



BT's response to Ofcom's
**"Review of spectrum fees
For fixed links and satellite"**

(Issued by Ofcom on 21 May 2015)

BT response dated 29 July 2015

INTRODUCTION

Generally speaking BT believes the current algorithms for fee structures for both fixed links and satellite Earth stations are acceptable, but we are open to proposed refinements where justified, and welcome the opportunity to contribute our views at this early stage in the process to develop future fee proposals.

We note that Plum has undertaken a study for Ofcom and as a consequence it is proposed that fees should be adjusted to encourage a shift in use from frequencies below 20 GHz to frequencies above 20 GHz. However, we have not seen the evidence that there is either a significant growth in the demand of links, or that there is congestion in any of the frequency bands. So whilst we are open to the idea of making adjustments to the algorithm used for calculating the fees, and also the figures which are used for the calculation, we believe that this should be justified based on the evidence available. We question the need for any significant increase in fee levels and consider that in some bands a **reduction** would be appropriate to bring fees closer to market values as revealed in the last fixed links auction.

The proposal to change the methodology and calculation of the “reference fee” is therefore one that needs to be addressed in a thorough and careful way.

Generally BT would support the changes to the algorithms, providing that any fee increases aimed at addressing congestion are targeted at the bands and geographical regions where the congestion is occurring. As a consequence, we support the principle of geographical pricing to ensure that licence fees in a given band are effectively only increased in those areas where the congestion is occurring.

RESPONSES TO THE QUESTIONS IN THE CONSULTATION

Question 1 - Do you agree with Plum’s view of the potential higher value alternative mobile use of the 3.6-3.8 GHz bands over the next seven to ten years?

We recognise that the 3.6 – 3.8 GHz band has been identified as a candidate band for IMT at WRC-15, and therefore we understand that it is very likely that it will have a higher value for mobile use in the medium term.

Question 2 - Do you agree with Plum’s analysis of current and future demand for spectrum for fixed links? Please give your reasoning.

We broadly agree with the analysis presented by Plum, although we do take issue with regard to certain aspects of the analysis (set out below). We also believe that great care should be taken in interpreting and applying the analysis.

Firstly, we are surprised that Ofcom have asked Plum to identify whether demand for fixed links has been increasing or falling, given that Ofcom should have all of the information on the number of links over the past years, whereas Plum are trying to deduce trends from a few snapshots (§3.2.1 of the Plum Report).

Figure 3-3 of the Plum Report indicates that demand for fixed links is falling in all bands, with the exception of the 6 GHz, 7.5 GHz and 15 GHz bands where there appears to be slight growth. Even if we assume that these figures are all accurate (and are comparing the same measures), we believe that these increases are only modest, and do not indicate a problem.

If Ofcom believe that there is significant growing demand for fixed links then we would like to see the evidence to support this, and also details about whether the increasing demand is for a specific band and application. One way to understand the growth in demand (taking into account volumes as well as the move to wider bandwidths) would be to look at the fixed links licence fee proceeds in recent years, because fees are proportional to bandwidth. We would invite Ofcom to make that information available to get a better indication of how demand is growing.

Even if, when the relevant evidence is assembled, it is demonstrated that demand is growing (even though the number of licences is declining), that would not necessarily mean that fee increases are required. An increase in the number of links in a band is a sign that the spectrum is being used more efficiently, which is surely a good thing and not something to be discouraged.

The most important issue is whether there is significant congestion now, or predicted for the medium term, taking into account the numerous fixed links bands that are available and the enormous potential capacity of those bands. BT only very rarely encounters serious restrictions in choice of frequencies when planning a new microwave link; any congestion has normally been solved by seeking another frequency or band.

In summary we do not think the available evidence supports a conclusion that there is a congestion risk to deal with and we do not agree that bands above 15GHz are congested, or likely to become congested in the medium term.

Question 3 - Do you agree with Plum's analysis of current and future demand of spectrum for PES and TES? Please give your reasoning.

We generally agree with the analysis.

Question 4 - Do you agree with the approach taken by Plum to calculate the opportunity cost of the spectrum? If not, how would you suggest the LCA is calculated? Do you also agree that this methodology is likely to provide a more conservative estimate?

Whilst we agree that it is not easy to calculate the opportunity cost of the spectrum, we do have some concerns that the approach taken by Plum is somewhat artificial, and does not really represent the value of the spectrum. It is likely that the value of the spectrum will vary from user to user, depending on their circumstances, and hence it is likely that each user will attach a different value to a licence. Consequently it is not really possible to comment on whether this approach provides a conservative estimate.

The only true measure of whether spectrum pricing is correct is down to the level of demand; if there is excessive demand then a given band is priced too low, and if there is insufficient demand (and hence the band is underused) then the band is priced too high.

Question 5 - Do you agree that Plum has identified the correct options for its LCA analysis? If not, what option(s) do you suggest we consider for the Least Cost Alternative?

We recognise the difficulty that Plum has faced in determining LCA given that the cost of moving to more efficient equipment that was used in the past is now less relevant because the price of fixed links equipment doesn't vary much with bandwidth/bitrate. However, we are not convinced that considering wired options or replacing a link with two links in a higher band is the right approach. The possibility to move to cross-polar working using half the bandwidth would be an alternative approach to incentivising more efficient use. We think this should be evaluated as an alternative methodology.

The price increases proposed seem to be somewhat arbitrary in terms of an increase that lays between the lowest and highest LCA figures (but thankfully towards the lower end). We do not think full opportunity cost is warranted and we think the lower estimate of costs is most relevant.

Question 6 - Do you agree with the cost assumptions that Plum has used in its analysis? Please provide documentary evidence if you disagree.

The site construction and site rental costs can be very variable, but we believe that it is potentially misleading to try to present these based simply on whether the link is > 20 GHz or not, and whether the site is rural or not. This is particularly so given that there is such an enormous variation between the cost estimates for each of these categories.

We believe that, if this is approach to determining LCA is to be maintained, a more extensive range of cost assumptions should be used.

Question 7 - Are there any other pieces of publicly available evidence we could use to estimate the opportunity cost of the use of 3.6-3.8 GHz for mobile use now?

We believe that Plum have identified the main sources of evidence.

Question 8 - Do you have any comments on Plum's suggestion to remove the path length factor?

We strongly support the suggestion to remove the path length factor, recognising that there is already an incentive (the band factor) to use the highest frequency band possible for a given link.

Question 9 - Do you have any comments on Plum's suggestion to add a location factor?

We do support the inclusion of a location factor¹, particularly to moderate or eliminate any fee increases which may have been introduced because a band has been perceived as being congested in another part of the country. However, in such cases we need to be clear that any fee increases proposed on the grounds of congestion, should first be substantiated.

Furthermore, we would welcome clarification on the proposed implications for the 6 GHz band. Figure 3-4 of the Plum Report suggests that there are about 1000 links across the 6 GHz bands (based on data from 2014), and Figure 3-11 of the same report appears to suggest that these are most commonly located around the coastline and islands of Scotland (using data from 2011). However §3.3.1 of the Plum Report says that there *“has been increased demand for links in the 6 GHz band, as a result of a new demand from the finance sector”*, and this *“has meant that it is difficult to make additional assignments in the 6 GHz band in the south of England”*.

We believe that this band is not currently congested in the 6 GHz band in Scotland, and that any increase in demand for assignments in this band relates to southern England. Therefore any intention to increase fees at 6 GHz, to address an actual or anticipated increase in demand in this band, should be more than offset by a location discount which would apply to (at least) the links across the Highlands and Islands of Scotland.

Question 10 - What are your views on the need to revise the bandwidth factor in the fixed link algorithm?

It would appear to be quite logical for the fee to reflect the amount of spectrum occupied (all other things being equal), and therefore we see no need to change the bandwidth factor.

We understand that one MHz at 1.4 GHz may be perceived as having more weight than one MHz in a millimetre wave band, however we believe that this can be addressed more than adequately by adjusting the “band factor” values. Therefore we believe that this is not a justification for changing the simple scaling of fees linearly with bandwidth for all bands.

However, we do note that the bandwidth factor is considered to be an incentive to encourage users to employ the highest modulation level possible, given that equipment now typically offers high levels of modulation for little or no additional cost. But if links are assigned based on a given level of modulation, and consequently also a given required C/I ratio, such high level modulation equipment could limit the availability of the channel to neighbouring links. In effect, the use of higher order modulation may be increasing the denial area, and yet the licence holder is incurring a lower licence fee. It is not clear whether this has been considered by Ofcom.

Question 11 - What are your views on the benefits of additional incentives for the use of high performance antennas? How might these best be implemented in our fees algorithm?

Whilst it may be commendable to encourage the use of high performance antennas, we would want to avoid any action which might risk penalising operators of existing links which have been assigned

¹ In our response to Ofcom’s “Spectrum Review” (January 2012) we included an analysis which supported the inclusion of a “geographic fee modifier”.

on the basis of a standard performance antenna. Therefore any encouragement to use high performance antennas should only apply to new links, and should not impact on the fees algorithm for existing links.

Question 12 - What are your views on the suggestion that we further consider ways to incentivise the use of automatic power control, a suggestion we are minded not to take up?

We agree that it is not clear how Ofcom could take advantage of ATPC, given that Ofcom plan Fixed Links on a static basis, with a suitable fixed margin to allow for fading. We cannot see any fair and easy way to reward users for transmitting at a lower power level during periods of good propagation performance.

Indeed we believe that Plum's suggestion that users could instead take advantage of such conditions by operating at a higher data rate would seem to be a suitable approach. However, given that it has been previously assumed that all equipment will already be operating at the highest level of modulation possible, it is not clear how users could take advantage of such good conditions by further increasing their data rate.

We do not have any other suggestions on how such adaptive approaches could be taken advantage of in the licensing process.

Question 13 - What are your views on the proposed revisions to the PES algorithm and the TES ratio? In particular, do you agree we should use the relative denial areas to reflect the difference in opportunity cost between PES, TES and fixed links? Do you have any other suggestions for improvement?

At the present time we see no need to amend the algorithms used for PES and TES, although we recognise that it would be sensible to ensure that there is alignment with the algorithm used for fixed links, and the relative denial areas.

However we note that whilst it is true that the locations of TES can change from day to day, it would seem to be inappropriate to assume that TES are *always* operating in congested areas (which are still to be defined). Perhaps there could be an assumption that the TES operate in congested areas for only part of the time, with an additional fee for TES which exceed this threshold?

Question 14 - Do you agree that the benefits of implementing geographic pricing are sufficiently high to warrant us considering this further? Should we look at both where mobile is, and is not, an alternative use? Do you have ideas on how this could be implemented?

We are supportive of implementing geographical pricing to reduce fees to only reflect administrative costs in those geographic areas where, considering the range of similar bands available, there is no congestion and little prospect of any future congestion, for example because the area is very remote and the population density is very low. We would particularly support geographical pricing to complement any increase in fees due to congestion. So if it is proven that congestion is a problem in a given band in some parts of the country (and we still contend that such evidence has not yet been

presented), then any resulting increase in licence fees should be offset by a reduction in pricing in those areas where there is no evidence of congestion.

We recognise that identifying and defining congestion is difficult, but we believe that it should be considered to be an area within which there is often difficulty in obtaining assignments for new links or areas in which there is a relatively low density of fixed links compared to the general situation for that band. As Plum suggested, such areas could be defined on a 100km x 100km basis according to the Ordnance Survey Grid Squares (as identified by a two letter code), although we would welcome further consideration of whether such granularity would be appropriate for all frequency bands. In the case of the higher frequency bands, where path lengths are typically shorter, it might be appropriate to consider congestion on the basis of smaller grid squares (e.g. 50km x 50km).

In the case of the 3.6 – 3.8 GHz band, which is expected to be identified for Mobile use in the medium term, we would agree that such use is likely to be in areas of higher population density, and therefore any new fixed or satellite service links should be discouraged in this band except in areas of lower population density.

Question 15 - Do you have any comments to make on any issues related to next steps and implementation?

Most of the questions in this consultation relate to principles, rather than detailed proposals, and some of these are based on assumptions which have not been proven (particularly the issue of congestion). Therefore we have had to base our responses on our interpretation on how these proposals might play out in the future. Consequently we may need to revise or amend our position in regard to some of these questions, when further details and proposals are made known.

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