



Award of the 600 MHz spectrum band

Statement

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Section 1

Executive summary

- 1.1 This statement sets out our decision to proceed with an award of the 600 MHz spectrum band (550 to 606 MHz) to Arqiva on an interim basis. We will do so by granting a single licence for the establishment of temporary Digital Terrestrial Television (DTT) multiplexes using DVB-T2/MPEG4 technology. The licence will run until 2026, but with a minimum duration to 31 December 2018, subject to revocation on 24 months' notice.
- 1.2 Our Consultation on the award (the Consultation) was published on 6 February 2013 and closed on 4 April 2013. Most of the responses were generally supportive of our proposals for the award, but some made comments about particular aspects of the proposed licence. After detailed consideration of the responses, and for the reasons set out in this document, we have decided to proceed with our main proposals to award a single licence for interim DTT multiplexes. We have also decided to adopt the service conditions we proposed in the Consultation.
- 1.3 One point of substantive challenge was that the proposed interim DTT licence might limit our ability to initiate any clearance of the 700MHz band - for mobile broadband - if such a clearance was to begin before the end of the proposed minimum licence term to the end of 2018. We have considered this argument carefully and decided, for the reasons set out in this statement, that the most proportionate way to address this issue is to add a clause in the licence that will allow us to vary or substitute the frequencies awarded in the 600 MHz band, as necessary, ahead of the end of 2018 in order to facilitate any transition of DTT from the 700 MHz spectrum.
- 1.4 The Consultation included an invitation to stakeholders interested in acquiring the spectrum to submit a Notification of Intention to Apply (NoITA). We said we would proceed to award the spectrum if we received only one NoITA, provided it was compliant with the proposed licence terms. We said we would hold an auction for the spectrum if we received more than one compliant NoITA.
- 1.5 In the event, Arqiva was the only respondent to submit a NoITA. We have considered this NoITA and decided that it is compliant with the terms of the licence. Accordingly, we are now proceeding with an award of the licence to Arqiva - subject to the company's formal acceptance of the revised terms as set out in an Annex to this document.

Section 2

Introduction and Consultation responses

Introduction

- 2.1 Our Consultation on the interim award of the 600 MHz spectrum band (550–606 MHz, but excluding 590 to 598 MHz) was published on 6 February 2013. It set out our proposals to license the spectrum for the provision of temporary DTT multiplexes. In doing so, it reflected decisions reached in our UHF Strategy Statement, published on 16 November 2012¹.
- 2.2 Our Consultation document included an invitation to stakeholders interested in acquiring the spectrum to submit a Notification of Intention to Apply (NoITA). We said we would proceed straight to an award of the spectrum in the event that we received only one NoITA and it was compliant with the proposed licence terms. We said we would proceed to an auction if we received more than one compliant NoITA.
- 2.3 The Consultation closed on 4 April 2013. We received 17 responses to our proposals for the award. Four of the responses were confidential. One of the responses was confidential in part. The responses fell broadly into three categories:
- Responses from broadcasters – these were concerned mainly with our proposed licence conditions. In particular, they were addressed at the coverage and roll-out obligations we proposed in the Consultation;
 - A response from a mobile network operator (Vodafone) – this expressed concern that the proposed award might hinder or obstruct the long-term objectives set out in our UHF Strategy statement, namely release of the 700 MHz spectrum for mobile broadband;
 - Responses from stakeholders with an interest in Programme Making and Special Events (PMSE) and/or White Space Devices (WSDs). Some of these respondents felt our proposals did not take sufficient account of the needs of the PMSE and/or WSD sectors.
- 2.4 Further responses were received from stakeholders raising issues affecting services in specific geographical areas. One of these was submitted confidentially raising the possibility of making some 600 MHz spectrum available to other broadcasting licensees to improve coverage in specific locations.
- 2.5 We received only one NoITA. We consider this to be compliant with the terms of the proposed licence. In accordance with our obligations under the Wireless Telegraphy Act 2006², we then published a subsequent consultation on making a Limitation Order, setting out the criteria by which we intend to award a single licence.
- 2.6 The rest of this section sets out:
- A summary of the proposals contained in the Consultation;

¹ “Securing long term benefits from scarce low frequency spectrum, UHF strategy statement” http://stakeholders.ofcom.org.uk/binaries/consultations/uhf-strategy/statement/UHF_statement.pdf

² Section 29.

- A summary of the responses we have received;
 - Our consideration of the main points raised by respondents.
- 2.7 The following section (Section 3) then considers how to address one specific issue raised in the responses – how to retain sufficient flexibility to deal with a potential early clearance of the 700 MHz band - and sets out our conclusions on the award itself, in light of those considerations.

Summary of our proposals

- 2.8 The Consultation set out our intention to support the long-term objective of enabling the future release of the 700 MHz band (694-790 MHz) for mobile broadband, whilst protecting the on-going provision of DTT. A key element of the long-term strategy is that the 600 MHz band should be available, if and when needed, to accommodate DTT services displaced by any future 700 MHz band clearance.
- 2.9 The UHF Statement made it clear that any interim use of the 600 MHz band should be supportive of this long-term strategy. In that context, it concluded that the most appropriate interim use of the 600 MHz band would be for establishing temporary DTT multiplexes. Additionally, the UHF Statement said these temporary multiplexes should adopt the more efficient DVB-T2 and MPEG4 technologies. This would support the long-term strategy by encouraging viewer take-up of receiver equipment capable of receiving the new services. In some instances, this could include new rooftop aerials.
- 2.10 The UHF Statement said any interleaved spectrum left unused by the new DTT multiplexes should be used for PMSE and WSDs.
- 2.11 In line with these conclusions, we proposed to offer the available 600 MHz spectrum for DTT use under a single licence (or 'lot') to the successful applicant. We said this represented the quickest and most straightforward way of bringing the band into use, whilst allowing potential licensees the flexibility to determine their own preferred usage patterns within the licence terms.
- 2.12 We said we might need to reclaim the spectrum for the purposes of DTT re-allocation sometime from the end of 2018. We therefore proposed conditions enabling us to revoke the licence on a minimum of 12-months written notice, subject to a guaranteed minimum term running to 31 December 2018.
- 2.13 We proposed that the licence should include a requirement for coverage within two years to reach 50% of UK households, including a minimum of 25% coverage in each of the UK Nations. We proposed that roll-out in the first 12 months should reach a minimum of 10% coverage, with a requirement that at least one video stream is available to consumers.
- 2.14 Our proposals said that one of the 'channels' within the 600 MHz band – Channel 36 (590-598 MHz) - should not be included in the award because it might be needed for a signal propagation study.

Consideration of Consultation responses

- 2.15 Our proposals were broadly supported by most respondents. Only Vodafone questioned the main objective of awarding the spectrum for interim DTT multiplexes.

Other respondents focussed their comments on more detailed aspects of the award process. Some proposed particular modifications to our proposals on the licence.

- 2.16 Consideration of the main areas where respondents offered views which diverged from our proposals are set out in the paragraphs below, together with our responses.
- 2.17 Some respondents raised additional points about the proposed process for awarding the spectrum in the event of us receiving more than one NoITA. Since we received only one NoITA, we have not addressed these points. No respondent opposed the process for awarding the licence in the event of receiving a single NoITA.
- 2.18 A more detailed account of the responses we received to specific questions asked in the Consultation document, together with Ofcom's response to those submissions, can be found at Annex 1. All the non-confidential responses we received are published on our website³. The policy options open to us as a result of considering the responses are addressed in Section 3, where we present our overall conclusions on the award.

Responses from broadcasters and broadcasting bodies

- 2.19 Non-confidential responses were submitted by Arqiva (some parts confidential), the BBC, Digital TV Group, Digital UK and Freeview. There were also responses about broadcasting issues from the British Film Institute, who defined itself as a party with an interest in both broadcasting and in PMSE, and from the Isle of Man Communications Commission.

Coverage and roll-out obligations

- 2.20 Most of the respondents who raised issues connected directly to broadcasting aspects of the Consultation questioned the service obligations we intended to include in the licence. There was a general concern that the minimum obligations we proposed, in terms of coverage within the UK and the speed of roll-out for new services, were not challenging enough.
- 2.21 Some of the responses expressed a concern that Ofcom had set a relatively 'low bar' for participation in the award process and that this might encourage speculative or strategic applications – particularly from parties with interests not aligned to the long-term future of the DTT platform. It was submitted that such applications would not be in the best interests of either DTT or Ofcom's long term UHF strategy objectives.
- 2.22 Arqiva was among the respondents to articulate the overall concerns of many broadcasters. Its response expressed broad support for our proposals, noting its own position as a major existing supplier of broadcasting technology and infrastructure. However, concern was expressed that the roll-out and coverage obligations proposed by Ofcom did not go far enough. It was suggested that the proposed minimum licence conditions could be met too easily, and would not deliver the intended support for an on-going DTT platform.
- 2.23 The same or similar views were expressed by the BBC, Digital UK and Freeview, who said the minimum roll-out and coverage obligations might not deliver sufficient quantity and quality of new services. This risked undermining the intention of driving consumer take-up of DVB-T2/MPEG4 receiver equipment in order to support the

³ <http://stakeholders.ofcom.org.uk/consultations/600mhz-award/?showResponses=true>

DTT platform. Freeview was concerned that the minimum licence obligations might not encourage sufficient development of HD services on DTT.

- 2.24 The BBC proposed more generally ambitious coverage obligations and pointed to a joint submission to the earlier UHF Strategy Consultation from the BBC, Channel 4 and Arqiva⁴. This had proposed the establishment of interim networks based on two multiplexes carrying a mix of PSB and commercial HD channels. The BBC was also supported on this point by a confidential respondent.
- 2.25 Digital UK expressed concern that the minimum roll-out and coverage obligations would not preclude an operator with interests that were not aligned with the long-term benefit of the DTT platform from participating in the award. Compliance could be achieved by carrying a single DTT subscription service. Digital UK urged the adoption of revised licence conditions aimed at ensuring the development of an attractive HD proposition to consumers.
- 2.26 The Isle of Man Communications Commission expressed disappointment that the proposed award was not being used to support the wider delivery of existing DTT services to non-urban areas of the UK. The Commission said this was an issue of relevance to large parts of Northern Ireland, Scotland, Wales and rural England, as well as the Isle of Man.
- 2.27 In its response, the Commission said the completion of digital switch-over (DSO) had resulted in Isle of Man viewers losing some DTT channels following a reorganisation to accommodate HD services. Ofcom was urged to reconsider the proposals for a 600 MHz award, and to ensure consumers in non-urban areas of the UK were informed more fully of the limitations of the DTT platform.

Channel 36

- 2.28 Arqiva was supportive of our proposal to allow Channel 36 to be held back for a possible signal propagation study. However, its submission pointed out that the channel might subsequently be required to help a future transition of services from the 700 MHz band. Arqiva said the timing of any future availability should acknowledge the need for extra spectrum for “parking bands” during any transition.

Other points raised on broadcasting

- 2.29 The Digital Television Group (DTG) expressed concern that the award might attract interest from parties not currently involved in the DTT platform seeking to deploy non-standard modes of DVB-T2 transmission. However, we note that such interest did not materialise. DTG also urged Ofcom to devise a framework to encourage unique content, because HD simulcasts of services currently broadcast in standard definition (SD) might not be sufficiently attractive to drive take up of DVB-T2 receiver equipment.
- 2.30 The British Film Institute (BFI) expressed support for Ofcom’s proposals in terms of its own interests in both DTT broadcasting and PMSE. However, the BFI expressed concerns about the cost of a future clearance of the 700 MHz spectrum band. This is not the subject of this Consultation and those issues are not therefore addressed here.

⁴ http://stakeholders.ofcom.org.uk/binaries/consultations/uhf-strategy/responses/Mux_operators.pdf

Ofcom response to broadcaster submissions

- 2.31 We have considered the concerns expressed by stakeholders involved in broadcasting and can identify two common concerns regarding the minimum roll-out and coverage obligations:
- A concern that the obligations might be too easily met, and so provoke interest from parties who did not support the overall objectives for DTT – or, alternatively, from parties who might not have the capability of achieving more than a nominal roll-out of services;
 - A related concern that the minimum obligations were not ambitious enough to support the future development of the DTT platform.
- 2.32 In relation to the broadcasters' first concern, we note that Arqiva operates two existing DTT multiplexes and could be presumed to be a party supportive of the overall objectives for the platform – as well as having the capability to roll out services.
- 2.33 In relation to the second concern, we carefully considered whether we should raise the minimum roll-out and coverage obligations, not least because Arqiva itself proposed such a course of action.
- 2.34 The licence obligations which we proposed were designed to achieve an appropriate balance between our objectives of supporting our UHF Strategy whilst not deterring potential bidders - including those who might have innovative ideas for using the spectrum. We consider the service obligations as proposed are appropriate to achieve this balance. In the event, only one party – Arqiva – submitted a NoITA. In this NoITA, Arqiva stated its plans to go significantly beyond the minimum roll-out and coverage obligations we had proposed.
- 2.35 It is, of course, open to the licensee to roll-out beyond the minimum requirements of its licence - and we would welcome such an approach to the provision of services. However, given the short-term nature of this award, we consider it is more appropriate for the precise manner of roll-out and coverage to be left to the judgement of the licensee, in light of its own strategic and commercial interests, rather than being prescribed by regulation.
- 2.36 We do not think it is appropriate to require that the spectrum is used to deliver more extensive geographic coverage for existing DTT services, as suggested by the Isle of Man Communications Commission. We do not believe a proposition based on this objective would have attracted interest from any commercial multiplex operator. In those circumstances, the 600 MHz spectrum would go unused for DTT ahead of its likely future use for mobile broadband. Such an outcome would be to the detriment of consumers,
- 2.37 Nor do we intend to adopt more stringent obligations on the type of services which must be provided on the interim multiplexes, as suggested by some respondents. As set out in the Consultation, we believe the business case for exploiting the 600 MHz spectrum within a short potential timeframe is likely to be marginal at best. As with roll-out and coverage obligations, we believe the licence holder will be best placed to make decisions on ensuring the most attractive consumer proposition. In such circumstances, we do not feel it is appropriate to mandate the content that should be carried.

- 2.38 Finally, we note Arqiva's submission regarding the future use of Channel 36 to facilitate a transition of DTT services from the 700 MHz channels to spectrum in the 600 MHz band.
- 2.39 It is premature for Ofcom to reach any particular view on this option at this stage. However, we will keep the use of Channel 36 under review and ensure future use is taken into account once the propagation study has been undertaken. We note that PMSE and WSDs wish to access Channel 36 when and where this is not needed for the propagation study.

Response from a mobile network operator on licence duration

- 2.40 Vodafone disagreed with our proposal to licence use of the 600 MHz band now for interim DTT multiplexes. Vodafone considered that our proposals did not conform to our own stated objective that "*interim use of the 600 MHz band should be supportive of the long-term strategy*" i.e. the clearance of the 700 MHz band for mobile broadband. Vodafone said the transition process could take up to three years, and under Ofcom's proposals could not even begin before 2019 at the earliest.
- 2.41 In Vodafone's view, it is very likely that the 600 MHz band will be needed well before 2019, and so the spectrum should not be awarded for temporary use in the meantime. It was submitted that moves were already underway in other parts of Europe to speed up the process, and the use of the 600 MHz spectrum for interim multiplexes would hinder this in the UK.
- 2.42 Vodafone pointed to our consultation on spectrum pricing for terrestrial broadcasting⁵ as evidence that mobile use of the 700 MHz spectrum would be much more valuable than DTT use. They considered that if we were unable to migrate DTT out of the 700 MHz band because the 600 MHz band was being used for temporary DTT multiplexes, this greater value would not be realised. Ofcom should therefore retain the flexibility to start the release of the 700 MHz spectrum before 2019.
- 2.43 Vodafone agreed that the adoption of DVB-T2/MPEG4 technology could be important for the long term UHF strategy, but said it was unclear how temporary DTT multiplexes would encourage consumers to buy new receivers. The available evidence suggested that those consumers who watched television in HD did so mainly for sport and movies, and so were more likely to be cable and satellite customers than DTT users. Vodafone considered that the interim DTT licence might be used to deliver "niche channels" with little appeal.
- 2.44 Vodafone considered that Ofcom should properly assess whether the interim use of the 600 MHz spectrum could delay the clearance of the 700 MHz spectrum for mobile services before proceeding. It maintained that it was premature to award the spectrum for DTT in the current circumstances. Instead, it should be used as a "migration pool" to assist a managed process to clear the 700 MHz spectrum of DTT, when required.
- 2.45 However, in the event that Ofcom was still determined to proceed with an award for temporary DTT multiplexes, the proposed 12 months notice period for termination of the licence should apply immediately (as opposed to Ofcom being able to exercise it on 31 December 2017 at the earliest). This would allow the maximum flexibility to react to any 700 MHz developments, while providing benefits for citizens, consumers and broadcasters in the interim.

⁵ <http://stakeholders.ofcom.org.uk/consultations/aip13/>

Ofcom response

- 2.46 We note that some of the issues raised by Vodafone have already been considered in our earlier UHF Strategy Consultation. The subsequent UHF Statement concluded that interim use of the 600 MHz band for DTT would support *two* core objectives i.e. both a release of the 700 MHz spectrum for mobile broadband *and* the protection of on-going provision of DTT. We have addressed Vodafone's response in light of this conclusion.
- 2.47 We first consider the main substance of Vodafone's position that the 600 MHz band may be needed ahead of the end of 2018 in order to support a DTT migration of services out of the 700MHz band - and that the proposed interim DTT licence could prevent this happening. We then consider the various mitigation suggestions put forward by Vodafone, namely to cancel or delay the award of the interim DTT licence or, if not, to change the terms of the licence so that Ofcom is able from the outset to revoke the licence on the basis of providing 12 months notice.

Timetable for possible 700 MHz clearance

- 2.48 Before considering the potential timetable, it is important to note that no decisions have yet been taken in regard to future use of the 700 MHz band. Our current expectation is that co-primary allocation of the band for mobile services will be confirmed on a Europe-wide basis at the next World Radio-communications Conference in 2015 (WRC15). Any clearance of DTT from the 700MHz band would then be likely to take a number of years to achieve.
- 2.49 However, we accept Vodafone's point that there has been some additional momentum towards an earlier change of use in the months since we published our Consultation in February. For example, the French Government has already decided in principle that the 700 MHz spectrum should be assigned to mobile broadband. Such a move makes it more likely that international agreements could be reached early on mobile and DTT band plans. We have considered the Vodafone response in the light of these possible new international developments.
- 2.50 We have, in particular, considered what the earliest conceivable date might be for re-tuning to occur that would require access to frequencies in the 600 MHz band. Having done so, it is clear that under some aggressive timetables, clearance retuning might commence before the expiry of our proposed minimum licence duration of the end of 2018.
- 2.51 Although such a timetable is *possible*, we do not currently think it is *probable*, because of the still significant co-ordination required to produce revised mobile and broadcasting band plans. Since radio waves travel across borders, the DTT plan especially would need to be coordinated internationally with all of the UK's neighbours. A fully revised frequency plan for delivery of DTT in all of the spectrum below the cleared 700 MHz band would need to be developed.
- 2.52 Given the number of countries involved and the potentially divergent agendas and interests of each of these players, there is considerable uncertainty over the timetable for changes. It is therefore too early to say when any changes impacting on the frequencies in the 600 MHz band could be implemented. However, we accept Vodafone's characterisation of the position - that there are certain scenarios where frequency changes could be required before the end of 2018.

Migration of services

- 2.53 Although we agree that there are scenarios where frequency changes could be required before the end of 2018 we do not accept Vodafone's argument that the 600 MHz interim award for DTT would prevent the migration of some services from the 700 MHz band from beginning before the end of the minimum licence period (end of 2018).
- 2.54 We anticipate that any 700 MHz clearance would be conducted through a rolling programme of retunes, with different transmitters retuning at different times. Based on previous experience (with DSO and with the clearance of 800 MHz spectrum for 4G mobile) we anticipate that fully cleared spectrum would be available for release 2-3 years after the first retune took place.
- 2.55 Even if the retuning process needed to start before the end of 2018, we believe we might only need access to 600 MHz frequencies in a few areas before that date. There are a number of DTT sites where frequency changes would be required to enable a 700 MHz clearance, but which are not part of the proposed DTT interim network. Frequency changes could potentially start at those sites first. This means there is likely to be some flexibility for a 700 MHz transition to begin alongside the operation of new interim multiplexes.
- 2.56 In addition, before the retuning process started, extensive infrastructure changes would be required in order to enable DTT transmitters to operate at the revised frequencies. In particular, the antennas at a large number of DTT transmitter sites may need to be replaced with antennas designed to transmit signals at the new frequencies.
- 2.57 We anticipate that the infrastructure changes in question could start in advance of 2018. We do not believe that the start of infrastructure changes at individual transmitter sites would necessarily be impeded by the presence of the interim multiplexes in the 600 MHz band.
- 2.58 The points raised about the potential process for migrating services out of the 700 MHz band are relevant to how we should respond to the possibility of its earlier release. They are therefore taken into account in reaching our conclusions on the policy options, as set out in Section 3.

Mitigations to facilitate early 700MHz transition

- 2.59 We now consider the various mitigation suggestions put forward by Vodafone, beginning with the suggestion that the award of the interim DTT licence be cancelled.
- 2.60 We agree that there are certain scenarios under which an earlier transition of DTT out of the 700 MHz spectrum band might become desirable – but, for reasons set out above, we do not consider this situation is probable in reality, or that the existence of the interim DTT licence would prevent any migration activity from taking place before the end of the minimum licence period. The benefit of cancelling the award would therefore be limited.
- 2.61 Set against this are the benefits of making the 600 MHz spectrum available for temporary DTT multiplexes, as set out in the UHF Strategy statement. Not only will this provide benefits for citizens and consumers by making new services available through rooftop aerials, the award will also help to promote the more efficient use of spectrum by encouraging take-up of DVB-T2 and MPEG4.

- 2.62 For these reasons, we do not consider it appropriate to reopen the decisions set out and concluded in the UHF Strategy statement that the 600 MHz band should be awarded for temporary DTT multiplexes.
- 2.63 We have also considered whether or not the 600 MHz award should be delayed. In doing so, we have taken account of both potential current and future use, and exercised our judgment in light of the evidence available to us.
- 2.64 As noted above, it is possible that we may have more clarity on a likely timetable for a potential 700 MHz clearance in the coming months. On the other hand, there is a significant chance that this might not happen and that it may be some time before there is a high level of confidence on the timetable for a possible 700MHz clearance.
- 2.65 Under these circumstances we have had to balance the risk around timing of possible future use of the band for mobile broadband against the risk that a delay in licensing the band for DTT makes it unviable for such use.
- 2.66 As set out in our Consultation, we believe the commercial case for establishing temporary DTT multiplexes is marginal at best. A delay to the award would have the effect of shortening the guaranteed minimum duration of the licence, and reducing even further the opportunity for the licensee to make any return on their investment. We therefore believe there is a risk that a delay would, in effect, be the same as a cancellation. This would be to the detriment of DTT consumers and to the objectives set out in our UHF Strategy statement. We believe this risk outweighs any potential benefit that could be gained from a delay and, for this reason, we do not believe it is appropriate to delay the award.
- 2.67 Vodafone's other suggestion was that the terms of the licence be changed so that the notice period for termination can be issued from the outset. The purpose of this change would be to create the flexibility to allow the 600MHz band to be made available as and when required to facilitate 700MHz clearance.
- 2.68 Given that there are certain scenarios where frequency changes could be required before the end of 2018 we have given further consideration to the question of whether it would be appropriate to introduce greater flexibility into the 600MHz licence. Our consideration of this question is set out in Section 3.

Responses from parties with an interest in PMSE/WSDs

- 2.69 Four stakeholders with an interest in PMSE and/or WSDs submitted responses to the Consultation, in addition to the BFI (which defined itself as having an interest in both DTT broadcasting and in PMSE). They were the British Entertainment Industry Radio Group (BEIRG), Brian Copsey, the Weightless Special Interest Group, and Sky (in the context of its particular interest in WSDs).
- 2.70 BEIRG said that PMSE users require access to both the 600 and 700 MHz bands and that clearance of the 700 MHz band should not be permitted until alternative bands with long term security of access are identified. The award of the 600 MHz spectrum for DTT alongside PMSE is therefore welcomed. However, BEIRG expressed concerns that the band may also be accessed by WSDs, and pointed to the potential for interference to PMSE.
- 2.71 More generally, BEIRG expressed concern about the delay in Ofcom taking a decision about interim use of the 600 MHz band. It stated that many PMSE users had already vacated the 600 MHz band, in the expectation that it would be denied to

them, and had invested in equipment enabling them to use alternative bands. BEIRG argued such investment may not have been necessary as they are now being allowed to stay in the band for the time being. Concern was also expressed by BEIRG about the future clearance of the 700 MHz band and the possibility of compensation for displaced PMSE users.

- 2.72 BEIRG agreed the spectrum should be awarded as a single 'lot' in terms of DTT, but said some of the spectrum should be held back for PMSE. An ideal solution, BEIRG said, would be for PMSE to be assigned a contiguous block of three channels (24 MHz) within the 600 MHz band as primary users.
- 2.73 Mr Brian Copsey considered that at least 24 MHz of contiguous spectrum should be allocated to PMSE, and on a permanent basis.
- 2.74 Sky expressed concern that Ofcom was being overly-protective of DTT. As a result, there was a risk that the UK would be left behind as other countries led the drive to more innovative and efficient uses of the spectrum, such as WSDs. Sky was particularly critical of the role of the UK Joint Planning Project (JPP) in the consideration of interference issues affecting WSDs – especially its role in providing Ofcom with information used to apportion interleaved spectrum for non-DTT uses.
- 2.75 Sky pointed out that the interests of non-DTT users are not represented on the JPP, which was a significant omission. As a result, the protections afforded to DTT may be disproportionate. Sky sought wider representation on the JPP or, failing that, the establishment of an independent supervisory board made up of a wider range of 600 MHz band users.

Ofcom response to submissions relating to PMSE/WSDs

- 2.76 The Consultation stated that Ofcom considers PMSE and WSDs to be important and valuable users of spectrum. However, as set out in the UHF Strategy Statement, we believe our core objectives (i.e. supporting both a future release of the 700 MHz spectrum and an on-going DTT platform) will be best achieved by making the 600 MHz band available in the interim for primary DTT use. PMSE and WSDs should have access on a secondary basis to any interleaved spectrum left unused by DTT.
- 2.77 The suggestion by BEIRG and Brian Copsey that 24 MHz of contiguous spectrum should instead be reserved for PMSE therefore runs counter to both our overall objective and to the decisions we have already taken in the UHF Strategy Statement. The purpose of the 600 MHz award Consultation was to put into effect those earlier policy decisions, not reopen them.
- 2.78 We consider that an exclusive reservation of spectrum for PMSE could restrict the development of interim 600 MHz multiplexes. This would not best support the long-term strategy for use of the UHF spectrum. In reality, it is likely that only two of the six channels available in the 600 MHz band (excluding Channel 36) would be used for DTT in any particular location. We also said that PMSE could have access to Channel 36, at all times and locations that this channel is not needed for any propagation study.
- 2.79 On the question of our original intention to close access to the 600 MHz band by PMSE users: we signalled the on-going availability of the spectrum for PMSE as soon as it became clear that it was likely to be needed for DTT - and that interleaved spectrum would continue to be available. Until that time, we had expected the band to be auctioned on a use-neutral basis fully cleared of other users, including PMSE.

- 2.80 The relationship between DTT and PMSE within interleaved spectrum is well understood, and is taken into account by the PMSE co-ordination process. The impact of new DTT for PMSE users is likely to be similar to that of existing DTT multiplexes, and parameters are set out in our proposed technical licence conditions. As stated in the Consultation, we are conducting further work on the precise arrangements for the co-existence of WSDs and other devices.
- 2.81 Other issues raised by BEIRG regarding 700 MHz clearance are not the subject of this current Consultation.
- 2.82 We note Sky's points regarding the membership of the JPP. These are not issues directly related to the award of the 600 MHz spectrum and we will address them separately through stakeholder engagement outside this current Consultation process.

Other responses

- 2.83 We received two other responses. One of these was confidential. The other was submitted anonymously, but was not confidential.
- 2.84 This latter response questioned the technical licence conditions that would apply to the Rowridge transmitter on the Isle of Wight that serves much of southern England. The anonymous respondent proposed a requirement for the inclusion of vertical as well as horizontal polarisation to enable the reception of signals from new multiplexes without having to conduct additional aerial work.

Ofcom response

- 2.85 At digital switchover, the Rowridge transmitter added a vertically polarised signal in addition to the horizontally polarised signals that it has traditionally broadcast. The vertical component was added to maintain coverage in a few areas where reception of horizontally polarised signals could have become degraded due to the changing nature of incoming interference from continental Europe, following their switchover to digital broadcasting.
- 2.86 The choice of whether to use vertical or horizontal polarisation or both will be for the interim multiplex licensee to determine. While some viewers may have vertically polarised aerials, this is only likely to be the case in the areas likely to be affected by the continental interference. The majority of households could continue to use their existing horizontally polarised aerial.

Consultation on the Limitation Order

- 2.87 Our Consultation on the award of the 600 MHz band set out the reasons why we considered it appropriate to grant a single licence covering all of the relevant spectrum.
- 2.88 We said there will only be a relatively short period of time in which the licensee will be able to utilise the spectrum. Therefore, if a decision is taken to award the spectrum, it is important that Ofcom is able to grant a licence to enable new DTT use as quickly as possible. We said the licence would be issued under the Wireless Telegraphy Act 2006 (WTA) using a process and rules set out in accordance with the Wireless Telegraphy (Licensing Procedures) Regulations 2010.

- 2.89 Where we consider it appropriate to impose limitations on the use of particular frequencies for the purposes of securing the efficient use of the spectrum, we are required under section 29 of the WTA to make an order imposing the limitations. Accordingly, we published on 29 April 2013 a formal notice of our proposal to make a Limitation Order in connection with the spectrum award⁶. We invited stakeholders and interested parties to comment on the proposal.
- 2.90 The consultation on the Limitation Order closed on 28 May 2013. We received four responses.
- 2.91 One respondent, considered that paragraph 3 of the draft Order was not consistent with Ofcom's statutory duties. In particular, the respondent stated that the criteria referred to in the Order repeated certain sections of the Act, where it is not necessary for it to do so. Further, the respondent submitted that Ofcom had been selective in the way that it had cited its statutory duties. Finally, the respondent stated that by referring to only some of our statutory duties, Ofcom might be implying that it has not considered other aspects of its duties in relation to the spectrum award.
- 2.92 A short response was received from Arqiva, the only party to submit a NoITA. The response supported Ofcom's proposal to award the spectrum as a single 'lot'.
- 2.93 Another response was submitted by BEIRG. This restated the views set out in BEIRG's response to the 600 MHz spectrum award Consultation and in particular, its general support for awarding the spectrum under a single licence, but its belief that the 'lot' should be smaller in order to leave 24 MHz of contiguous spectrum vacant for PMSE as a primary user.
- 2.94 Finally, a response was received from Sheffield Local Television Ltd (SLTV), the party awarded the digital licence to operate local television services for the Sheffield area. SLTV said there is no transmission frequency available that allows most of Sheffield to be reached by signals from the main Emley Moor transmitter site. Rather than using an alternative site, SLTV would like to make use of a single 600MHz channel on Emley Moor to improve coverage. The SLTV response said it supported the terms of the proposed Limitation Order "*in so far as they would permit this use*". In particular it noted that limitation "*is not restricted to just one licence but for a limited number of licences*".
- 2.95 SLTV requested Ofcom to ensure that the desirability of the 600MHz spectrum being available for local television in Sheffield, and any similar local television needs elsewhere, is taken into account.

Ofcom response

- 2.96 Under section 29 of the WTA, Ofcom must, when making a Limitation Order, set out the criteria that will be applied when determining the limit on the number of licences granted⁷. It is therefore appropriate that Ofcom set out the specific criteria in the draft Limitation Order and that these reflect Ofcom's statutory duties. Ofcom has, in identifying the appropriate criteria, carefully considered all its statutory duties and identified those that are most relevant to this particular award. The reason that we have not set out section 3(2)(c) of the Communications Act 2003 in its entirety is because it is in our view only the first part of this duty which is most relevant to this

⁶ http://stakeholders.ofcom.org.uk/binaries/consultations/600-mhz-limitation/summary/600_MHz_Limitation_Condoc.pdf

⁷ Section 29(3) of the Wireless Telegraphy Act 2006.

particular award. By enabling multiplex services to be provided on an interim basis in the 600 MHz band, we are creating the opportunity for further high quality television content to be made available to viewers.

- 2.97 The points raised by BEIRG have largely been addressed earlier in this section and in Annex 1. We note that, notwithstanding its preference for a smaller 'lot', BEIRG supported the award of a single licence in preference to an award of multiple licences.
- 2.98 In relation to the points raised by SLTV, Ofcom has already made a decision as to the appropriate interim use of the 600 MHz band, as set out in the UHF Strategy Statement and further reflected in the consultation on the Limitation Order. In particular, we intend to grant a single licence for the purposes of providing DTT multiplexes using DVB-T2 and MPEG4. The local service in the Sheffield area will not be deploying these technologies.
- 2.99 While the Order does not preclude the possibility that Ofcom may, in future, grant further licences, we currently do not have plans to do so, nor to make the 600 MHz band available for the purposes of broadcasting local television.
- 2.100 Ofcom now intends to make the Limitation Order, as set out in Annex 3 of this Statement. We have made some non-substantive drafting changes.

Section 3

Conclusions and next steps

- 3.1 As discussed in the previous section, responses to the Consultation showed broad support for our proposals for awarding the 600 MHz spectrum. Consequently, and for reasons already set out, we are not making any changes to the proposed service obligations to be included in the licence.
- 3.2 However, in Section 2, we noted there were certain scenarios in which it might be desirable to have access to frequencies in the 600 MHz spectrum band covered by the interim DTT licence earlier than the minimum licence term running to the end of 2018. We address this issue first, before summarising our decisions on the award.

Options for retaining flexibility

- 3.3 In the Consultation, we proposed an interim 600 MHz licence duration running to 2026 but with a minimum licence term to the end of 2018. This would enable us to revoke the licence at the end of 2018 (at the earliest). We did this on the premise that the 600 MHz spectrum was unlikely to be needed to support the clearance of the 700 MHz band before that date - and that this was likely to be the minimum term to make the proposition viable for a DTT multiplex operator.
- 3.4 In light of the possibility that we might – in some circumstances - wish to begin a transition of DTT services out of the 700 MHz spectrum sooner than the end of 2018, we have considered the options for providing additional flexibility. In doing so, we aim to support both the long-term objective of releasing the 700 MHz, whilst also maintaining a viable interim DTT award.
- 3.5 We have considered two options (which are not mutually exclusive):
- Revising the licence conditions in order to enable particular frequencies to be varied/substituted
 - Shortening the minimum licence duration
- 3.6 In considering these options, we have borne in mind that, whilst it is possible that we may require early access to some 600 MHz frequencies under certain scenarios, these are not the most probable scenarios. We have also noted that a 700 MHz transition could begin alongside the operation of new interim multiplexes in the 600 MHz band. This is because there are a number of transmission sites that will not be part of the proposed interim DTT multiplex network. We believe that infrastructure changes could begin at a number of sites alongside transmissions from the temporary multiplexes licensed under this interim DTT award. We noted further that a transition plan could include consideration of the use of Channel 36 (see Section 2).

Enabling frequencies to be varied/substituted

- 3.7 We have considered the practicalities of including provision in the licence to allow us to vary or substitute the frequencies awarded in the 600 MHz band, as necessary, in order to facilitate the start of a transition of DTT from the 700 MHz spectrum. Under such a provision, the variation or substitution of frequencies could be achieved with the consent of the licensee, or through appropriate notice followed by consideration

of representations from the licensee, in accordance with the procedures set out in the legislation.

- 3.8 We believe it would be in the interests of all parties involved in any DTT re-planning, including the holder of the 600MHz interim DTT licence, for progress to be made with mutual co-operation. Ensuring some additional flexibility in use of licensed frequencies would increase the ability to begin any migration of DTT services from the 700 MHz band to the 600 MHz band before the end of the minimum licence duration, if this was desirable.
- 3.9 The ability to vary/substitute frequencies would provide additional flexibility (over and above the approaches referred to in paragraph 3.6 above) to begin any transition process whilst still allowing consumers to receive the temporary DTT services in the meantime. We would seek to conduct any transition – if needed – in line with the following principles:
- If retuning activity becomes necessary, we would aim to commence this in areas of the country where there are no 600MHz interim multiplexes being broadcast;
 - If access to 600MHz frequencies was required where interim multiplexes are being broadcast, we would seek to avoid the most populous areas (i.e. those areas of most significance for the licensee) until after 2018; and
 - Where it was unavoidable for us to have access to frequencies in the 600MHz band we would, where possible, seek to make alternative frequencies available for the DTT services provided under the 600 MHz licence.
- 3.10 We believe that the inclusion of this flexibility to vary/substitute frequencies is desirable. It will allow us to award the spectrum in the way we originally intended in the UHF Strategy statement, whilst leaving the flexibility to react to changing circumstances.

Shortening the minimum licence duration

- 3.11 We have also considered the case for providing further flexibility by shortening the minimum licence duration (i.e. in addition to the approaches referred to in paragraph 3.6 above and a provision to enable the variation or substitution of frequency allocations). A shorter minimum licence period would allow us to reclaim the whole of the 600 MHz spectrum earlier, in order to ensure a transition of DTT from the 700 MHz band.
- 3.12 We believe a minimum licence duration of significantly shorter duration than that which we proposed – such as the 12 months minimum duration proposed by Vodafone – would have the effect of rendering an award of the 600MHz band unviable. We see little prospect of additional DTT services being rolled out if there was only a guaranteed tenure of 12 months.
- 3.13 We have considered whether a lesser reduction in the minimum licence duration might achieve the appropriate balance between the risk of hindering a potential early 700 MHz clearance, and the risk of frustrating the interim 600 MHz award. One challenge in identifying an alternative minimum term is that we cannot know now the date at which it might be beneficial to begin any migration. If, for example, we set the minimum licence term to mid 2018, this would not address the most aggressive – though very unlikely - scenario under which a migration could begin in 2017. At the

same time, there is a risk that shortening the minimum licence duration by any meaningful degree makes the award commercially unviable.

- 3.14 Having considered these factors, we have concluded that shortening the minimum licence duration is unlikely to add material additional benefit, having taken account of:
- The low probability of any 700 MHz clearance going ahead before the end of 2018;
 - The fact that some migration could begin in any case without the need to terminate the licence before the end of 2018 through exploitation of the flexibility discussed in paragraph 3.6 above;
 - The additional flexibility we can gain through a provision in the licence to allow us to vary or substitute particular frequencies.
 - The distinct possibility that any significant shortening of the initial period introduces a risk of making the award commercially unviable.
- 3.15 On balance, therefore, we do not consider it is necessary or appropriate to reduce the minimum licence term to before the end of 2018.

Conclusions on the award

- 3.16 In view of the assessments above, we will now proceed with the award of the 600MHz spectrum on the basis that it may become necessary for Ofcom to have early access to some frequencies in specific areas. If this is required, we will seek to achieve this in the first instance through dialogue with the licensee.
- 3.17 We have revised the draft licence to introduce the flexibility outlined above⁸. The full revised licence is attached at Annex 2.
- 3.18 In addition, following a request from Arqiva, we have revised the minimum notice period for revocation of the licence to 24 months – from 12 months - subject to the minimum duration running to the end of 2018⁹. We consider this is helpful to the licensee, and its potential customers, in planning investment. We consider the revised minimum notice period to be manageable from Ofcom’s point of view because re-planning and infrastructure work tend to operate over longer timescales than 24 months.
- 3.19 In all other respects, we will proceed with the award of the 600 MHz spectrum as set out in the proposals in the Consultation. Our reasons for doing so are set out in our responses to specific points raised by stakeholders, as addressed in Section 2 of this document and in Annex 1.
- 3.20 In summary, we will:
- Make a Limitation Order
 - Award the spectrum as a single licence under the WTA in order establish temporary DTT services using DVB-T2/MPEG4 technology

⁸ Clause 4, clause 18(9) and Schedule 1 clause 7(a)

⁹ Clause 3(6)(ii)

- Award the licence to Arqiva, the only party to submit a NoITA
- Issue the licence with a term running until 2026, but with a minimum duration to the end of 2018, subject to 24 months notice
- Include a licence provision allowing us to vary/substitute frequencies, if required, subject to consultation with the licensee
- Include a requirement for services to be rolled out within 12 months of any licence award; and for coverage within two years to reach 50% of UK households, including a minimum of 25% coverage in each of the UK Nations
- Include a requirement that roll-out in the first 12 months should reach a minimum of 10% coverage, with a requirement that at least one video stream is available to consumers
- Exclude Channel 36 from the award so that it may be used for a signal propagation study
- Allow interleaved spectrum left unused by DTT to be used for PMSE and WSDs

Annex 1

Responses to specific Consultation questions

A1.1 This Annex sets out in more detail the responses to specific questions asked in the Consultation.

Question 1: Do you agree with our proposal not to include Channel 36 in the spectrum to be awarded?

- A1.2 All of the respondents who submitted an answer to this question supported the proposal to exclude Channel 36 from the award. However, Arqiva submitted a proviso; if, in due course, the 700 MHz band is to be cleared of DTT services, Channel 36 should be made available in advance of such a clearance to facilitate the migration of services out of the 700 MHz band. In particular, the timing of availability should acknowledge the need for extra spectrum for “parking bands” during any transition.
- A1.3 BEIRG said Channel 36 should be excluded from the immediate award, but that it should be considered in the medium to long-term as part of a contiguous band of spectrum reserved for PMSE.
- A1.4 The Weightless Special Interest Group said our proposal to allow Channel 36 to be used for PMSE until it was needed for the propagation study should also apply to its potential use for WSDs.

Ofcom response

- A1.5 We proposed excluding channel 36 from the award because of its potential use for a signal propagation study. We continue to believe this would be a potentially valuable temporary use of the spectrum, and on that basis, have excluded it from this award.
- A1.6 If, in due course, it appears that channel 36 may be useful in achieving the transition of DTT services from the 700 MHz to the 600 MHz band, we will consider at that stage whether or not it would be appropriate to facilitate this. It may also be appropriate to consider alternative uses of the spectrum, including use for PMSE as proposed by BEIRG.
- A1.7 In response to the Weightless Special Interest Group, we believe there may be adverse consequences for the propagation study if WSDs are given access via the geo-location database. A specific aim of the trial is to record how propagation changes with time, especially the proportion of time when signals propagate much better than is normal. As these periods of unusual propagation typically occur for relatively short periods of time only, it is particularly important that the trial receiver locations are not subject to interference from sources outside the trial to avoid recording anomalous results.

- A1.8 Introducing WSDs and PMSE into channel 36 both potentially introduce some degree of risk that the propagation trial results might become corrupted, should the trial receivers incorrectly receive signals from a PMSE or WSD transmitter rather than a propagation trial transmitter. PMSE devices will however be licensed and should any anomalous results be found when the trial results are analysed, these can be checked against the locations where PMSE was licensed in channel 36. The same checks could not be carried out for WSDs as their locations would not be recorded.
- A1.9 We therefore judge that the risk of permitting WSDs access to channel 36 is materially greater than for PMSE. We therefore confirm that we will permit PMSE use of channel 36 where it is not needed for the purposes of the propagation study.

Question 2: Do you agree that the 600 MHz band should be awarded as a single 'lot'?

- A1.10 There was general support for the proposal to award the spectrum as a single 'lot' from all but three respondents. Broadcasters in particular described the approach as pragmatic and the most likely to deliver the desired outcome. One confidential response suggested that splitting the award into two separate 'lots' would promote welcome competition among DTT multiplex operators. Another confidential response raised the possibility of making part of the 600 MHz spectrum available to other broadcasters to improve coverage in specific areas.
- A1.11 BEIRG said it was generally supportive of the proposal, in preference to the band being divided into a number of smaller 'lots'. However, BEIRG said an ideal solution would be for PMSE to be assigned its own contiguous block of three channels (24 MHz) as primary users. Mr Brian Copsey also said that at least 24 MHz of contiguous spectrum should be allocated to PMSE, and on a permanent basis.
- A1.12 Vodafone stated its general objection to the award of the 600 MHz spectrum for interim DTT multiplexes.

Ofcom response

- A1.13 The decision to award the spectrum for interim DTT use was taken in the UHF Strategy Statement. The Statement said that PMSE and WSDs should have access to the interleaved spectrum not used by DTT. The primacy of DTT was to support the long-term objective of supporting the release of the 700 MHz for mobile broadband. This would be helped if the 600 MHz band was used by DTT multiplexes using DVB-T2/MPEG4 technology. This would help drive consumer take-up of more efficient receiver equipment.
- A1.14 In light of this objective, we believe it is appropriate that PMSE and WSDs have access to the interleaved spectrum that is not required by DTT, but that they do not have primary use of certain parts of the band. In reality, it is likely that only two of the six channels available in the 600 MHz band (excluding Channel 36) would be used for DTT in any particular location. In many areas away from high density populations, no 600 MHz spectrum would be used at all, because services are unlikely to be rolled out so extensively. In those areas, both PMSE and WSDs would have access to large blocks of spectrum.
- A1.15 Given that only one party submitted a NoITA for the spectrum, we do not consider the question of dividing the award for DTT into more than one 'lot' as relevant any longer. Nor do we consider that part of the spectrum should be used to improve coverage in specific areas, as suggested by a confidential respondent. The

spectrum is being made available on the basis that it would be used for DTT services using DVB-T2/MPEG4. This would not be the case under the scenario outlined by the respondent.

Question 3: Do you agree that the licence should have an end date of 2026, with a minimum term until 31 December 2018 and a clause enabling it to be revoked after that date, subject to at least 12 months notice having been given?

- A1.16 Most respondents supported our proposals. Three respondents – Vodafone, BEIRG and Brian Copsey – disagreed with the proposal for an initial term running to the end of 2018. Vodafone considered that the spectrum may be required before the end of 2018 to enable a transition of DTT out of the 700 MHz band to make way for mobile services (Please see Section 2 above).
- A1.17 BEIRG said the minimum licence term should be extended to 2026 because PMSE users needed a longer timeframe to give them confidence to invest in equipment to operate in the 600 MHz spectrum. Brian Copsey said the proposed minimum licence duration should apply to DTT services but not to PMSE.
- A1.18 The BBC and one confidential respondent suggested the full duration of the licence should be specified as 12 years rather than running to the end of 2026. Although our proposals would in affect give the licensee an additional period (i.e. 13 years, as opposed to 12) the BBC said it was important that all multiplex licences were consistent with the durations of existing Broadcasting Act (BA) licences. The BBC said the licence could be awarded under the BA instead of under the WTA as proposed by Ofcom.

Ofcom response

- A1.19 The points made by Vodafone are addressed in Section 2 of the Statement.
- A1.20 The nature of this interim award is that we must have the flexibility to reclaim the spectrum if it is needed for any future transition of DTT out of the 700 MHz band. It may be possible for PMSE and WSDs to continue in the 600 MHz band even after a UHF spectrum re-plan. However, the Consultation focussed mainly on the primary use of the spectrum, DTT, and the minimum licence duration relates to that. We do not believe it is appropriate at this stage to make separate specific provision for PMSE and/or WSDs, since this could fetter our discretion on re-planning in future.
- A1.21 In response to the BBC's point about a 12 year duration, we do not believe that this is material in the present circumstances. As set out in the Consultation, and in this Statement, Ofcom may need to reclaim the spectrum as early as the end of 2018. This means that we need to retain a more flexible approach for this particular award. In our view proceeding under the WTA – as opposed to the BA, where the default term for a television multiplex licence is 12 years - is therefore a more flexible and appropriate option. A maximum duration running to 2026 aligns the licence with the latest-expiring existing multiplex licences.

Question 4: Do you agree with the proposed service obligations for the licence, including roll-out and coverage obligations to ensure 50% UK coverage (and a minimum 25% in each UK Nation)?

- A1.22 All but one of the respondents from the broadcasting industry suggested that the service obligations should be set at a higher level than proposed. Arqiva said the

proposals did not go far enough in maximising the positive impact of temporary multiplexes for the long-term sustainability of the DTT platform.

- A1.23 The BBC said the proposed service obligations were inadequate to ensure take up of more efficient broadcast technologies. The Corporation identified a risk that the “modest” obligations might lead to unattractive offerings, and suggested new services should be rolled out to more viewers; more channels should be delivered (including a minimum number free-to-air); and that there should be a minimum of two multiplexes.
- A1.24 Freeview and Digital UK also proposed higher service obligations. Freeview said there should be a requirement for new channels to be broadcast in HD – in particular, the most popular channels currently transmitted in SD.
- A1.25 Brian Copsey said the obligations should be reassessed once spectrum had been allocated to PMSE.

Ofcom response

- A1.26 Ofcom’s response to the matters raised above is set out in Section 2 of this Statement.
- A1.27 We have not revised our proposals on PMSE from those set out in the UHF Strategy Statement. No reassessment is in our view needed in light of an exclusive allocation for PMSE.

Question 5: Do you agree with our proposals to apply a cost-based fee instead of AIP?

- A1.28 No respondent disagreed with our proposal to apply a cost-based fee.

Ofcom response

- A1.1 In our Consultation (paragraph 5.38) we proposed a single fee of £180,000 to cover the period up to the end of the minimum licence term (31 December 2018). This represented a contribution towards the costs of making this award plus our annual administration costs.
- A1.2 In light of the consultation responses we will proceed with the proposed fee level. However, this decision cannot be seen as a precedent for the approach we might take to developing cost-based fee proposals more generally, where we expect to propose consideration of a broader definition of our spectrum management costs.
- A1.3 The timetable for award of the 600 MHz licence has been such that we needed to set out proposals and make a decision on the level of fees in advance of our wider consideration of cost based fees. The decision recognises the short term nature of the 600 MHz licence and the importance of getting the spectrum into use quickly for the benefit of consumers and citizens. Fees will be reviewed if interim use of the 600 MHz band continues beyond 2018.

Question 6: Do you have any other comments on the non-technical licence conditions that are being proposed?

- A1.4 Vodafone, BEIRG and Brian Copsey commented on our proposed non-technical licence conditions. Vodafone proposed an additional sub-clause should be inserted into the licence allowing revocation or variation “*in order to enable Ofcom to comply with EU legislation without derogation*”. This was related to ensuring the spectrum could be reclaimed in the event of an EU decision to harmonise the 700 MHz spectrum for use by mobile broadband.
- A1.5 BEIRG and Brian Copsey said that new DTT services should not be allowed to cause interference to PMSE.

Ofcom response

- A1.6 Ofcom notes Vodafone’s point that the licence should include a provision that enables it to be revoked in order to comply with the requirements of EU legislation. This was reflected in paragraph 3(3) of the draft licence that was consulted upon, under which Ofcom can revoke the licence in accordance with Schedule 1(8)(5) of the WTA. These statutory provisions enable the licence to be varied or revoked if, in Ofcom’s opinion, it is necessary or expedient to do so in the interests of national security, or for the purpose of securing compliance with an international obligation of the UK. We think that paragraph 3(3) of the licence is sufficient as drafted.
- A1.7 In response to the points raised by Mr Copsey, we do not expect DTT services to cause undue interference to PMSE in frequencies licensed for this secondary use.

Question 7: Do you agree with the technical licence conditions we propose to include in the licence?

- A1.8 No respondent disagreed with the technical licence conditions except BEIRG and Brian Copsey. BEIRG restated the point made in response to question 6 above about the protection of PMSE. Mr Copsey said licensees should ‘sign up’ to all of his points made in submission to questions 2 to 6 (exclusive reservation of 24 MHz of spectrum for PMSE; a minimum licence term for PMSE of 2026; and no interference for PMSE users).

Ofcom response

- A1.9 Ofcom has addressed BEIRG’s point under question 6, and Mr Copsey’s points under question 2 to 6 above.

Question 8: Do you agree with our proposal not to restrict any party from participating in this award process?

- A1.10 Three respondents with a direct interest in broadcasting made comments about our proposal not to restrict any particular party from participating in the award process. A confidential respondent also made points we have considered.
- A1.11 The BBC repeated its submissions made earlier that the minimum service obligations should be set at a higher level to ensure a winning applicant supported the policy objectives for the 600 MHz spectrum. The Corporation said the strategic benefits for a rival platform operator might outweigh the cost of fulfilling such modest obligations.
- A1.12 Digital UK and Freeview also pointed to the risk of strategic bidding. Digital UK said all applicants should be required to support the aims of a vibrant and competitive

DTT platform. The British Film Institute said participation should be restricted to applicants wishing to use the spectrum for free to air HD services.

- A1.13 BEIRG said only applicants who could demonstrate that their proposals would have no negative impact on PMSE should be allowed to apply. Brian Copsey said he agreed with our proposals only if all parties involved 'sign up' to his points under questions 2 to 6 above.

Ofcom response

- A1.14 Ofcom has already set out its view with respect to the appropriate service level obligations. Given that we have received only one NoITA, the notion of restricting the participation of other parties in this award is no longer relevant.

Question 9: Do you have any comments on the proposed award process in the case of a single compliant Notice of Intention to Apply?

- A1.15 Only Brian Copsey commented about the award process in the event of a single complaint NoITA. He said he agreed with our proposals only if the party involved 'signed up' to his other points regarding the protection of PMSE.

Ofcom response

- A1.16 Mr Copsey's points are addressed under questions 2 to 6 above.

Question 10: Do you have any comments on the proposed award process in the case of more than one compliant Notice of Intention to Apply?

- A1.17 Arqiva, the BBC and Freeview expressed reservations about the proposed award process in the event of us receiving more than one NoITA. All expressed concerns that the spectrum might be awarded to a party which did not necessarily support the objectives of the UHF Strategy. As with their responses to other questions, they urged Ofcom to reconsider the service and coverage obligations in the licence.
- A1.18 Vodafone said the indeterminate nature of the licence duration meant that an auction could deliver perverse outcomes. In particular, the licence holder would have an incentive to frustrate a revocation order.
- A1.19 Brian Copsey said he agreed with our proposals only if all parties involved 'sign up' to his other points regarding PMSE.

Ofcom response

- A1.20 We have not needed to consider further the award process that might apply if more than one compliant NoITA was received, as this situation did not arise.

Annex 2

Revised licence

WIRELESS TELEGRAPHY ACT 2006

OFFICE OF COMMUNICATIONS

WT Television Multiplex Service LICENCE

Licence no: xxxxxx

Date of issue: dd/Month/yyyy

Commencement Date: dd/Month/yyyy

1. The Office of Communications (Ofcom) grants this licence under the Wireless Telegraphy Act 2006 (“the Act”) to:

[Insert company name, (“the Licensee”) company registration number, company address]

to establish, install and use wireless telegraphy stations and/or wireless telegraphy apparatus as described in Schedule 1 (“the Radio Equipment”) subject to the terms set out below.

LICENCE TERM

2. The Licence shall commence on [DATE TO BE INSERTED] (“the Commencement Date”) and shall continue in force until 31 December 2026, unless revoked by Ofcom in accordance with Paragraphs 4 to 6 below, or surrendered by the Licensee.

LICENCE REVOCATION AND VARIATION

3. Pursuant to section 10 and Schedule 1, paragraph 8 of the Act, Ofcom may not revoke this Licence under Schedule 1, paragraph 6 of the Act except:
 - (1) at the request of, or with the consent of, the Licensee;
 - (2) in accordance with paragraph 6 of this Licence;
 - (3) in accordance with Schedule 1 paragraph 8(5) of the Act;
 - (4) if there has been a breach of a term of the Licence;
 - (5) if it appears to Ofcom to be necessary or expedient to revoke this Licence for the purposes of complying with a direction by the Secretary of State given to Ofcom under section 5 of the Act or under section 5 of the Communications Act 2003;
 - (6) for reasons related to the management of the radio spectrum, provided that in such case:

- (i) the power to revoke is exercised after 31 December 2018; and
 - (ii) before exercising the power to revoke, at least twenty-four (24) months' notice is given in writing to the Licensee, such notice not to be given before 31 December 2016.
4. Ofcom may revoke or vary this Licence by notification in writing to the Licensee and in accordance with Schedule 1, paragraphs 6, 6A and 7 of the Act.

RADIO EQUIPMENT USE

5. The Licensee must ensure that the Radio Equipment is established, installed and used only in accordance with the provisions, restrictions and requirements specified in the Schedules to this Licence. Any proposal to amend any detail specified in the Schedules to this Licence must be agreed with Ofcom in advance and implemented only after this Licence has been varied or reissued accordingly.
6. The Licensee must ensure that the Radio Equipment is operated in compliance with the terms of this Licence and is used only by persons who have been authorised in writing by the Licensee to do so and that such persons are made aware of, and of the requirement to comply with, the terms of the Licence.
7. The Licensee must comply with any direction given to it by Ofcom for the purposes of any relevant international obligation, or pursuant to a notification to Ofcom by the Secretary of State, including (but not limited to) any notification by the Secretary of State to transmit specified announcements, or to refrain from transmitting such announcements or other specified material.
8. The Licensee must comply with the restrictions and requirements set out in the Schedules to this Licence.

FEES

9. The Licensee shall, on the grant of the Licence, pay to Ofcom the sum of one hundred and eighty thousand pounds (£180,000) for the period beginning with the Commencement Date until 31 December 2018 in accordance with sections 12 and 13 of the Act and the regulations made thereunder.
10. After 31 December 2018 the Licensee shall each year pay to Ofcom the relevant fee(s) as provided in section 12 of the Act and the regulations made thereunder on or before the fee payment date notified in writing to the Licensee.
11. The Licensee must comply with the regulations referred to in paragraphs 9 and 10 and with the relevant terms, provisions and limitations of the Licence, failing which Ofcom may revoke this Licence.
12. The Licensee shall pay interest to Ofcom on any amount which is due under the terms of this Licence or provided for in any regulations made by Ofcom under sections 12 and 13(2) of the Act from the date such amount falls due until the date of payment,

calculated with reference to the current Bank of England base rate. In accordance with section 15 of the Act, any such amount and any such interest is recoverable by Ofcom.

13. If the Licence is surrendered or revoked, no refund, whether in whole or in part, of any amount which is due under the terms of this Licence or provided for in any regulations made by Ofcom under sections 12 and 13(2) of the Act will be made, except at the absolute discretion of Ofcom in accordance with any regulations made under the Act.

ACCESS AND INSPECTION

14. The Licensee shall permit a person authorised by Ofcom:

- (1) to have access to the Radio Equipment; and
- (2) to inspect this Licence and to inspect, examine and test the Radio Equipment at any and all reasonable times or, when in the opinion of that person an urgent situation exists, at any time to ensure that the Radio Equipment is being used in accordance with the terms of this Licence.

CHANGES

15. This Licence is not transferable. The transfer of rights and obligations arising by virtue of this licence may, however, be authorised in accordance with regulations made by Ofcom under powers conferred by section 30(1) and section 30(3) of the Act.
16. The Licensee must give prior notice to Ofcom in writing of any proposed change to the Licensee's name and address from that recorded in the Licence.

MODIFICATION, RESTRICTION AND CLOSEDOWN

17. A person authorised by Ofcom may require any of the radio stations or radio apparatus that comprise the Radio Equipment to be modified or restricted in use, or temporarily or permanently closed down immediately if in the opinion of the person authorised by Ofcom:
- (1) A breach of a term of the Licence has occurred; and/or
 - (2) The use of the Radio Equipment is causing or contributing to undue interference to the use of the other authorised radio equipment.
18. Ofcom may require any of the radio stations or radio apparatus that comprise the Radio Equipment to be modified or restricted in use, or temporarily closed down either immediately or on the expiry of such period as may be specified in the event of a national or local state emergency being declared. Ofcom may only exercise this power after a written notice is served on the Licensee or a general notice applicable to holders of a named class of Licence is published.

INTERPRETATION

19. In this Licence, including the Schedules thereto:

- (1) The “Act” referred to in this Licence is the Wireless Telegraphy Act 2006;
- (2) The expression “a.g.l” means above ground level;
- (3) The expression “DTT” means digital terrestrial television and the associated expression “DTT transmitter” means a transmitter used to transmit DTT services;
- (4) The expression “digital television additional service” (“DTAS”) has the meaning given in section 24(1) of the Broadcasting Act 1996 (as amended);
- (5) The expression “digital television programme service” (“DTPS”) has the meaning given in section 1(4) of the Broadcasting Act 1996 (as amended);
- (6) The expression “EPG” means Electronic Programme Guide, which is the on-screen guide which lists the available channels and programme schedule data on a digital television platform;
- (7) The expression “e.r.p.” means the effective radiated power. This is the power fed to the antenna multiplied by the maximum gain of the antenna with respect to a half-wave dipole;
- (8) The establishment, installation and use of the Radio Equipment shall be interpreted as establishment and use of stations and installation and use of apparatus for wireless telegraphy as specified in Section 8(1) of the Act;
- (9) The expression “frequencies” means the frequencies specified from time to time in row “G” headed “Frequency Range” in Table 1 of Schedule 1 to this Licence, and a “frequency” means any of the frequencies;
- (10) The expression ‘interference’ shall have the meaning given by section 115 of the Act;
- (11) The expression “JPP” means the Joint Planning Project¹⁰;
- (12) The expression “logical channel number” means the unique identification number for each DTPS or DTAS carried on a DTT multiplex service or radio multiplex service, which assigns the service to a position on the electronic programme guide;
- (13) The expression “multiplex service” shall have the meaning set out for “television multiplex service” in section 241(2) of the Communications Act 2003;
- (14) The expression “network identification” means the unique label which identifies each television multiplex service;
- (15) The expression “PMSE” means programme making and special events;

¹⁰ JPP is a spectrum planning group comprising Ofcom, BBC and multiplex operators

- (16) The expression “service identification” means the unique label which identifies each DTPS and DTAS on a DTT multiplex;
 - (17) The expression “transport stream components” means the individual packets of data that together make up the transport stream that carries all the services and service information within a television multiplex service;
 - (18) The expression “video stream” means a sequence of digital information that conveys a broadcast programme service consisting principally of moving images and accompanying sound;
 - (19) The expression “white space technologies” means low power licence exempt devices that makes opportunistic use of spectrum that is not used by the Licensee or other licensees in specific geographic areas;
 - (20) The expression “wireless telegraphy apparatus” and “wireless telegraphy station” shall have the meanings given by section 117 of the Act;
 - (21) The expression “800 MHz DTT Clearance” means the removal of Television frequency allocations from the 790 – 862 MHz part of the spectrum.
20. The Schedules to this Licence form part of this Licence together with any subsequent Schedules which Ofcom may issue as a variation to this Licence at a later date; and
21. The Interpretation Act 1978 shall apply to this Licence as it applies to an Act of Parliament.

SCHEDULE 1 TO LICENCE NUMBER XXXX

Licence Category: Spectrum Access Licence 550 to 606 MHz Band (excluding 590 to 598 MHz)

1. Description of Radio Equipment Licensed

In this Licence, the Radio Equipment means any radio transmitting and receiving stations and/or any radio apparatus that transmits in accordance with the requirements of the Schedules to the Licence.

2. Interface requirements for the Radio Equipment use

Use of the Radio Equipment shall be in accordance with the following Interface Requirement:

IR 2022 Broadcast transmitters operating in frequency bands administered by Ofcom (98/34/EC Notification number 2007/124/UK), as may be amended to take account of new band edges due to 800 MHz DTT clearance.

In addition, spurious emissions shall comply with the limits defined in CEPT/ERC/REC 74-01 Unwanted Emissions in the Spurious Domain.

3. Co-ordination at Frequency and Geographical Boundaries

The Licensee shall ensure that the Radio Equipment is operated in compliance with such co-ordination and sharing procedures as may be notified to the Licensee by Ofcom from time to time.

4. Cross-border coordination

The Licensee shall ensure that the Radio Equipment is operated in compliance with such cross-border coordination agreements and sharing procedures as may be notified to the Licensee by Ofcom from time to time.

5. Purpose of Use

- (1) The Licensee shall use the frequencies for the purpose of providing a DTT multiplex service, using the DVB-T2 technical standard and MPEG4 advanced video coding compression.
- (2) The Licensee shall, where it is not transmitting on certain frequencies for the purposes of providing a digital terrestrial television multiplex, make these available for use by PMSE providers and the operators of white space technologies by notifying such frequencies to Ofcom.

6. UK coverage and roll-out obligations

The Licensee shall comply with the following coverage and roll-out obligations:

- (1) the Licensee must establish at least one DTT transmitter that transmits at least one video stream capable of being received by at least ten per cent (10%) of the households in the UK within twelve (12) months of the Commencement Date;
- (2) the Licensee must, within twenty-four (24) months of the Commencement Date, ensure that DTT services transmitted in accordance with the Schedules to this Licence are capable of being received by at least fifty per cent (50%) of the households in the UK, including a minimum of twenty-five per cent (25%) of the households in each of England, Scotland, Wales and Northern Ireland.

7. Technical Requirements

The Licensee shall, in relation to all Radio Equipment listed in Schedule 2 to this Licence, comply with the following technical requirements set out in Table 1 below and in Schedule 2:

- (a) The Radio Equipment may only be used for wireless telegraphy on the frequencies set out from time to time in row "G" headed "Frequency Range" in Table 1 below;
- (b) The transmission parameters of the Radio Equipment must comply with those set out in Table 1 and Schedule 2;
- (c) The maximum permitted effective radiated power shall not exceed that specified in the column headed "Maximum Effective Radiated Power" in Table 1 and Schedule 2.

Table 1: Details of transmitting operating conditions

A	Class of Emission	8M00X7FXF
B	Transmission Type	DVB-T2 32K 256QAM code rate 2/3 ('extended carrier mode' operation is permitted)
C	Video Encoding Standard	MPEG4 Advanced Video Coding
D	Maximum Effective Radiated Power	As recorded in Schedule 2 of this Licence. Individual assignments may operate at power levels up to the 'Maximum Coordinated ERP' as shown in Schedule 2. The recorded 'Nominal ERPs' are the power levels most likely to be employed in practice by the licensee.

E	Description of Antenna	To meet the antenna restrictions template diagrams recorded in Schedule 4 of this Licence. The templates provided in Schedule 4 show the required directional restrictions with respect to a 'Maximum Coordinated ERP' for each assignment. Where the licensee transmits an individual assignment at a lower power level than the coordinated ERP, the relative directional radiated power must not exceed that shown in the associated internationally coordinated restrictions template diagram.
F	Polarisation	As recorded in Schedule 2 of this Licence
G	Frequency Range	550 – 606 MHz (excluding 590 – 598 MHz). The specific frequencies which may be used at each transmitter site are recorded in Schedule 2 of this Licence.
H	Spurious Emissions	As defined in UK Interface Requirements 2022 (as may be amended to take account of new band edges)
I	Frequency Tolerance	1 kHz
J	Frequency Offset	Positive or negative frequency offsets (+166.67 kHz or -166.67 kHz) may be employed with the prior approval of Ofcom

8. Technical Standards

- (1) The Licensee shall ensure that the signals being transmitted attain as high standards in terms of technical quality and reliability as is reasonably practicable and shall, in particular (but without limiting the foregoing), ensure that it complies with the technical standards contained in the following¹¹:
- (a) The Television Technical Performance Code (including the Reference Parameters referred to therein);
 - (b) The Code of Practice on Changes to Existing Transmission and Reception Arrangements;
 - (c) The Guidance Note on Test Transmissions.
- (2) The Licensee shall minimise, to the extent reasonably practicable, any disruption caused to the viewers of its DTT transmissions as a result of any changes made by the Licensee to its Radio Equipment or transmission infrastructure.

¹¹ These documents are available on the Ofcom website: www.ofcom.org.uk

- (3) The Licensee shall ensure that appropriate network-based measures are taken to minimise undue interference with existing DTT services transmitting in 470 – 550 MHz and PMSE services transmitting in the frequencies 606 – 614 MHz.
- (4) The Licensee shall ensure that any EPG service included in the multiplex service is provided using published technical standards which are freely available and have been standardised either by a recognised European Standardisation body or such other industry body as recognised by the European Commission.

9. Interoperability

The Licensee shall ensure that any labelling of transport stream components, including logical channel numbers, service identification and network identification, used in the provision of a television multiplex service does not conflict with the labelling used by other operators providing technically compatible services.

10. Information provision

- (1) During the period that this Licence remains in force, unless consent has otherwise been given by Ofcom, the Licensee shall compile and maintain accurate records of the following details relating to the Radio Equipment:

- (a) Postal address (including post code);
- (b) National Grid Reference (to 100 meters resolution);
- (c) Antenna height (a.g.l) and type;
- (d) Radio frequencies on which the Radio Equipment is transmitting;
- (e) The technical characteristics of the Radio Equipment in terms of transmission;

and the Licensee must produce these records if requested by a person authorised by Ofcom.

- (2) (2) The Licensee must submit to Ofcom copies of such parts of the records detailed in sub-paragraph (1)(a) above at such intervals as Ofcom shall notify to the Licensee. Without prejudice to any information which Ofcom is required by law to publish or disclose, Ofcom may, from time to time, publish such extracts of this information as it sees fit, including:

- (a) Details of the Radio Equipment which is operational;
- (b) The location of the Radio Equipment, aggregated by outward postcode;
- (c) The frequencies used by the Radio Equipment.

SCHEDULE 2 TO LICENCE NUMBER XXXX

Station name	National Grid Reference (GB)	UHF Channel	Nominal ERP (watts)	Maximum Coordinated ERP (watts)	Maximum Coordinated ERP (dBW)	Polarisation (V/H)	Antenna Height (m a.g.l.)
Crystal Palace	TQ33947122	33	15600	200000	53	H	212
Crystal Palace	TQ33947122	35	13500	200000	53	H	204
Winter Hill	SD66051446	31	14000	100000	50	H	237
Winter Hill	SD66051446	37	14000	100000	50	H	237
Sutton Coldfield	SK11350032	33	6400	200000	53	H	264
Sutton Coldfield	SK11350032	35	8300	200000	53	H	264
Craigkelly	NT23338724	33	2300	50000	47	H	131
Craigkelly	NT23338724	34	3000	50000	47	H	131
Black Hill	NS83116456	32	9400	100000	50	H	264
Black Hill	NS83116456	35	12500	100000	50	H	264
Divis	NW41193098	33	4400	100000	50	H	148
Divis	NW41193098	34	3400	100000	50	H	148
Pontop Pike	NZ14785270	33	9500	100000	50	H	145
Pontop Pike	NZ14785270	34	9500	100000	50	H	145
Rowridge	SZ44728654	31	25000	200000	53	H/V	156
Rowridge	SZ44728654	37	25000	200000	53	H/V	156
Wenvoe	ST11077416	31	4200	100000	50	H	258
Wenvoe	ST11077416	37	12200	100000	50	H	258
Bilsdale	SE55319622	31	5000	100000	50	H	296
Bilsdale	SE55319622	37	5000	100000	50	H	296
Waltham	SK80942333	31	1400	50000	47	H	260
Waltham	SK80942333	37	1400	50000	47	H	260
Hannington	SU52745680	32	10000	50000	47	H	142
Hannington	SU52745680	34	5500	50000	47	H	142
Belmont	TF21828365	33	15400	200000	53	H	342
Belmont	TF21828365	35	15400	200000	53	H	342
Oxford	SP56711054	31	5800	100000	50	H	161

Award of the 600 MHz spectrum band

Oxford	SP56711054	37	5800	100000	50	H	161
Tacolneston	TM13059572	31	10000	100000	50	H	200
Tacolneston	TM13059572	37	10000	100000	50	H	200
Ridge Hill	SO63033336	32	4200	20000	43	H	162
Ridge Hill	SO63033336	34	4200	20000	43	H	162
Emley Moor	SE22291288	32	16700	195000	52.9	H	279
Emley Moor	SE22291288	34	16700	195000	52.9	H	279
Mendip	ST56434883	33	17500	100000	50	H	192
Mendip	ST56434883	35	17500	100000	50	H	192
Sandy Heath	TL20474944	32	8400	200000	53	H	220
Sandy Heath	TL20474944	34	8400	200000	53	H	220
Durriss	NO76418994	32	12500	100000	50	H	315
Durriss	NO76418994	35	12900	100000	50	H	315
Angus	NO39484078	31	4500	20000	43	H	230
Angus	NO39484078	37	4500	20000	43	H	230
Bluebell Hill	TQ75736134	32	1400	20000	43	H	49
Bluebell Hill	TQ75736134	34	1400	20000	43	H	49
Sheffield	SK32448706	31	200	1000	30	V	48
Sheffield	SK32448706	37	200	1000	30	V	48
Moel-y-Parc	SJ12337013	32	7300	20000	43	H	236
Moel-y-Parc	SJ12337013	34	5000	20000	43	H	236
Caldbeck	NY29954259	32	5400	100000	50	H	331
Caldbeck	NY29954259	35	3600	100000	50	H	331
Caradon Hill	SX27327079	31	10500	100000	50	H	234
Caradon Hill	SX27327079	37	2500	100000	50	H	234
Beacon Hill	SX85726197	33	4300	20000	43	H	100
Beacon Hill	SX85726197	34	1000	20000	43	H	100
Darvel	NS55753413	31	2600	20000	43	H	110
Darvel	NS55753413	37	2600	20000	43	H	110
Fenton	SJ90294510	32	140	2000	33	V	50

Fenton	SJ90294510	34	140	2000	33	V	50
Fenham	NZ21676487	31	80	400	26	V	51
Fenham	NZ21676487	37	80	400	26	V	51

SCHEDULE 3 TO LICENCE NUMBER XXXX

The restrictions and requirements set out in this Schedule 3 apply pursuant to Condition 10 of the Licence.

1. Local authorities and political bodies

(1) Subject to sub-paragraph (2), the following persons are not permitted to provide a DTT multiplex service under this Licence:

- (a) a local authority;
- (b) a body whose objects are wholly or mainly of a political nature;
- (c) a body affiliated to a body falling within paragraph (b);
- (d) an individual who is an officer of a body falling within paragraph (b) or (c);
- (e) a body corporate which is an associate of a body corporate falling within paragraph (b) or (c);
- (f) a body corporate in which a body falling within any of paragraphs (a) to (c) and (e) is a participant with more than a 5 per cent interest;
- (g) a body corporate which is controlled by a body corporate falling within paragraph (f);
- (h) a body which is controlled by a person falling within any of paragraphs (a) to (e) or by two or more such persons taken together; and
- (i) a body corporate in which a body falling within paragraph (h), other than one which is controlled:
 - (i) by a person falling within paragraph (d), or
 - (ii) by two or more such persons taken together, is a participant with more than a 5 per cent interest.

(2) Where a service is provided exclusively for the purposes of carrying out the functions of a local authority under section 142 of the Local Government Act 1972 (provision by local authorities of information relating to their activities), a person is not permitted to provide a DTT multiplex service by virtue of sub-paragraph (1) in relation to a licence to provide that service only if he would not be permitted to do so disregarding paragraph (a) of that sub-paragraph.

2. Religious bodies

(1) The following persons are not permitted to provide a DTT multiplex service:

- (a) a body whose objects are wholly or mainly of a religious nature;
- (b) a body which is controlled by a body falling within paragraph (a) or by two or more such bodies taken together;

- (c) a body which controls a body falling within paragraph (a);
- (d) a body corporate which is an associate of a body corporate falling within paragraph (a), (b) or (c);
- (e) a body corporate in which a body falling within any of paragraphs (a) to (d) is a participant with more than a 5 per cent interest;
- (f) an individual who is an officer of a body falling within paragraph (a); and
- (g) a body which is controlled by an individual falling within paragraph (f) or by two or more such individuals taken together.

3. Undue influence

- (1) A person is not permitted to provide a DTT multiplex service if in the opinion of Ofcom:
 - (a) any relevant body is, by the giving of financial assistance or otherwise, exerting influence over the activities of that person, and
 - (b) that influence has led, is leading or is likely to lead to results which are adverse to the public interest.
- (2) In sub-paragraph (1) "relevant body" means a person falling within paragraph 1(1)(a) to (f) or (i) above or a body which is controlled:
 - (i) by a person falling within paragraph 1(1)(a) to (e) above, or
 - (ii) by two or more such persons taken together.

4. General provision of information to Ofcom

- (1) The Licensee shall furnish to Ofcom in such manner and at such times as Ofcom may reasonably require such documents, accounts, returns, estimates, reports, notices or other information as Ofcom may (require for the purpose of exercising the functions assigned to it under the Act (but without prejudice to the generality of the foregoing):
 - (a) a declaration as to its corporate structure in such form and at such times as Ofcom shall specify; and
 - (b) such information as Ofcom may reasonably require from time to time for the purposes of determining whether the Licensee is on any ground not permitted to provide a television or radio multiplex service by virtue of any of the provisions within paragraphs 1, 2 and 3 of this Schedule 3.

5. Changes

- (1) Where the Licensee is a body corporate, the Licensee shall notify Ofcom:
 - (a) of proposals affecting shareholdings in the Licensee or any body corporate which controls the Licensee, or the directors of the Licensee or the directors of any body corporate which controls the Licensee, and of any proposals to enter into any arrangements of the type referred to in paragraph 5(2) below, by giving advance notice of such proposals where they are known to the Licensee as soon as reasonably practicable where such proposals would constitute a change in the persons having control over the Licensee within the meaning of paragraph 8 below; and
 - (b) of changes, transactions or events affecting shareholdings in the Licensee or any body corporate which controls the Licensee, or the directors of the

Licensee or the directors of any body corporate which controls the Licensee (irrespective of whether proposals for them have fallen to be notified) within 28 days of the Licensee becoming aware of any such change, transaction or event and where such change, transaction or event would constitute a change in the persons having control over the Licensee within the meaning of paragraph 8 below.

(2) The Licensee shall

- (a) notify Ofcom within 28 days if any person:
 - (i) holding or being beneficially entitled to 50 per cent. of the equity share capital in the Licensee or in any body corporate which controls the Licensee; or
 - (ii) possessing 50 per cent. of the voting power in the Licensee or any body corporate which controls the Licensee,

enters into any arrangement with any other participant in the Licensee or in any such body corporate which controls the Licensee as to the manner in which any voting power in the body possessed by either of them is to be exercised, or as to the omission by either of them to exercise such voting power.

(b) For the purposes of paragraph 5(2)(a):

- (i) "arrangement" includes any agreement or arrangement, whether or not it is, or is intended to be, legally enforceable;
- (ii) a person shall be treated as holding, or being beneficially entitled to, any equity share capital which is held by a body corporate which he controls or to which such a body corporate is beneficially entitled, and as possessing any voting power possessed by such a body corporate.

6. Prohibition on conveyance of unlicensed services

(1) The Licensee shall ensure that:

- (a) All DTPS broadcast under this Licence are provided by the holder of a DTPS licence under section 18 of the Broadcasting Act 1996 or by the BBC;
- (b) All DTAS broadcast under this Licence are provided by the holder of a licence under section 25 of the 1996 Act or by the BBC.
- (c) This Condition shall not apply to the provision of a DTPS or a DTAS by a person established and licensed (if required) to provide such a service in another EEA member state.

7. Interpretation

(1) In this Schedule 3:

"control"

- (a) in relation to a body corporate, shall be construed in accordance with subparagraph (4), and
- (b) in relation to any body other than a body corporate, means the power of a person to secure, by whatever means and whether directly or indirectly, that the affairs of the first-mentioned body are conducted in accordance with the wishes of that person;

"equity share capital" has the same meaning as in the Companies Act 1985;

"local authority"

- (a) in relation to England, means any of the following, that is to say, the council of a county, district or London borough, the Common Council of the City of London and the Council of the Isles of Scilly;
- (b) in relation to Wales, means a county council or county borough council;
- (c) in relation to Scotland, means a council constituted under section 2 of the Local Government etc (Scotland) Act 1994; and
- (d) in relation to Northern Ireland, means a district council;

"participant", in relation to a body corporate, means a person who holds or is beneficially entitled to shares in that body or who possesses voting power in that body;

- (2) For the purpose of determining the persons who are the associates of a body corporate for the purposes of this Schedule 3:
 - (a) an individual shall be regarded as an associate of a body corporate if he is a director of that body corporate, and
 - (b) a body corporate and another body corporate shall be regarded as associates of each other if one controls the other or if the same person controls both.
- (3) For the purpose of determining the persons who are an individual's associates for the purposes of this Schedule, the following persons shall be regarded as associates of each other, namely:
 - (a) any individual and that individual's husband or wife or civil partner and any relative, or husband or wife or civil partner of a relative, of that individual or of that individual's husband or wife or civil partner;
 - (b) any individual and any body corporate of which that individual is a director;
 - (c) any person in his capacity as trustee of a settlement and the settlor or grantor and any person associated with the settlor or grantor;
 - (d) persons carrying on business in partnership and the husband or wife or civil partner and relatives of any of them;
 - (e) any two or more persons acting together to secure or exercise control of a body corporate or other association or to secure control of any enterprise or assets;

and in this sub-paragraph "relative" means a brother, sister, uncle, aunt, nephew, niece, lineal ancestor or descendant (the stepchild or illegitimate child of any person, or anyone adopted by a person, whether legally or otherwise, as his

child, being regarded as a relative or taken into account to trace a relationship in the same way as that person's child); and references to a wife or husband shall include a former wife or husband and a reputed wife or husband and references to a civil partner shall include a former civil partner and a reputed civil partner.

- (4) For the purposes of this Schedule a person controls a body corporate if:
- (a) he holds, or is beneficially entitled to, more than 50 per cent of the equity share capital in the body, or possesses more than 50 per cent of the voting power in it; or
 - (b) although he does not have such an interest in the body, it is reasonable, having regard to all the circumstances, to expect that he would (if he chose to) be able in most cases or in significant respects, by whatever means and whether directly or indirectly, to achieve the result that affairs of the body are conducted in accordance with his wishes; or
 - (c) he holds, or is beneficially entitled to, 50 per cent of the equity share capital in that body, or possesses 50 per cent of the voting power in it, and an arrangement exists between him and any other participant in the body as to the manner in which any voting power in the body possessed by either of them is to be exercised, or as to the omission by either of them to exercise such voting power.
- (5) For the purposes of sub-paragraph (4)(c):
- (a) "arrangement" includes any agreement or arrangement, whether or not it is, or is intended to be, legally enforceable, and
 - (b) a person shall be treated:
 - (i) as holding, or being beneficially entitled to, any equity share capital which is held by a body corporate which he controls or to which such a body corporate is beneficially entitled, and
 - (ii) as possessing any voting power possessed by such a body corporate.
- (6) For the purposes of any provision of this Schedule which refers to a body controlled by two or more persons or bodies of any description taken together, the persons or bodies in question shall not be regarded as controlling the body by virtue of paragraph (b) of sub-paragraph 7(4) unless they are acting together in concert.
- (7) In this Schedule any reference to a participant with more than a 5 per cent interest in a body corporate is a reference to a person who:
- (a) holds or is beneficially entitled to more than 5 per cent of the shares in that body, or
 - (b) possesses more than 5 per cent of the voting power in that body.
- (8) Sub-paragraph 6(7) shall have effect subject to the necessary modifications in relation to other references in this Schedule:
- (a) to an interest of more than a specified percentage in a body corporate, or
 - (b) to an interest of a specified percentage or more in a body corporate.

8.

- (1) Subject to sub-paragraph 7(2) any reference in paragraph 7(1) above to a person:
- (a) holding or being entitled to shares, or any amount of the shares or equity share capital, in a body corporate, or
 - (b) possessing voting power, or any amount of the voting power, in a body corporate,

is a reference to his doing so, or being so entitled, whether alone or jointly with one or more other persons and whether directly or through one or more nominees.

- (2) For the purposes of this Schedule, a person's holding of shares, or possession of voting power, in a body corporate shall be disregarded if, or to the extent that:
- (a) he holds the shares concerned
 - (i) as a nominee,
 - (ii) as a custodian (whether under a trust or by a contract), or
 - (iii) under an arrangement pursuant to which he has issued, or is to issue, depositary receipts, in respect of the shares concerned, and
 - (b) he is not entitled to exercise or control the exercise of voting rights in respect of the shares concerned.

- (3) For the purposes of sub-paragraph 7(2)(b):
- (a) a person is not entitled to exercise or control the exercise of voting rights in respect of shares if he is bound (whether by contract or otherwise) not to exercise the voting rights, or not to exercise them otherwise than in accordance with the instructions of another, and
 - (b) voting rights which a person is entitled to exercise or of which he is entitled to control the exercise only in certain circumstances shall be taken into account only when those circumstances have arisen and for as long as they continue to obtain.

9.

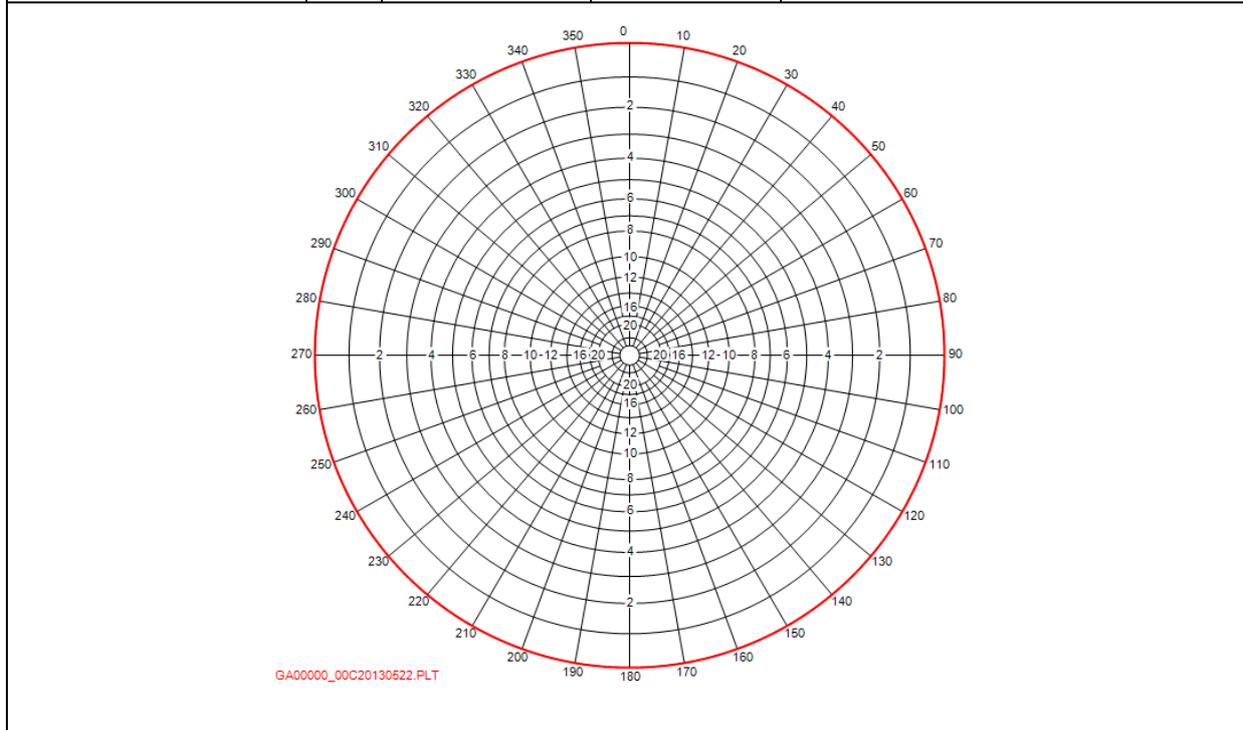
For the purposes of this Schedule the following persons shall be treated as connected with a particular person:

- (a) a person who controls that person,
- (b) an associate of that person or of a person falling within paragraph (a), and
- (c) a body which is controlled by that person or by an associate of that person.

SCHEDULE 4 TO LICENCE NUMBER XXXX**Assignments with Non Directional Antenna Patterns**

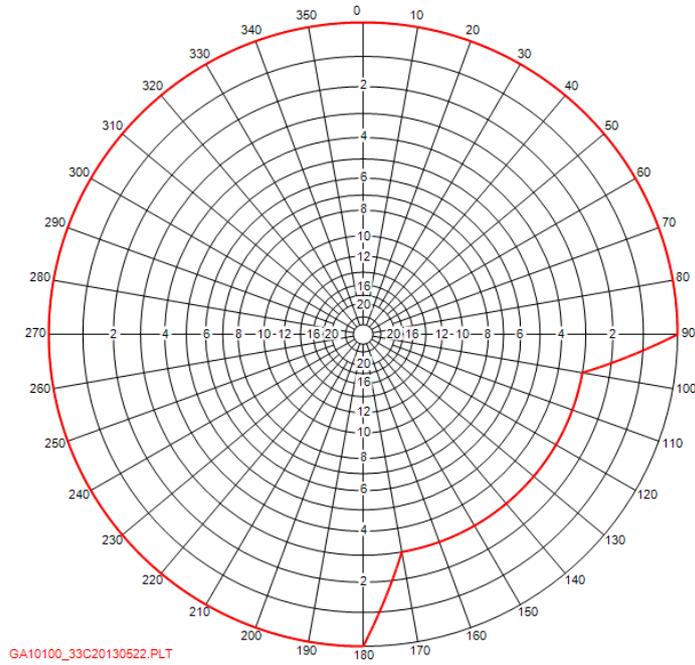
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Sutton Coldfield</i>	33	<i>53 dBW HP</i>	<i>264 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Sutton Coldfield</i>	35	<i>53 dBW HP</i>	<i>264 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Craigkelly</i>	33	<i>47 dBW HP</i>	<i>130 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Craigkelly</i>	34	<i>47 dBW HP</i>	<i>130 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Black Hill</i>	32	<i>50 dBW HP</i>	<i>315 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Black Hill</i>	35	<i>50 dBW HP</i>	<i>315 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Divis</i>	34	<i>50 dBW HP</i>	<i>185 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Pontop Pike</i>	33	<i>50 dBW HP</i>	<i>154 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Pontop Pike</i>	34	<i>50 dBW HP</i>	<i>154 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Rowridge</i>	31	<i>53 dBW H/V</i>	<i>177 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Bilsdale</i>	31	<i>50 dBW HP</i>	<i>296 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Bilsdale</i>	37	<i>50 dBW HP</i>	<i>296 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Waltham</i>	31	<i>47 dBW HP</i>	<i>307 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Waltham</i>	37	<i>47 dBW HP</i>	<i>307 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Belmont</i>	33	<i>53 dBW HP</i>	<i>370 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Belmont</i>	35	<i>53 dBW HP</i>	<i>370 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Oxford</i>	31	<i>50 dBW HP</i>	<i>187 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Ridge Hill</i>	32	<i>43 dBW HP</i>	<i>162 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Ridge Hill</i>	34	<i>43 dBW HP</i>	<i>162 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Emley Moor</i>	32	<i>52.9 dBW H</i>	<i>323 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Emley Moor</i>	34	<i>52.9 dBW H</i>	<i>323 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Durriss</i>	32	<i>50 dBW HP</i>	<i>312 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Durriss</i>	35	<i>50 dBW HP</i>	<i>312 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Angus</i>	31	<i>43 dBW HP</i>	<i>236 m</i>	<i>GA00000_00C20130522 (Omni)</i>
<i>Angus</i>	37	<i>43 dBW HP</i>	<i>236 m</i>	<i>GA00000_00C20130522 (Omni)</i>

Sheffield	31	30 dBW VP	48 m	GA00000_00C20130522 (Omni)
Sheffield	37	30 dBW VP	48 m	GA00000_00C20130522 (Omni)
Moel-y-Parc	32	43 dBW HP	233 m	GA00000_00C20130522 (Omni)
Moel-y-Parc	34	43 dBW HP	233 m	GA00000_00C20130522 (Omni)
Caldbeck	32	50 dBW HP	340 m	GA00000_00C20130522 (Omni)
Caldbeck	35	50 dBW HP	340 m	GA00000_00C20130522 (Omni)
Darvel	31	43 dBW HP	158 m	GA00000_00C20130522 (Omni)
Darvel	37	43 dBW HP	158 m	GA00000_00C20130522 (Omni)
Fenton	32	33 dBW VP	50 m	GA00000_00C20130522 (Omni)
Fenton	34	33 dBW VP	50 m	GA00000_00C20130522 (Omni)
Fenham	31	26 dBW VP	51 m	GA00000_00C20130522 (Omni)
Fenham	37	26 dBW VP	51 m	GA00000_00C20130522 (Omni)

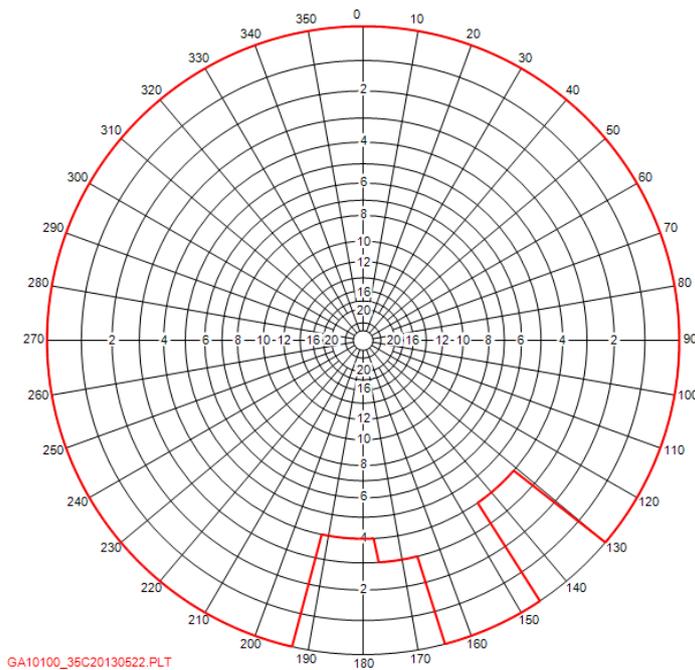


Assignments with Directional Antenna Patterns

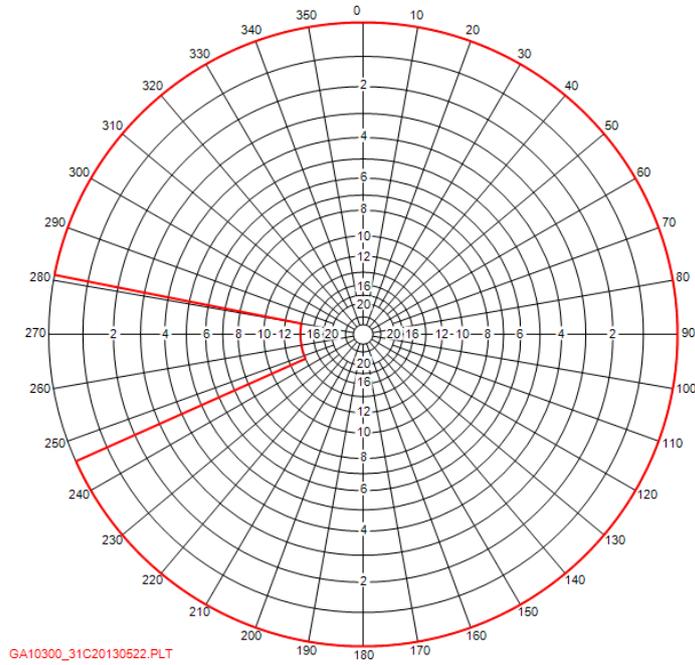
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Crystal Palace</i>	<i>33</i>	<i>53 dBW HP</i>	<i>211 m</i>	<i>GA10100_33C20130522.PLT</i>



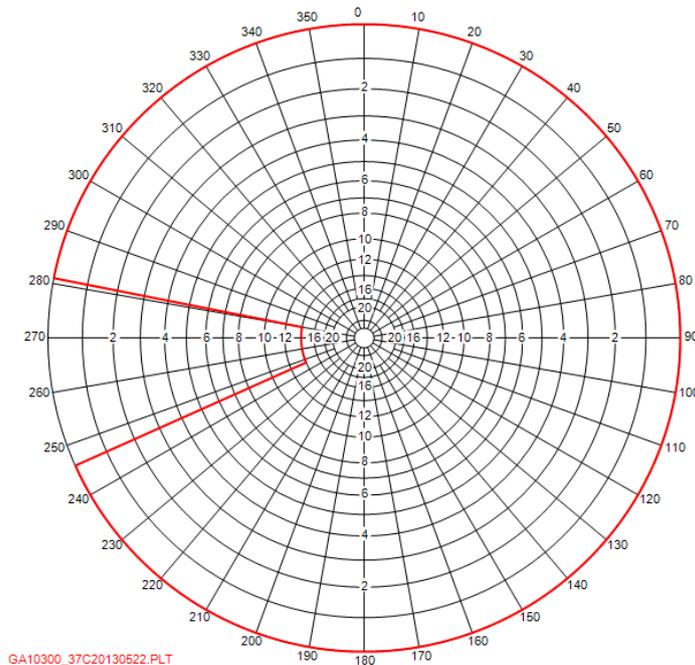
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Crystal Palace</i>	<i>34</i>	<i>53 dBW HP</i>	<i>211 m</i>	<i>GA10100_35C20130522.PLT</i>



Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Winter Hill	31	50 dBW HP	294 m	GA10300_31C20130522.PLT

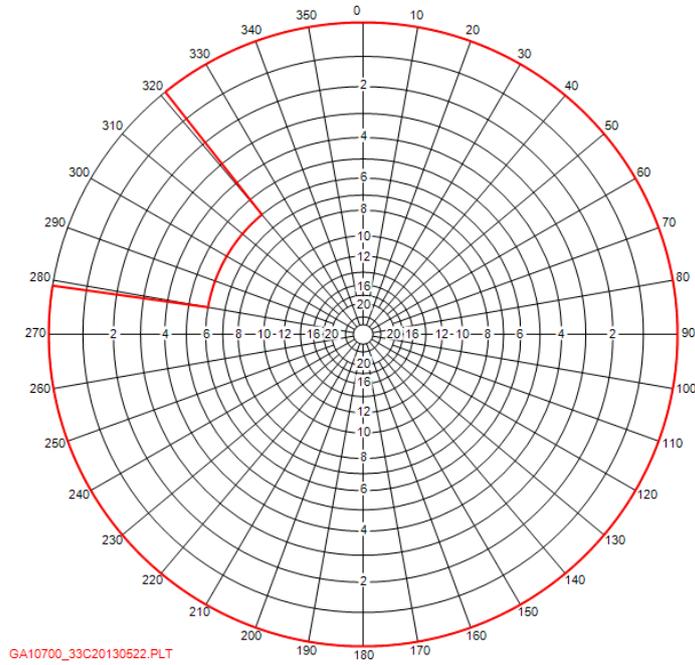


Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Winter Hill	37	50 dBW HP	294 m	GA10300_37C20130522.PLT

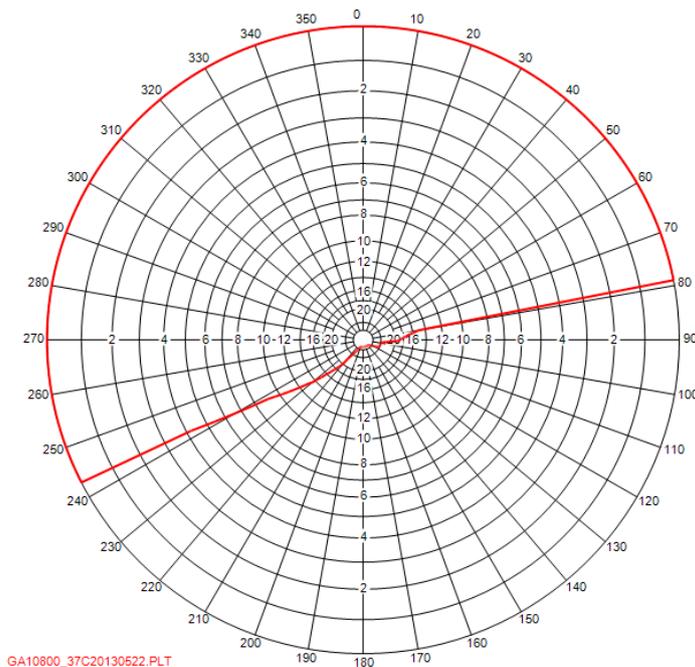


Award of the 600 MHz spectrum band

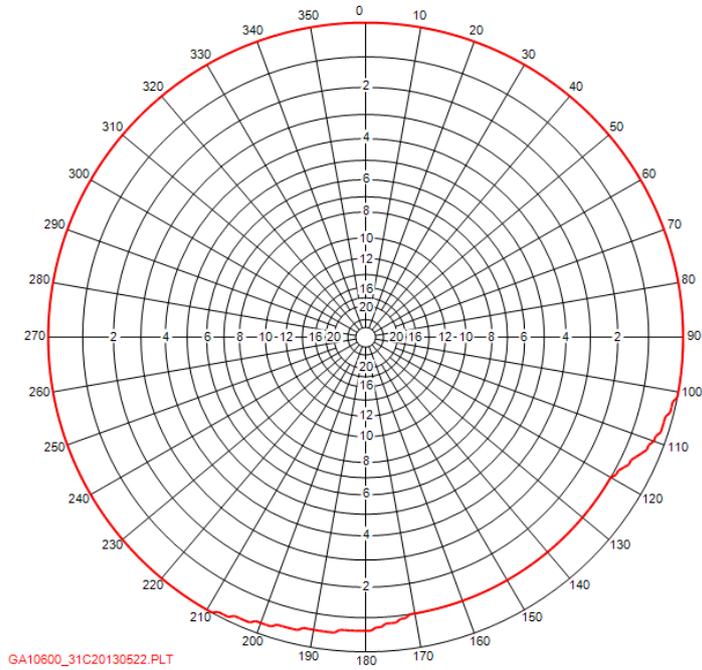
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Divis</i>	33	50 dBW HP	185 m	GA10700_33C20130522.PLT



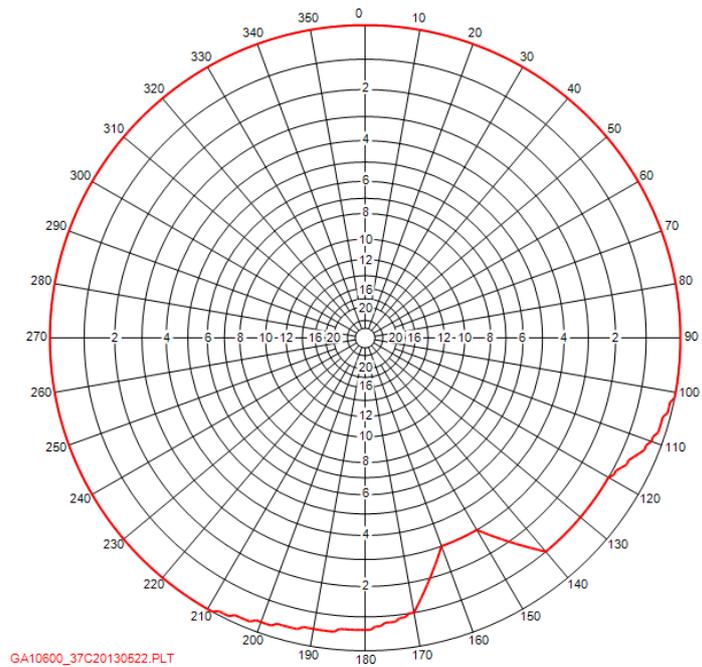
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Rowridge</i>	37	53 dBW H/V	177 m	GA10800_37C20130522.PLT



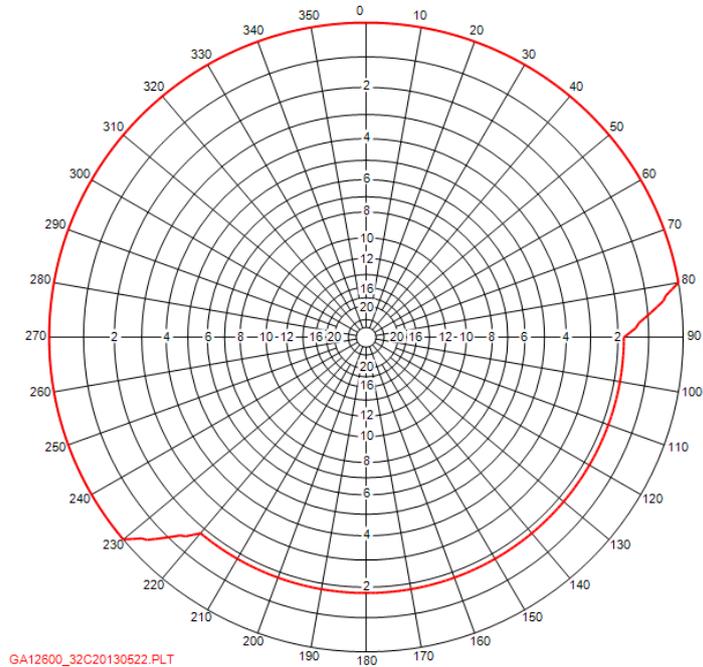
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Wenvoe	31	50 dBW HP	265 m	GA10600_31C20130522.PLT



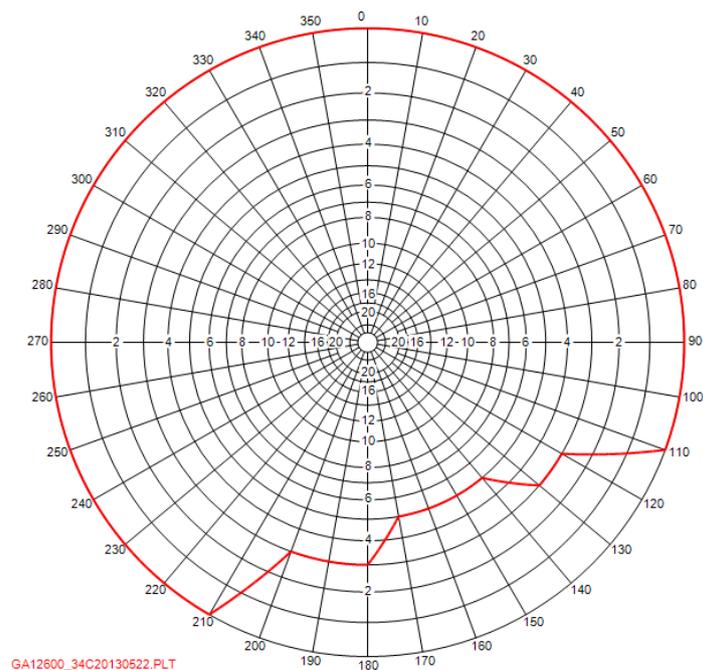
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Wenvoe	37	50 dBW HP	265 m	GA10600_37C20130522.PLT



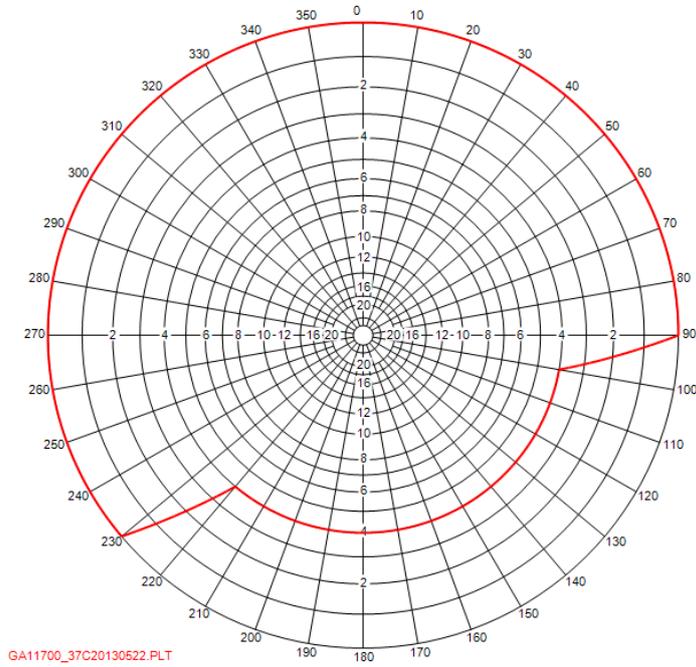
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Hannington	32	47 dBW HP	139 m	GA12600_32C20130522.PLT



Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Hannington	34	47 dBW HP	139 m	GA12600_34C20130522.PLT

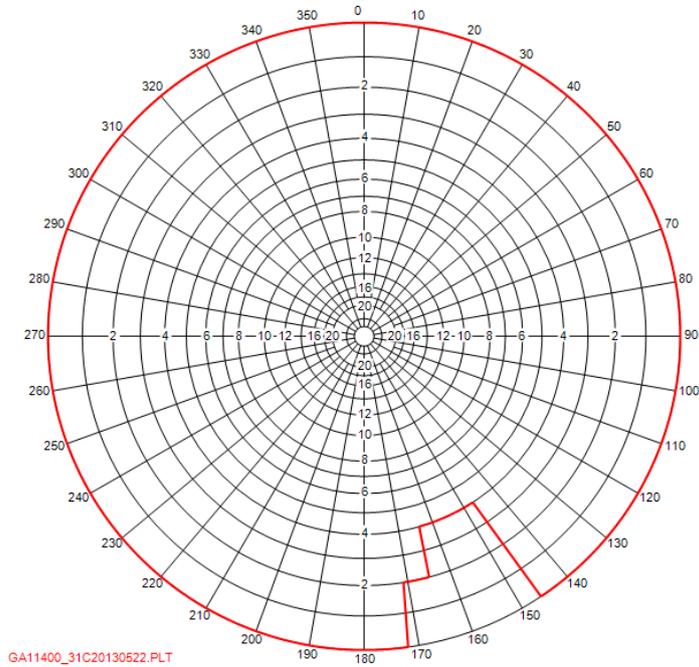


Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Oxford	37	50 dBW HP	187 m	GA11700_37C20130522.PLT

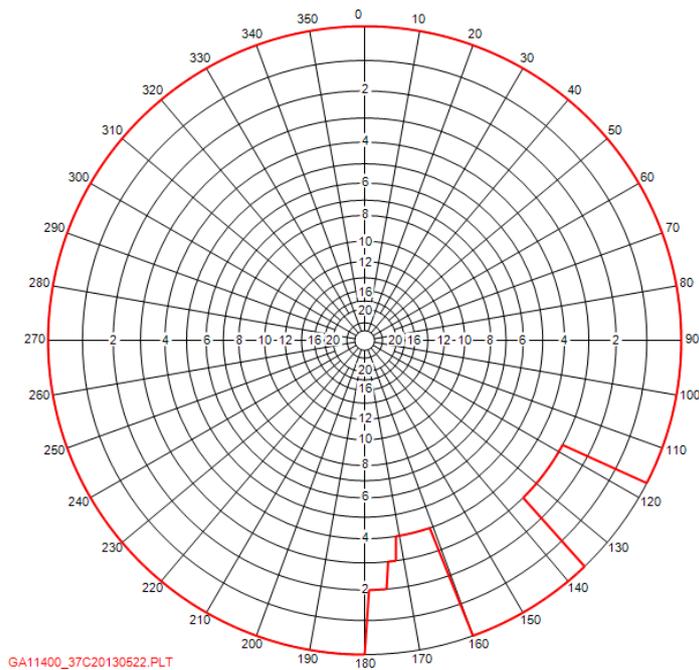


Award of the 600 MHz spectrum band

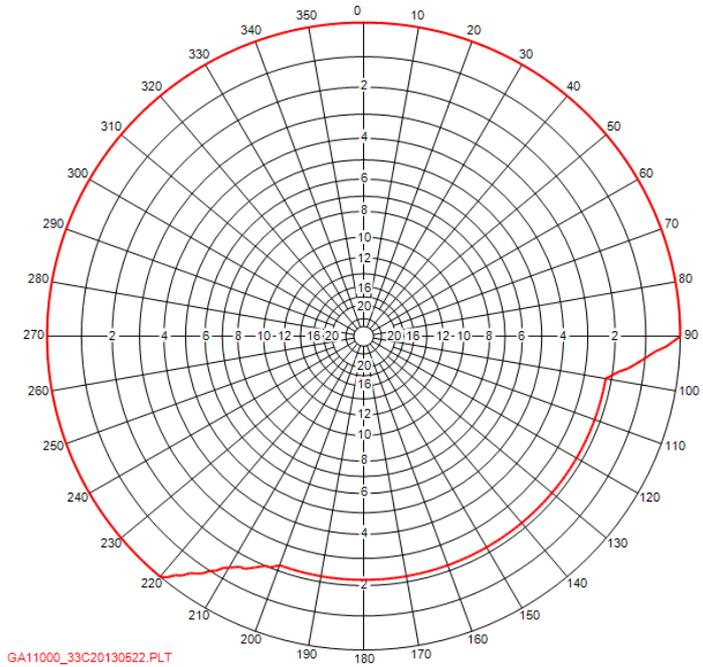
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Tacolneston	31	50 dBW HP	199 m	GA11400_31C20130522.PLT



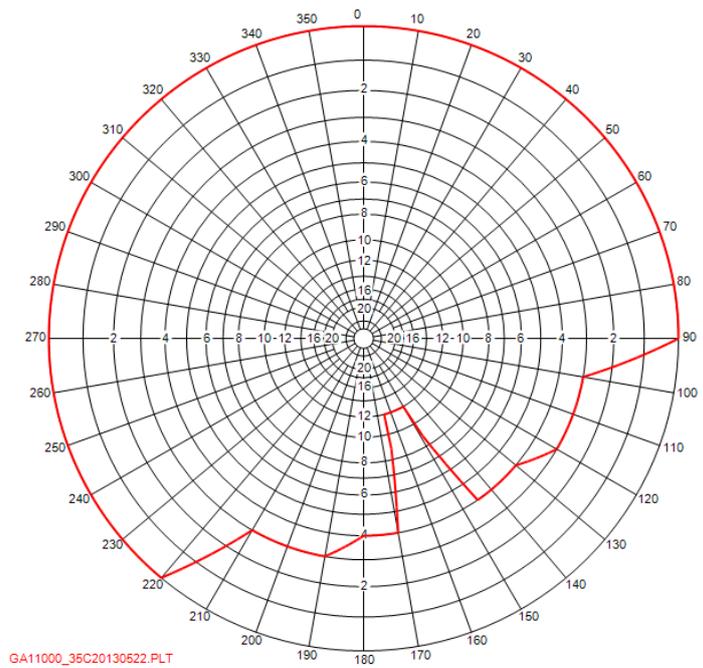
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Tacolneston	37	50 dBW HP	199 m	GA11400_37C20130522.PLT



Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Mendip	33	50 dBW HP	298 m	GA11000_33C20130522.PLT

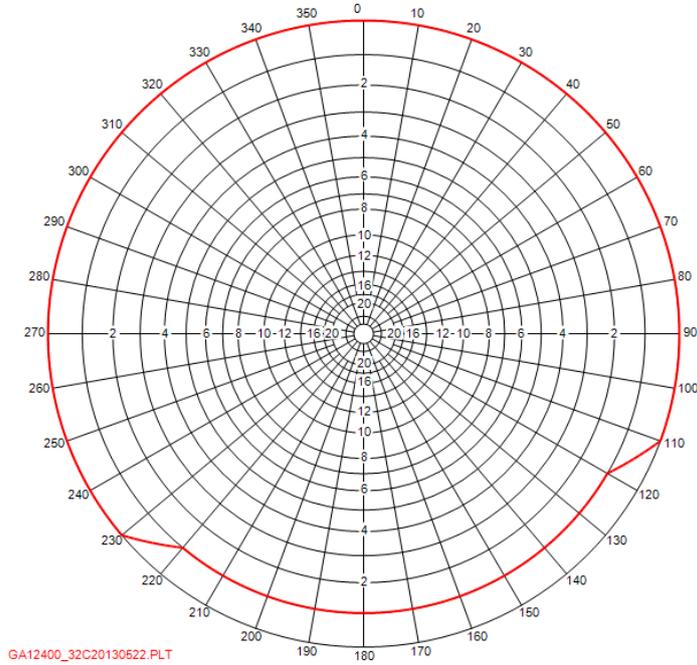


Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Mendip	35	50 dBW HP	298 m	GA11000_35C20130522.PLT

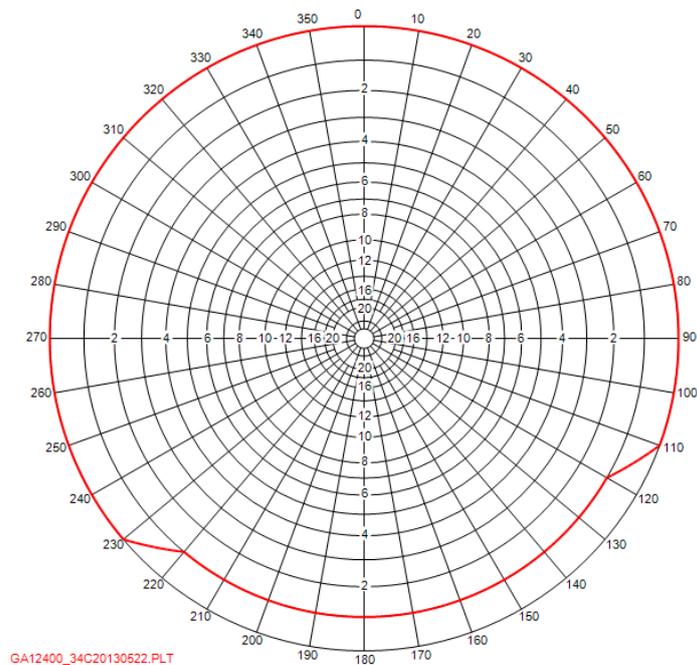


Award of the 600 MHz spectrum band

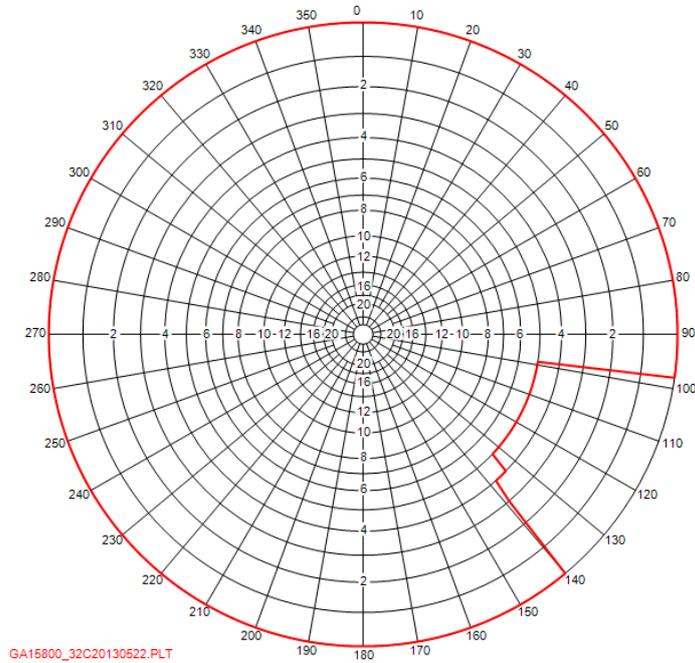
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Sandy Heath	32	53 dBW HP	235 m	GA12400_32C20130522.PLT



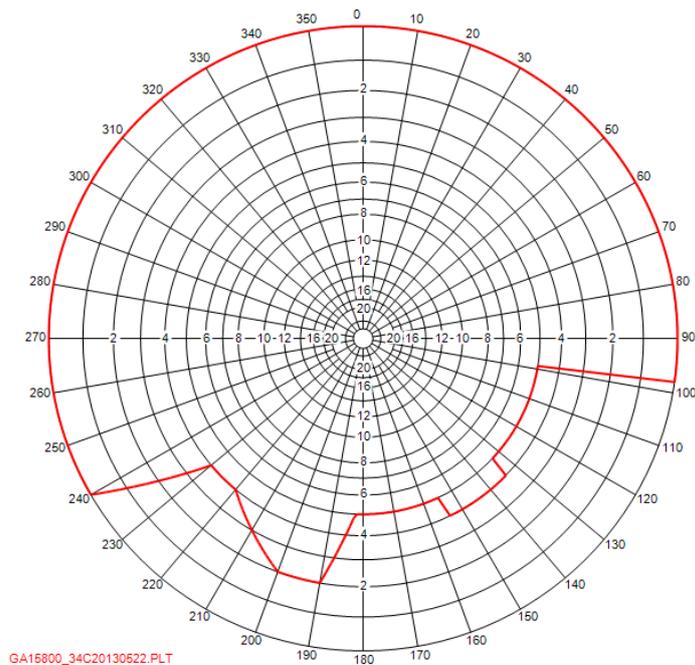
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Sandy Heath	34	53 dBW HP	235 m	GA12400_34C20130522.PLT



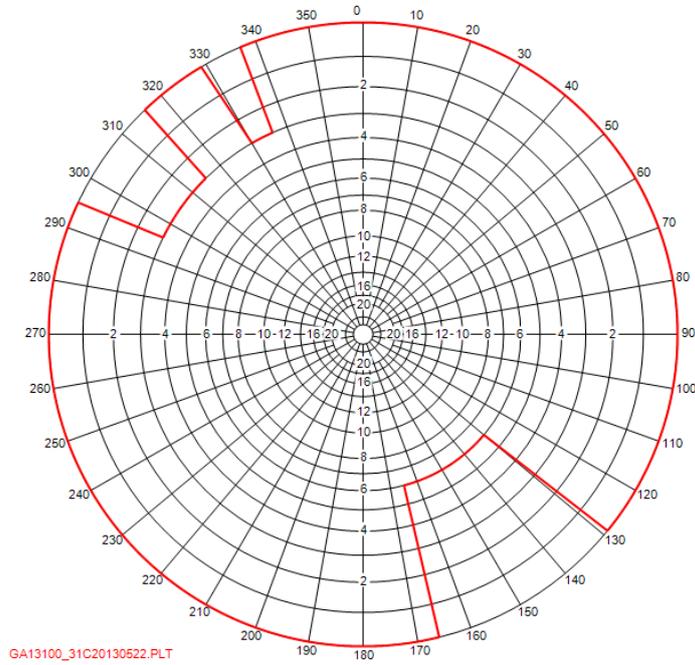
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Bluebell Hill	32	43 dBW HP	52 m	GA15800_32C20130522.PLT



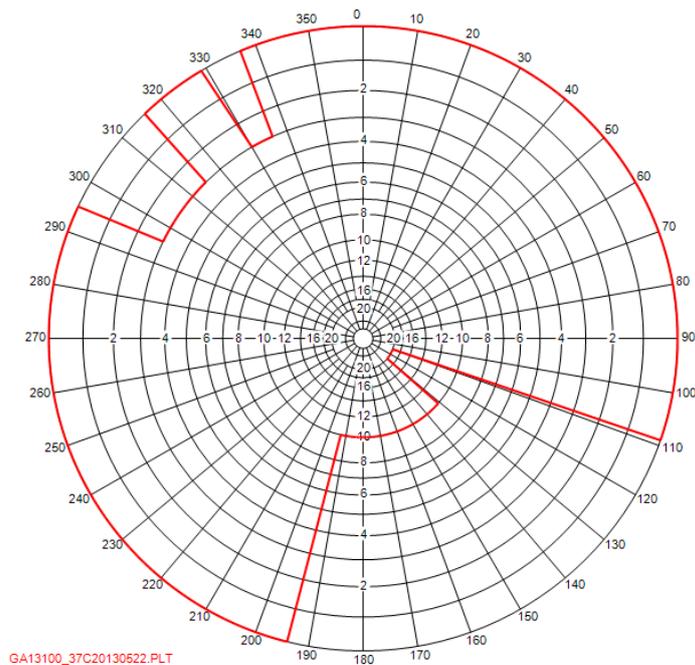
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
Bluebell Hill	34	43 dBW HP	52 m	GA15800_34C20130522.PLT



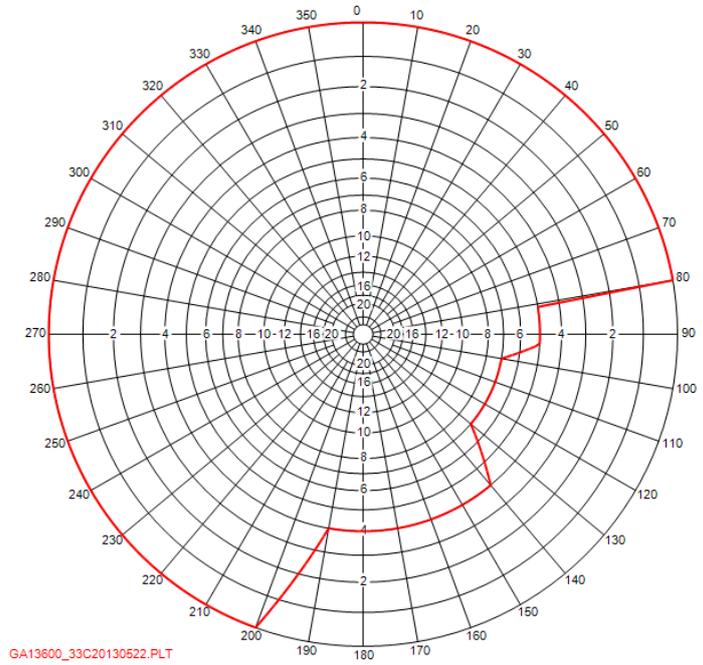
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Caradon Hill</i>	<i>31</i>	<i>50 dBW HP</i>	<i>234 m</i>	<i>GA13100_31C20130522.PLT</i>



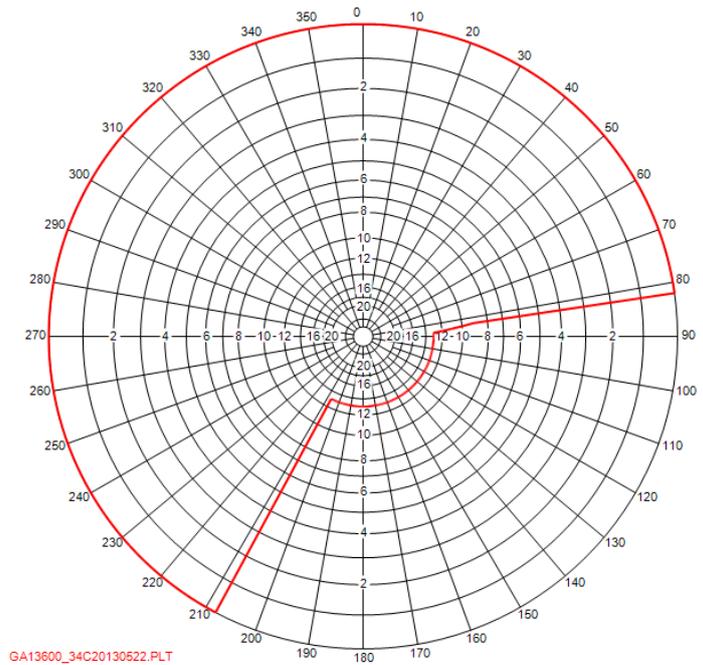
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Caradon Hill</i>	<i>37</i>	<i>50 dBW HP</i>	<i>234 m</i>	<i>GA13100_37C20130522.PLT</i>



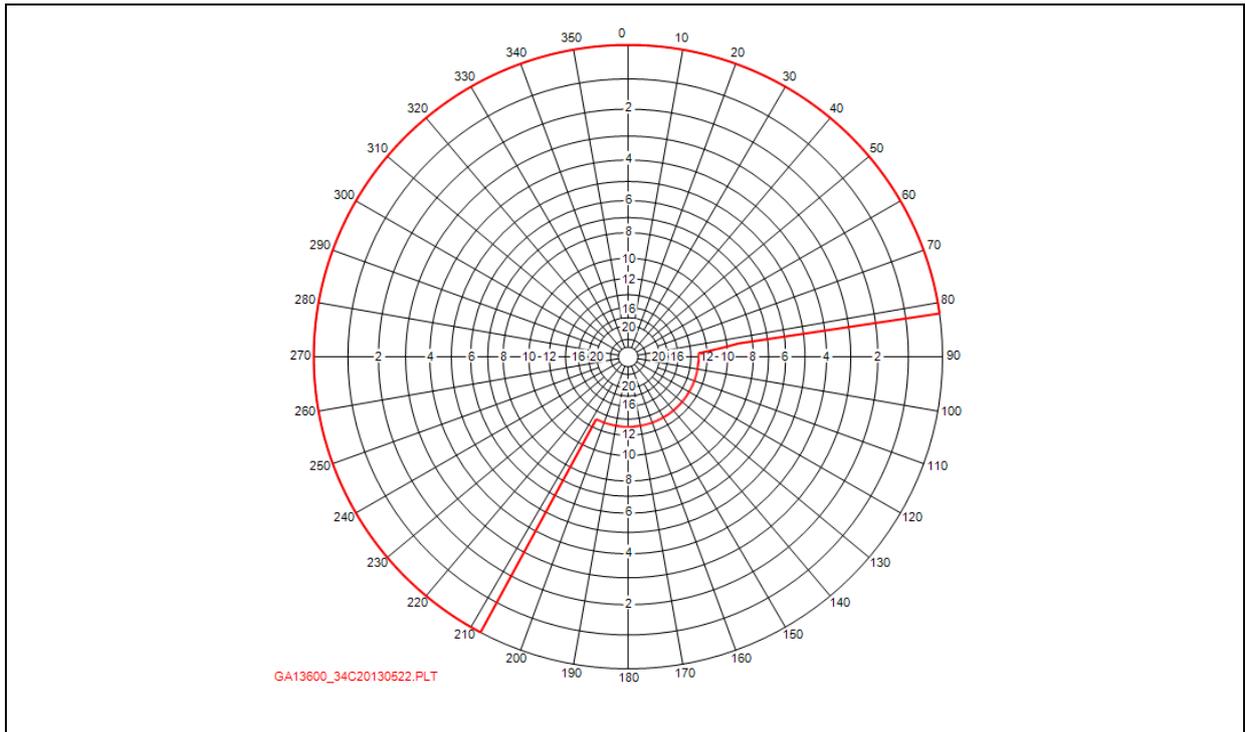
Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Beacon Hill</i>	<i>33</i>	<i>43 dBW HP</i>	<i>100 m</i>	<i>GA13600_33C20130522.PLT</i>



Station Name	Ch	Ref ERP	Ref Ant Ht	Nominal Co-ordination Template
<i>Beacon Hill</i>	<i>34</i>	<i>43 dBW HP</i>	<i>100 m</i>	<i>GA13600_34C20130522.PLT</i>



Award of the 600 MHz spectrum band



Annex 3

Limitation Order

STATUTORY INSTRUMENTS

2013 No. XXX

ELECTRONIC COMMUNICATIONS

Wireless Telegraphy (Limitation of Number of Licences) Order 2013

Made - - - - - *10th July 2013*
Coming into force - - - - - *20th July 2013*

The Office of Communications (“OFCOM”) make the following Order in exercise of the powers conferred by sections 29(1) to (3) of the Wireless Telegraphy Act 2006⁽¹²⁾ (“the Act”).

Before making the Order 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, commencement and extent

1.—(1) This Order may be cited as the Wireless Telegraphy (Limitation of Number of Licences) Order 2013 and shall come into force on 20th July 2013.

(2) This Order shall not extend to the Channel Islands or to the Isle of Man.

Limitation of licences

2.—(1) OFCOM shall grant a limited number of wireless telegraphy licences for the purposes of establishing digital terrestrial television multiplexes in the frequency band 550 – 606 megahertz in the United Kingdom.

(2) In determining the number of wireless telegraphy licences to be granted OFCOM shall select the number of licences which is most likely to secure—

- (a) the optimal use of the electromagnetic spectrum;
- (b) the availability throughout the United Kingdom of a wide range of electronic communications services; and
- (c) the availability throughout the United Kingdom of a wide range of television and radio services.

⁽¹²⁾ 2006 c.36.

- (3) In determining to whom to grant a licence OFCOM shall select the person—
- (a) whose use of the frequency band OFCOM considers will be the most likely to secure—
 - (i) the optimal use of the electromagnetic spectrum;
 - (ii) the availability throughout the United Kingdom of a wide range of electronic communications services; and
 - (iii) the availability throughout the United Kingdom of a wide range of television and radio services; and
 - (b) who has provided OFCOM with the information set out in regulation 5 of the Wireless Telegraphy (Licensing Procedures) Regulations 2010⁽¹³⁾.

10 July 2013

Stephen Unger
Group Director of Strategy, International, Tech, Economist
For and by the authority of the Office of Communications

EXPLANATORY NOTE

(This note is not part of the Order)

This Order specifies the frequencies and purposes for which the Office of Communications (“OFCOM”) will grant wireless telegraphy licences.

Article 2(1) provides that a limited number of licences will be granted for the use of frequencies in the specified frequency band. Article 2(2) sets out the criteria that OFCOM will apply in determining the number of licences to be granted. Article 2(3) sets out the criteria that OFCOM will apply in determining the persons to whom those licences will be granted.

A full regulatory impact assessment of the effect that this Order will have on the costs to business is available to the public from the OFCOM library at Riverside House, 2a Southwark Bridge Road, London SE1 9HA (Tel: 020 7981 3000) or on the OFCOM website at www.ofcom.org.uk. Copies of the impact assessment have also been placed in the libraries of both Houses of Parliament.

⁽¹³⁾ S.I. 2010/1823.