

Question 1: (Section 4) Do you agree with our proposals on the coverage obligations as set out in this section? Please give reasons supported by evidence for your views.

Ruckus Networks would agree with the geographic based coverage proposal for outdoor usage, although we do have some concerns about the low number for Scotland and whilst this may be due large areas of unpopulated land, is this sufficient to ensure that users maintain the ability to contact the emergency services away from centres of population and possibly even roads.

However, the question of inbuilding coverage does not appear to be adequately addressed in this consultation. This is a concern, as the move to “energy efficient buildings” especially office blocks, also means that signal attenuation is increasing when measured indoors from outdoor base stations. One solution to this would be to use indoor small cells. However, this is not economically viable if the CapEx and OpEx must be borne entirely by the MNO’s, especially as every building would require support from each MNO independently. Therefore, a building owner solution is preferable, but this would need access to spectrum either by some form of leasing arrangement from one or more MNO’s, or and the preferred option, by adopting an approach similar to that in use in countries such as Sweden and Germany where 3700-3800MHz has been set aside for local/industry/vertical use under a low-cost or light licensing type regime. The success in Germany of this latter approach can be seen in this report from Reuters <https://uk.reuters.com/article/uk-germany-telecoms-companies-factbox-idUKKCN1P11IO> and Ruckus Networks believes that U.K. industry is missing out on such opportunities with the lack of spectrum being made available in this manner with this auction, although Ofcom’s proposals in the “Enabling opportunities for innovation Shared access to spectrum supporting mobile technology” consultation may go some way in addressing this need.

Question 2: (Section 5) Do you agree that we have identified the correct competition concerns?

Ruckus Networks believes that the competition assessment in this consultation is based upon the sole premise of MNO’s bidding and ultimately being assigned spectrum on a national basis. If this were the only option, then the assessment is probably reasonable if H3G, with its existing 140 MHz of spectrum within the 3.4-3.8 GHz band, is prevented from bidding for more spectrum in order to align the amounts of spectrum allocated to each of the national MNO’s. However, Ruckus Networks believes that this is not the only option and the consultation completely misses out the option of local area licensing which has the potential of providing more comprehensive in building and rural coverage by enabling SME’s and building/site owners to gain access to cellular spectrum with which they can utilise the mass-market ecosystem of network equipment and user terminals. This approach is already successfully being adopted in other European countries such as The Netherlands.

Question 3: (Section 5) Do you agree with our assessment of these competition concerns, and our proposed measure for addressing them? Please give reasons supported by evidence for your views.

Ruckus Networks has no further comments other than that raised in the answer to question 2 above.

Question 4: (Section 6) Do you agree with our proposal to proceed with a conventional assignment stage?

Whilst Ruckus Networks has no specific comments to make on the assignment stage, we would note that H3G, through its ownership of UK Broadband, already owns 140MHz of spectrum in the 3.4-3.8 GHz bands prior to any award resulting from this auction, and consequently would raise concerns

over potential competition aspects in this new spectrum. In addition, we are concerned, as mentioned in our responses to other questions, about the lack of spectrum being made available for local area licencing for industrial and vertical sector uses in this band.

Question 5: (Section 7) Do you agree with our proposal to use a CCA design for this award?

Ruckus Networks has no comments to make on this question.

Question 6: (Section 7) Do you have any comments on the proposed detailed rules for our CCA design?

Ruckus Networks has no comments to make on this question.

Question 7: (Section 8) Do you agree with our proposed approach to coexistence in the 700 MHz band?

Ruckus Networks has no comments to make on this question.

Question 8: (Section 8) Do you have any comments on the proposed licence obligation and guidance note (annex 19)?

Ruckus Networks has no comments to make on this question.

Question 9: (Section 9) Do you agree with our proposed approach to managing interim protections for registered 3.6-3.8 GHz band users?

Ruckus Networks agrees with the proposed approach to managing interim protections for registered 3.6-3.8 GHz band users contained within this consultation.

Question 10: (Section 9) Do you agree with our 3.6-3.8 GHz in-band restriction zone proposals?

Ruckus Networks agrees with the in-band restriction zone proposals contained within this consultation.

Question 11: (Section 9) Do you agree with our view that we do not need to include any specific conditions in 3.6-3.8 GHz licences to mitigate the risk of adjacent band interference?

Ruckus Networks agrees with Ofcom's view that no specific condition are required to mitigate the risk of adjacent band interference.

Question 12: (Section 10) Do you agree with the non-technical conditions that we propose to include in the licences to be issued after the award of the 700 MHz and 3.6-3.8 GHz bands?

Ruckus Networks does not agree with all of the non-technical conditions proposed. Specifically, we believe that the use of local area licences are a valuable tool in providing a cost effective solution to the problems of in-building (and rural) coverage. The challenges posed by both in-building and rural coverage often require similar technical solutions that will be, in many cases, cost prohibitive if they are to be realised solely by the competing MNO's under their national licenses. By using local area licences, operator agnostic solutions can be deployed that utilise the existing equipment ecosystem in this band without the cost of all the national MNO's providing base station coverage for a large number of small individual clusters of users.

Ruckus Networks also has some concerns about Ofcom's decision not to impose a "use-it-or-lose-it" conditions. Whilst noting the difficulties outlined in the consultation, we believe that "use-it-or-lose-it" conditions can be a useful tool in freeing up under-used spectrum on a local area basis where this

spectrum has been allocated on a national basis, but where the national licence holder has insufficient economic incentive to provide service but where a local area operator, who is operating on a different cost model, can provide service but is prevented from doing so because of lack of spectrum access. However, Ruckus Networks believes that the proposal for locally licenced use of underused MNO spectrum as outlined in the “Enabling opportunities for innovation Shared access to spectrum supporting mobile technology” consultation, could offer a solution in some cases to this situation.

Question 13: (Section 11) Do you agree with the technical licence conditions we propose?

Ruckus Networks agrees with the technical licence conditions proposed within this consultation.