction. Whilst considered narrowly and in isolation we understand why this may appear beneficial.

The proposed variation at this time and ahead of the forthcoming 3.6 – 3.8 GHz auction in 2019 is problematic for BT. We consider there is a much wider picture that must be considered and the variation must be addressed within a much broader context. We set out in **section 2** how the 3.4 – 3.8 GHz band must be considered as a whole and the need to pursue the benefits arising from various options for a wider defragmentation of the band.

We explain in **section 3** how the forthcoming 3.6 – 3.8 GHz auction and the competition assessment that will be needed for that award would be undermined by now varying the licence in the way proposed. Ofcom needs to consider properly whether the requested variation would lock in and limit the opportunity for realising wider benefits for the band, where such benefits appear quite important also for competition. A proper competition analysis can and should be undertaken in the context of the wider band, which is the completion analysis Ofcom will be working on ahead of the 3.6 – 3.8 GHz auction.

We have also identified some other relevant matters that Ofcom needs to consider. In **section 4** we highlight matters relating to applicable fees. In **section 5** we discuss technical considerations and in **section 6** we consider the question of leasing/trading provisions.

Finally, we propose a way forward in **section 7** whereby the matters can all be concluded at the time the 3.6 – 3.8 GHz award details are decided.

## 2 Benefits from defragmentation of the 3.4 – 3.8 GHz band

The outcome of the 3.4 – 3.6 GHz auction will enable MNOs to expand their network capacities. Furthermore, as the 3.4 – 3.8 GHz is the pioneer band for 5G, it will enable the introduction of this new technology and new capabilities that will benefit customers. Following the auction of 3.4 – 3.6 GHz, the fragmentation of the 3.4 – 3.8 GHz band that exists today (see figure 1), and that may prevail after the auction of the 3.6 – 3.8 GHz band, is not ideal. Ofcom needs to examine how this can be addressed for the benefit of all operators in order to ensure that Ofcom has met its statutory duty to promote efficient use of spectrum overall and where relevant, promote competition.

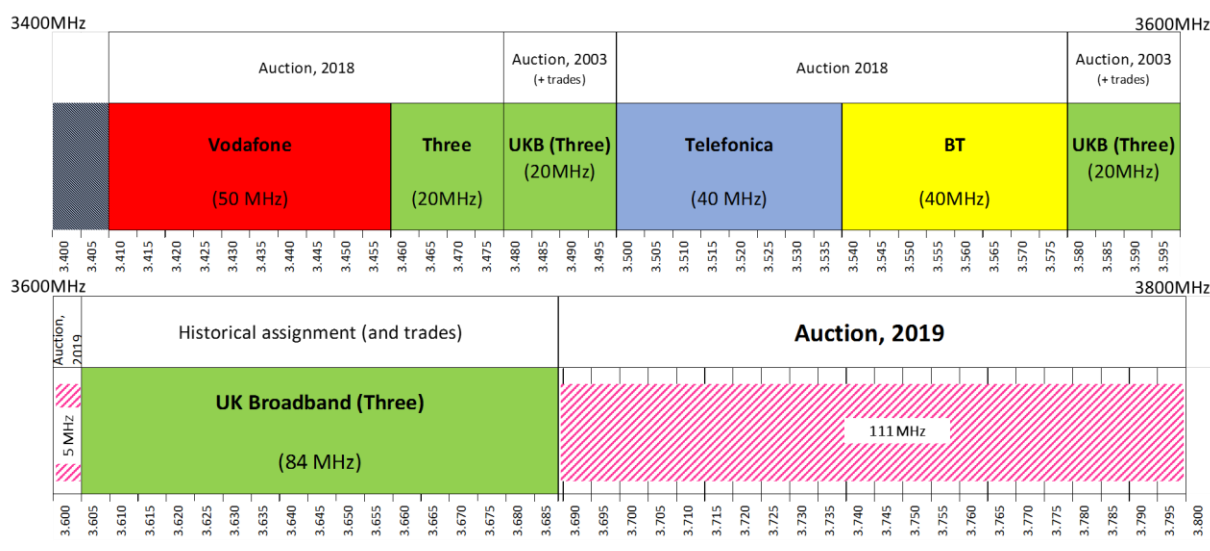


Figure 1: Existing fragmented assignments in 3.4 – 3.8 GHz band

Three/UKB did have the opportunity to help defragment the band at the time of the last auction but did not take the opportunity to do so. Ofcom had initially required the consolidation of the existing assignments and their relocation as a condition of bidding in the auction but eventually did not require this from Three/UKB. As a result thereof, operators faced uncertainty as to whether they would receive a split assignment (the risk varying depending on how much spectrum was won) and were constrained as to where in the band they could be assigned.

This licence variation request would clearly convey advantage to Three/UKB in terms of early certainty of a large and high power assignment suitable for early deployment of 5G NR that is not available to other operators until after the next auction, if at all. The reduction of 4 MHz in the UKB assignment is unlikely to be of material detriment to UKB given the standardised channel bandwidths for 5G and would have a slight benefit to them in terms of reduced Annual Licences Fees if the spectrum is not needed.

Ofcom needs to do more to facilitate the possible defragmentation of the band and the auction may provide a mechanism to facilitate this. That being said, it is undeniable that the variation of the frequencies would be beneficial in terms of making a contiguous 120 MHz of spectrum for auction, which is a positive step towards achieving a less fragmented band plan and might potentially enable other MNOs to achieve wider assignments.

### **3 The 3.6 – 3.8 GHz auction**

Ofcom is preparing for the award of the 3.6 – 3.8 GHz band but is yet to consult on the auction design, including any competition measures that may be necessary as a result of the competition assessment that Ofcom is to undertake. In our view, the change of frequencies of the existing UKB assignment should be considered in the wider context of the auction process alongside the possibility that one or more other MNOs might also wish to also vary their frequencies if they were to acquire further spectrum and had a preference to have it made contiguous.

We therefore believe Ofcom needs to go further in tackling the fragmentation issue across the whole 3.4 - 3.8 GHz band in order to ensure that competition in 5G services is promoted to maximum extent following the auction of the remaining parts of the whole 3410 -3800 MHz band in 2019. We might provide more detailed proposals on how further defragmentation of 3.4- 3.8 GHz band could be achieved as part of the forthcoming consultation on the auction. For example it could be that a package of measures is needed to achieve this, of which one element could be variation of the existing licence as proposed, but it could also be necessary to examine the opportunity to go further so that other MNOs could consider whether there is interest and a means to consolidate their existing and potential new assignments, not just as voluntary trades after the auction, but potentially as a more organised set of voluntary trades as part of an assignment round covering the full 3.4 – 3.8 GHz band.

Granting the requested licence variation before consulting on auction proposals gives advantage to Three/UKB whilst their competitors must wait to see whether the auction will allow them to also change their existing assignments to new frequencies should they wish to do so. It would be better to include the requested licence variation as a scenario to be considered as part of the auction consultation proposals and to finally decide on it once stakeholders have provided their views on the proposals. This would still leave the 9 months that UKB says it needs to move to new frequencies<sup>3</sup> before the new auction licences are granted.

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<sup>3</sup> See point b. on page 22 of the licence variation request

## Competition assessment

Ofcom's competition assessment in relation to the proposed UKB 3.6 GHz licence variation cannot reasonably be undertaken in isolation from the forthcoming 3.6 – 3.8 GHz auction. The proposal should be looked at in the context of that auction as a potential element of the auction design and as a scenario which might affect the competition measures that are required within the auction rules.

At paragraphs 4.24 – 4.29 of the consultation document, Ofcom discusses how UKB/Three and their customers could benefit from a 100 MHz wide 5G carrier. Ofcom concludes that having a 100MHz wide 5G carrier will not provide an unmatched competitive advantage or be enduring over time. Considering all issues in the round Ofcom on balance explains that it proposes to grant the requested licence variation.

It is our view that the 3.4 – 3.8 GHz band must be considered as a whole and that the capability of each of the four competing national mobile network operators to offer early 5G services using this 5G pioneer band should be considered. Three/UKB already holds 144 MHz out of the 234 MHz (62%) of the frequencies assigned so far in the 3.4 – 3.8 GHz 5G pioneer band. The variation would give Three/UKB immediate access to 100 MHz contiguous bandwidth at high power, whilst the other three MNOs have just 40-50 MHz each with no route at present to achieve similar 100 MHz contiguous spectrum. Furthermore, the three other MNOs do not have certainty as to if and when intra band carrier aggregation will be supported in a single radio, for the spacing of carriers that might exist in the band after the 3.6 – 3.8 GHz auction, should they acquire additional spectrum.

Furthermore, the increase to the licensed base station power level from 60 dBm/5 MHz to 65 dBm / 5 MHz will also have considerable impact on the utility of the 3.6 GHz spectrum access licence for provision of 5G services and is therefore highly relevant to the auction competition assessment and may form part of a package of measures to be included in the auction arrangements.

Therefore, we do not agree that the competitive advantage of awarding Three a contiguous 100 MHz bandwidth to support a high power 5G NR carrier will not be enduring. This depends entirely on the outcome of the 3.6 – 3.8 GHz auction, which could in turn be shaped by any competition measures in the auction and any potential scheme to reallocate holdings for the entire 3410-3800 MHz band to achieve greater contiguity for more operators. Moreover, the possibility of achieving such pro-competitive outcomes may require Three to accept such measures for which the change of frequencies could be an element of the overall package.

## 4 Fees for use of the spectrum

Another element that should be further clarified before the variation of the licence is agreed is the basis on which annual licence fees will be set. The logical conclusion from what Ofcom says in the consultation is that new levels of 3.6 GHz licence fee could be introduced in 2020 at the earliest and that it would reflect 3.6 GHz auction bids and prices (if available) and "other relevant information".

Three explains in its request that the proposed variation "will allow Three and UKB to roll-out a 100 MHz continuous bandwidth 5G service". Therefore, in practice, part of the 3.4 GHz UKB licence spectrum and 3.6 GHz licence spectrum will be used in combination to provide authorisation of a 100 MHz carrier that straddles the boundary of the 3.4 - 3.6 GHz and 3.6 - 3.8 GHz bands. In this context it is not clear why, beyond the time of the 3.6GHz auction and the licence variation (if agreed), the fee for 3.6 GHz should differ from 3.4 GHz (for which the UKB licence provides for fees to be payable from 17 July 2018). Put differently, it could be that the 3.6 GHz auction prices should have some impact on 3.4 GHz fees in the longer term (i.e. beyond the time of the 3.6 GHz auction).

This matter should be clarified since it could affect the dynamics of the bidding in the upcoming auction. For example, if Ofcom takes into account the 3.6GHz auction prices to set annual fees for all

(or even some) of the existing UKB 3.4 – 3.8GHz spectrum assignments, then if Three/UKB were to bid for further 3.6GHz spectrum it might have incentive to temper its demand, knowing that if its bids result in higher auction prices then it would increase its future costs of existing holdings that are subject to annual fees, thereby potentially affecting the prices paid and amounts of spectrum that other parties may win.

## 5 Technical licence conditions

### Power limits

In principle we are not opposed to a future increase of power limits to bring the licence in to alignment with harmonised technical conditions. However, as explained above, this matter is relevant to the auction competition assessment. This element of the licence variation request should be considered as a package and considered as part of the overall proposals for the 3.6 – 3.8 GHz award. The request to increase the licensed base station power level from 60 dBm/5MHz to 65 dBm / 5MHz should be decided at the same time as the request to change frequencies.

### Consequential changes to other existing 3.4 GHz licences

We note that the proposed licence variation would render the current “note 2” contained in other existing 3.4GHz spectrum access licences in the 3.4 - 3.6 GHz band unnecessary. This note relates to possible need for reduced out of block emission levels to protect the UKB use above 3605 MHz. If and when the proposed licence variation were to occur, Ofcom should confirm that it will offer to vary other existing 3.4GHz spectrum access licences to remove this note if those licensees so request (the note should also not remain for any transition period within which UKB may be permitted to run under the old and varied licences to avoid unnecessary uncertainty).

### Suitability for 5G technology

The UKB licence variation request mentions roll out of 5G equipment for 3580-3680 MHz. We agree that the 3.6GHz licence (varied or otherwise) is suitable to deploy 5G technologies. However, the frame structure (as in all other existing 3.4GHz spectrum access licences in 3410 - 3600 MHz) will support, but is not optimised for, 5G New Radio technology capabilities<sup>4</sup>. Ofcom has an important role to play in facilitating discussions on this issue as part of the work to establish technical licence conditions for licences to be auctioned in 3.6 – 3.8 GHz and exploring with existing licensees how these more optimal 5G technical licence conditions can be applied across the whole 3.4 – 3.8GHz band (i.e. also in existing 3.4GHz licences).

## 6 Spectrum leasing and trading

We note that the existing and proposed variation to the UKB 3.6 GHz licence includes provisions for spectrum leasing, but this is not currently available to other licensees in the adjacent 3.4GHz band.

Ofcom might consider a more consistent approach across all spectrum access licences in the 3.4 – 3.8 GHz range since they are, or will become once the 3.6GHz technical conditions are changed, substantially the same in terms of rights and obligations and since they can all be used to deliver the

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<sup>4</sup> For example the mandated frame structure is based on 4G/LTE technology and this prevents some important features of 5G New Radio technology from being fully realized, such as lowest latencies which could improve customer experience.



same services. This would appear to align with recommendations in the recent DCMS Future Telecoms Infrastructure Review report<sup>5</sup>.

However, as we pointed out in response to Ofcom's December 2016 consultation on proposed changes to the trading regulations<sup>6</sup>, whilst we are not against possible leasing arrangements being concluded to further the efficient use of spectrum, we believe that leasing arrangement in spectrum suitable for mobile should be subject to the same ex-ante scrutiny as trades.

Ofcom has in fact so far not proceeded to make the proposed changes to the trading regulations that it consulted on in December 2016. These would have moved the 3605-3689 MHz band from the general trading regulations to the mobile trading regulations (so that it can do a competition assessment before approving a licence trade). The present situation is unsatisfactory and is discriminatory given that the entire 3.4 – 3.8 GHz band is the pioneer 5G band in Europe.

We therefore suggest that, before concluding on a possible variation of UKB's 3.6 GHz licence, Ofcom should first resolve the issue of making the licence subject to the mobile trading regulations and at the same time address the issue of leasing arrangements which could have a similar effect from a competition standpoint as a trade. Ofcom might consider whether this could be achieved via additional licence provisions or via including leasing of mobile spectrum in the mobile spectrum trading regulations.

## 7 Proposed way forward

In answer to the consultation question, for the reasons discussed above, we believe Ofcom must defer its decision on this licence variation request at least until it has completed the competition assessment and has consulted and decided on the 3.6 – 3.8 GHz auction design.

Ofcom should also look at how the auction might enable further defragmentation of the whole 3.4 – 3.8 GHz band by facilitating consolidation of other spectrum assignments (should licensees wish).

Ofcom should include the requested licence variation as a scenario to be considered as part of the auction consultation proposals and should eventually decide once stakeholders have provided their views on the proposals. This would still leave the 9 months that UKB says it needs to move to new frequencies<sup>7</sup> before the new auction licences are granted.

Whilst Ofcom hopes to conduct the 3.6 – 3.8 GHz award in late 2019 there is the possibility it could be delayed, including by any legal appeals of Ofcom's decision. This is a further reason why it would be preferable if Ofcom issues its decision on all elements of the auction proposals at the same time, including the requested variation of existing assigned frequencies, so that if any party were to appeal the decision all elements could be considered together.

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<sup>5</sup> See para 226 of the DCMS Future Telecomms Infrastructure Review [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/727889/Future\\_Telecoms\\_Infrastructure\\_Review.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727889/Future_Telecoms_Infrastructure_Review.pdf)

<sup>6</sup> BT/EE response to Ofcom's consultation on "proposed changes to the spectrum trading regulations" [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0022/102739/bt-ee.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0022/102739/bt-ee.pdf)

<sup>7</sup> See point b. on page 22 of the licence variation request