



Commission for
Communications Regulation

Explanatory Note

Proposed 3.6 GHz Band Spectrum Award

Draft Information Memorandum

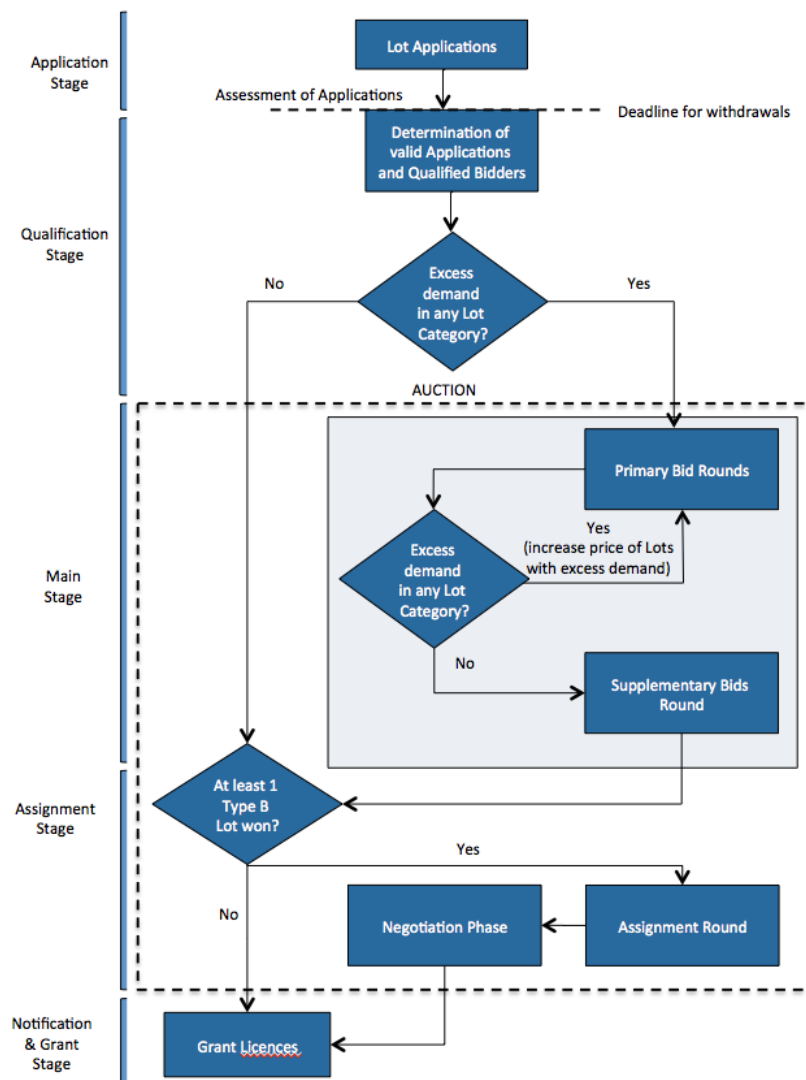
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1 Introduction

1. The purpose of the draft Information Memorandum (IM) for the 3.6 GHz Band is to detail the processes and procedures ComReg envisages it would employ in the implementation of its proposals for the 3.6 GHz Band Award Process¹.
2. The purpose of this Explanatory Note is to summarise and assist Interested Parties in their understanding of certain aspects of the draft IM.
3. The draft IM contains full details of the proposed processes and procedures. The figure below provides a useful illustration of the process and timelines involved:



¹ See ComReg’s draft Decision in Chapter 8 of Document 15/140.

4. The draft IM takes, as a starting position, the IM successfully used in the Multi Band Spectrum Award (MBSA) (Document 12/52), which also implemented a Combinatorial Clock Auction (CCA) and involved Activity Rules designed to allow Bidders to switch fluidly between Lot Categories.
5. However, the particularities of the 3.6 GHz Band award mean there are certain differences in the approach taken in the draft IM to that taken in the MBSA IM, some of which significantly reduce the complexity of this Award Process relative to the MBSA. In particular:
 - the 3.6 GHz Band award is for one spectrum band rather than three;
 - the MBSA's Activity Rules needed to account for two classes of Eligibility, related to two time periods for lots, where there is just a single class of Eligibility in the 3.6 GHz band award; and
 - in the MBSA, the determination of Winning Bids and prices also determined whether licences already held by certain operators would be liberalised or not, an issue that is absent in the 3.6 GHz Band award.
6. In addition, in accordance with the previous consultations and the views of respondents, this award proposes releasing spectrum rights of use on a regional basis and, as a result, has involved further divergence from the approach taken in the MBSA. ComReg considers that it may be useful to explain two aspects of the Award Process which differ from the MBSA, in particular:
 - a. In the MBSA, Bidders were limited to bidding only for Packages not exceeding the Eligibility of their Initial Bid. This restriction has been dropped in the 3.6 GHz Band award as it is inappropriate due to the regional structure of the award.
 - b. Provisions have been made in the 3.6 GHz Band award for Bidders to form Alliances in the Assignment Stage. Again, this difference relative to the MBSA arises because of the regional structure of the award. It is intended to facilitate bidding in the Assignment Stage by regional winners who might wish to coordinate frequency assignments between or within Regions where there may be significant efficiencies in doing so.
7. In this Explanatory Note, ComReg provides some additional material to assist the reader in its understanding of the processes and procedures relating to the Draft IM and, in particular, the two aspects highlighted above.

2 Preparing Interested Parties for participation in the Award Process

8. ComReg is conscious of concerns expressed about the potential complexity of its award proposals, particularly given the diverse nature of potential award participants. In that regard, ComReg confirms that:
 - it will seek to keep complexity to a minimum;
 - it will assist all Bidders in developing an understanding of the Auction Rules through the running of workshops, and providing the tools necessary for Bidders to simulate Auction conditions; and
 - the Award Process will be underpinned by a detailed IM, presented in Document 16/22 in draft form for the consideration of Interested Parties, which clearly outlines the applicable rules.
9. Given the complexities involved in the Award Process, ComReg has sought to provide as much clarity as possible in the draft IM around the envisaged processes, procedures and rules, taking into account the fact that some interested parties may not have previously participated in any similar process.
10. It is worth highlighting that, for reasons of completeness and transparency, the draft IM sets out the full details of how the Auction and Auction Rules will work, some of which may appear complex. Interested Parties are assured, however, that, in practice, the automated auction system that will be used by Bidders to submit Bids in the Auction will assist Bidders in navigating the relevant rules.
11. Following publication of the final IM, ComReg will provide a presentation/workshop on the Award Process and the Auction Rules. This presentation will seek to provide further clarity and explanation for Interested Parties.
12. ComReg will also facilitate the submission of questions regarding the Award Process and Auction Rules and will respond publicly to these questions on an anonymous basis.
13. Prior to the start of the Auction, if one is required, ComReg will initiate a schedule of at least one mock auction for Bidders to facilitate Bidders understanding of practicalities of participating in the award.

14. The timelines for the elements of the Award Process aimed at facilitating Interested Parties' understanding of the processes and procedures of the Award Process will be identified in the final IM, and is presented in draft form in Section 3.2 of the draft IM. Each milestone within the timeline of the award is calculated by reference to the start date of the award.

3 Bidding constraints arising from the Initial Bid

15. As noted above, this Award Process diverges from the approach adopted in respect of the MBSA in a number of ways, in particular in light of the fact that, in the proposed 3.6 GHz Band award, ComReg will release spectrum rights of use on a regional basis. ComReg considers that it would be useful to explain why it proposes a different approach in the 3.6 GHz Band award to that in the MBSA award with respect to bidding constraints.

3.1 Role of Initial Bid

16. In common with the MBSA award, Bidders in the proposed 3.6 GHz Band award are required to make an Initial Bid on Application. The Initial Bid will be used to evaluate whether there is excess demand for spectrum at Reserve Prices, and whether an Auction process is necessary. The Initial Bid also determines a Bidder's 'Initial Eligibility' (i.e. the Eligibility of the Package of Lots in the Initial Bid), and thus its initial position and bidding options in the event that an Auction is needed. The Reserve Price of the Initial Bid also determines the minimum Deposit amount required to be submitted by Applicants.

3.2 Limits on Packages that could be Bid for in the MBSA

17. In the MBSA, a Bidder's Initial Bid also constrained the Bidder's maximum demand throughout the Auction, in that a Bidder was not allowed to Bid for any Package that would exceed its 'Initial Eligibility'.

18. The motivation for this constraint was to discourage bidders from strategically expressing little demand in their Initial Bid in an attempt to share the available spectrum at Reserve Prices, without needing to participate in an auction process. By constraining Bidders in relation to their Initial Eligibility, any Bidder who would strategically reduce its demand on Application was at a risk of being constrained in the maximum they might be able to express in the event that an auction proceeded.

19. In the MBSA, there was a risk of low participation (as it was quite plausible that only mobile network operators might participate). In this context, constraining Bidders to their Initial Eligibility was helpful in destabilising potential tacit collusion at the Application Stage, as a Bidder who strategically reduced demand would be disadvantaged relative to any competitors that might not have reduced their demand in their Application. Given the properties of a CCA, in which expressing demand for additional spectrum primarily affects the price paid by competitors rather than a Bidder's own price, constraining a Bidder's maximum demand to their Initial Eligibility provided good incentives for Bidders to express their true demand at the Reserve Prices.

3.3 Considerations for the 3.6 GHz Band Auction

20. The considerations above do not apply to the 3.6 GHz Band Auction. Due to the greater uncertainty about potential participants and their likely demand, the risk of Bidders strategically reducing their demand or tacitly colluding is reduced. Additionally, given the large amount of spectrum available, the award is likely to attract diverse parties potentially utilising different technologies. Therefore, it would be difficult for Bidders to assess at what level of demand they may be able to avoid an Auction. In addition, the generous offering of spectrum provides a good opportunity for Bidders to acquire large bandwidths on a contiguous basis that is both unprecedented and unlikely to be repeated for a number of years. Therefore, Bidders might miss a unique opportunity to obtain a large contiguous frequency block if they were to Bid below their true demand at the Reserve Prices on Application.

21. If a similar rule were used as that in the MBSA award, there is a danger that Bidders could be induced to Bid on larger Packages than they really want (at Reserve Prices) in order to relax this constraint on which Packages of Lots they can Bid for later. For example, at Reserve Prices a Bidder might prefer a small Package of Lots to a large one, but bid for the large one to relax the constraint.

22. This risk is much more relevant for 3.6 GHz Band than it was for the MBSA. Offering regional licences provides many more switching possibilities, as some Bidders might consider geographical expansion in alternative additional Regions, or may be willing to switch Region altogether depending on relative prices.

23. There is uncertainty about the extent to which individual Bidders view certain geographic Regions as substitutable for each other. Also, the terms on which certain Regions might be substitutable for others is uncertain and might differ from the terms suggested by relative Reserve Prices or Eligibility. If spectrum in different Regions is given different Eligibility Points, then switching from a low-Eligibility to a high-Eligibility Region whilst maintaining bandwidth requires a Bidder to Bid above its Eligibility. Acknowledging this possibility, the Auction Rules use relaxed Activity Rules, which allow Bidders to Bid above their Initial Eligibility as long as doing so respects the revealed preference constraints that arise from earlier Primary Bids.
24. However, if Bidders were constrained in relation to their Initial Eligibility, then the choice of Initial Bid is key to determining the options that the Bidder will have to switch across Regions later in the Auction if it wishes to do so in response to changes in relative prices. Therefore, a Bidder would only be able to switch across all its potential targets if it makes an Initial Bid for the target with greatest Eligibility; however, this may not be its preferred target at Reserve Prices. Conversely, Bidders who make a Bid for their preferred Package of Lots at Reserve Prices may be unduly constrained later in the Auction, which could suppress competition in high-Eligibility Regions.
25. Distorting bidding incentives for Initial Bids could lead to an inefficient assignment in the event that an Auction is not needed, as Bidders' Initial Bids may not reflect their preferred choices. It may also overstate demand for high-Eligibility Regions (and understate demand for low-Eligibility Regions), possibly leading to an Auction being held in cases where it may have been possible to accommodate the demand of all Bidders at Reserve Prices. As a result, the aggregate demand information available to other bidders for each Lot Category prior to the start of the Main Stage becomes more difficult for these bidders to interpret as the Aggregate Demand presented may not be reflective of actual demand at these prices. Bidders may be deprived of information they would otherwise have used to confirm or revise their valuations and bid strategy.

3.4 Proposed approach

26. Given the considerations above, ComReg does not consider it necessary in this Auction to include a constraint that prohibits Bidders from bidding for Packages of Lots with Eligibility greater than the Eligibility of their Initial Bid. By taking this approach, Bidders can choose the Package of Lots they prefer at Reserve Prices but now also have the option to switch to higher Eligibility Packages of Lots at a later round. This option, however, is subject to constraints². The constraint is that Bidders can only increase their Eligibility in the specific circumstances where such a Bid is consistent with the preferences implied by the Bidder's previous bidding behaviour.
27. In terms of application of the Activity Rules, the Initial Bid will be classed as an Eligibility-setting Bid and so have a role in determining constraints on subsequent Bids, in a similar manner to any Bid made in a Primary Bid Round in which the Bidder reduced Eligibility.
28. Informally, the Initial Bid made on application could be thought of as 'Round 0' of the Primary Bid Rounds. In particular, Packages of Lots with an Eligibility greater than the Eligibility of the Package of Lots of the Bidder's Initial Bid will be subject to a Relative Cap in relation to 'round 0' ('round 0' refers to the demands stated in the Application Stage) with the Package of Lots of the Initial Bid being the Constraining Package, and Reserve Prices being the constraining prices. Therefore, whilst Bidders may be able to Bid for Packages of Lots with Eligibility greater than the Package of Lots of their Initial Bid, they may only do so if the difference between their Bid for such a Package and the Bid for their initial Package of Lots is less than the difference between the Reserve Price for the Package of Lots and the Reserve Price for their initial Package of Lots. This is the constraint (implied by the Bidder's previous bidding behaviour) as described in paragraph 26.

3.5 Deposit requirements

29. In the MBSA, the constraint that Bidders could not Bid for Packages with Eligibility greater than their Initial Eligibility meant that Bidders would not be able to Bid for any Package with a Reserve Price that exceeded the Reserve Price of the Initial Bid. This mitigated the risk that Bidders might default on their payment. ComReg also had discretion to require Bidders to increase their Deposits as the Auction progressed and Bids increased, but the need to make Deposit Calls was arguably reduced by ensuring that at least the Reserve Price of any Package of Lots was covered by the initial deposit.

² To allow this change of Eligibility to be done without constraints has the potential to open the auction to gaming by allowing Bidders to hide their true demand until later rounds.

30. In the context of the 3.6 GHz Band award and in the absence of this constraint, to guarantee that Bidders are able to pay for any Lots they apply for, Bidders will be required to submit a deposit as part of the application process. The Deposit should cover the Reserve Price for the Package of Lots of their Initial Bid, which they would be directly assigned at the Reserve Price in the event that there is no excess demand and an Auction is not required.
31. Notwithstanding, at any point during the Auction, ComReg may give notice to one or more Bidders that they need to increase their Deposits (a Deposit Call) to an amount specified by ComReg in accordance with the Auction Rules.

4 Joint Bidding

4.1 Introduction

32. Joint bidding can occur at two points in the Award Process.
33. The first instance is prior to the Application Stage, where Interested Parties can decide, if they wish, to bid jointly in the award as a consortium. This consortium will be deemed to be a single entity for the purposes of the Award Process and in the event of this single entity becoming a Winning Bidder in the award, a 3.6 GHz Band Liberalised Use Licence would be issued to this consortia as a single entity.
34. While this possibility was afforded to Interested Parties in the MBSA, ComReg envisages that it could be more relevant for Interested Parties in the present award due to the interest expressed by smaller operators in the band. By means of example, it may be a useful option for smaller operators that may currently operate in a localised area under the existing FWALA scheme, but as part of a consortium could perhaps better compete for spectrum in one or more of the Regions proposed. Equally some of the larger regional operators could form a consortium, to acquire a multi-regional / national licence.
35. The second form of joint bidding provided for in this Award Process is the formation of Alliances, an innovation on the process under the MBSA, which has been developed to take account, in particular, of the fact that, in the 3.6 GHz Band award, ComReg will release spectrum rights of use on a regional basis. Winning Bidders will be able to decide, prior to the Assignment Stage, to Bid in the Assignment round as an Alliance. This possibility and the adjustments to the Award Process is explained further in the following section.

4.2 Alliance Bidding in the Assignment Stage

36. For the 3.6 GHz Band award, the spectrum available is to be awarded on a regional basis (with 9 Regions in total). In each Region, there is one frequency-specific 25 MHz Lot (the A-Lot, below State Services) and 65 frequency-generic 5 MHz Lots (the B-Lots, above State Services) to be awarded in the Main Stage of the Auction. The Assignment Stage then determines the specific frequencies to be awarded to the Winners of the B-Lots, subject to a number of constraints on where each Winning Bidder might be positioned in the band as defined in Section 4.3.1 of the draft IM (Document 16/22), which include

- Each Assignment Bidder will be assigned contiguous spectrum in each Region³; and
- Each Assignment Bidder will be presented with options in the Assignment Round to Bid on. For Assignment Bidders that have acquired spectrum in multiple Regions, the options presented will be those where it gets the same spectrum in each region to the maximum extent⁴.

37. ComReg is of the view that facilitating the formation of Alliances (see further below for details) prior to the Assignment Stage may lead to notable spectrum efficiency gains to the benefit of Interested Parties. This will facilitate Winning Bidders that wish to enter into Inter-Licensee Co-ordination Agreements⁵ in maximising the use of the spectrum at the borders of Regions or for the purposes of the Inter-Licensee Synchronisation Procedure⁶.

38. If Winning Bidders were participating independently in the Assignment Stage, there would be no possibility for Winning Bidders to align their frequencies (within a Region or across Regions) with those of any other Winning Bidder. The Assignment Stage would not provide any mechanism for Winning Bidders to coordinate their outcome should that be desirable from a spectrum efficiency perspective.

39. This was not an issue in the context of the MBSA, as licences were assigned nationally and ComReg did not expect operators to be concerned about where their spectrum was located in the band relative to another operator. However, with a regional licence structure and regional operators, there is the potential for significant efficiencies where two or more Winning Bidders are assigned similar frequencies across Regions or adjacent frequencies within Regions.

40. In light of this, ComReg has proposed an innovative feature for the Assignment Stage of the Auction (relative to the Auction Rules used for the MBSA), whereby groups of Winning Bidders are allowed (under certain limited conditions) to coordinate and participate in the Assignment Stage as if they were a single entity (an 'Alliance').

³ This is in line with the proposals in previous consultations, Document 15/70 and Document 15/140.

⁴ This is in the interests of facilitating a Winning Bidder being able to make the most efficient use of spectrum across regions where it has won spectrum.

⁵ This means bi-lateral or multi-lateral agreements between Licensees on field strength co-ordination threshold levels at the boundaries of Regions.

⁶ This means the synchronisation procedure set out in Section 3 of part 4 of Schedule 1 to the Draft Wireless telegraphy (Licences in the 3.6 GHz band) Regulations 2016, published as Annex 2 to the Draft IM 16/22

Who can form Alliances?

41. The use of Alliances is intended to allow Winning Bidders to achieve the efficiency benefits of aligning their frequencies across and /or within Regions (and any Alliance formed should offer a clear benefit in this regard). It is not designed to provide an operator with access to a larger block of spectrum within a Region, and in particular should not provide a means by which Bidders can circumvent the Competition Caps and gain access to more than 150MHz of spectrum in any Region.
42. With this in mind, ComReg has introduced a restriction on the set of Bidder's that will be permitted to form an Alliance, to address the risk of any misuse. In particular, an Alliance will not be allowed if the total amount of spectrum awarded to the proposed Alliance members would exceed the Competition Cap of 150 MHz in any Region.

How does it work?

43. A group of Winning Bidders would be allowed to work together at the beginning of the Assignment Stage to form an Alliance, and then participate in the Assignment Stage as a single entity. That is, Assignment Options would be generated for the Alliance as a whole, as if the Alliance members were a single Winning Bidder (winning all frequency-generic Lots awarded in total to the Alliance members in the Main Stage).
44. The Assignment Round (if necessary) would be run with any Alliance submitting a single set of Bids for its Assignment Options. The Alliance would then be guaranteed contiguous frequencies within each relevant Region, and the frequencies awarded to the Alliance across Regions would be aligned as much as possible. At the end of the Negotiation Phase, any Alliance must inform ComReg of the specific frequencies to be awarded to each Alliance member, on the basis of the Assignment Option won by the Alliance. This all means that any Winning Bidders that would like to have their frequency assignments aligned across Regions and/or within a Region can form an Alliance and guarantee such an outcome.
45. On the formation of an Alliance, one Alliance member must be designated the Leading Member. The Leading Member will be responsible for:
 - submitting Bids on behalf of the Alliance and paying any Additional Price arising in respect of the Alliance's winning assignment bid;
 - informing ComReg of the frequency assignments for each Alliance at the end of the Negotiation Phase; and

- transferring any necessary funds to ComReg in the event that a Deposit increase is required to cover the Alliance's Assignment Bids (although Alliance members will be jointly and severally liable for this payment).

Deposits at the end of the Assignment Round

46. ComReg has also proposed an additional Deposit call that would take place (at ComReg's discretion) at the end of the Assignment Round, and before determining the outcome of the Assignment Round. This would allow ComReg to require that participants in the Assignment Round (either individual Bidders or Alliances) increase their deposit to an amount that ensures the difference between the participants' deposit and its Base Price is at least the highest Assignment Bid it submitted.

5 Next steps

5.1 Next Steps

47. ComReg welcomes all submissions received to Document 15/140, Response to Consultation and draft Decision, and will fully consider and address all comments in a further response to consultation before proceeding to publish a Final Decision with respect to the 3.6 GHz Band award.
48. Further, to the extent that ComReg receives submissions relating to the draft IM, ComReg will consider and proceed to issue a final IM for the proposed 3.6 GHz Band award.
49. While ComReg cannot provide further clarity on the overall timelines at this juncture, as this will depend, among other things, on the nature of responses received, ComReg would reiterate that it remains conscious of the expiry of existing 3.6 GHz licences in July 2017 and is working towards providing clarity on the future of the 3.6 GHz Band as far as possible in advance of this date.

End.