

About Arqiva

Arqiva has its headquarters in Hampshire, with other major UK offices in Warwick, London, Buckinghamshire and Yorkshire. It has 9 international satellite teleports, over 70 other manned locations, and around 9,000 shared radio sites throughout the UK and Ireland including masts, towers and rooftops from under 30 to over 300 metres tall.

The company is owned by a consortium of long-term investors led by the Canadian Pension Plan Investment Board (CPPIB) and has two operating divisions: Broadcast & Media and Government, Mobile & Enterprise.

Arqiva is technology and service-neutral and operates at the heart of the broadcast and mobile communications industry. We are at the forefront of network solutions and services in an increasingly digital world. The company provides much of the infrastructure behind television, radio and wireless communications in the UK and has a growing presence in Ireland, mainland Europe and the USA.

Arqiva is a founder member of Freeview (Arqiva transmits all 6 Freeview multiplexes and is the licensed operator of 2 of them) and was a key launch technology partner for Freesat. Arqiva is also the licensed operator of the Digital One national commercial DAB multiplex.

Alongside the BBC, Arqiva's Spectrum Planning Group has played a critical role in planning Digital Switch Over (DSO).

In the communications sector, the company supports cellular, wireless broadband, video, voice and data solutions for the mobile phone, public safety, public sector, public space and transport markets.

Major customers include the BBC, ITV, Channel 4, Channel 5, BSkyB, Classic FM, the five UK mobile operators, UKTV, Viacom, Turner Broadcasting, Metropolitan Police and RNLI.

General Comments

We welcome the opportunity to provide input to this consultation. We have provided specific responses to some of the questions below, and in addition offer the following general comments:

- There is a direct link between the findings and industry response to the Coexistence consultation (Coexistence of new services in the 800MHz band with digital terrestrial television) and this consultation. Whilst this has been stated as out of scope, we are concerned that there is an inherent process issue whereby the findings from the coexistence consultation should be used to inform the Technical Licence Conditions necessary to permit efficient operation of LTE services adjacent to DTT services. We encourage Ofcom to reflect on the responses to the co-existence consultation and as Ofcom's understanding of the scale of the interference issue grows to undertake additional analysis to further develop the appropriate protection regime. Hence, we urge Ofcom to reserve the right to revisit the TLCs in light of this new level of understanding. Furthermore, in light of the critical relationship between the co-existence arrangements and the Technical Licence Conditions we encourage Ofcom to ensure that appropriate internal governance arrangements are introduced to this process to optimise the outcome.
- The coexistence consultation is predicated on certain assumptions that are not reflected in the proposed Technical Licence Conditions, i.e.
 - co-location of LTE base stations is assumed in the coexistence consultation but this requirement is not stipulated in the proposed TLCs
 - Ofcom uses different assumptions on the out-of-block masks used for LTE base-stations in the interference study when compared with those allowed in the proposed licence conditions
 - The coexistence analysis is based upon a maximum EIRP of 59dBm, whereas the proposed licence conditions in the TLC consultation permit a maximum EIRP of 64dBm

These discrepancies in isolation have a bearing on the interference outcome but in combination will have a greater impact which needs to be recognised and remedied. We encourage Ofcom to address these issues alongside the other issues identified in Arqiva's response to the coexistence consultation via the further analysis planned and a subsequent follow-on consultation. Arqiva are keen to support and be part of this further analysis that Ofcom plan to undertake.

- We believe that to be able to efficiently manage the interference between operators and more broadly the interference protection regime for DTT services there would be merit in the operators being required to share their network plans and roll-out timetables with other operators and with the body responsible for DTT interference mitigation to ensure an efficient protection outcome.
- We note the issues on interim co-ordination obligations with radar systems in sections 5.6 and 5.7, but believe that Ofcom needs to ensure that more certainty is

given on the timeframe for the completion of the modification programme. Without such assurance that the modification programme will be completed on time there will be a significant risk to rollout of networks.

- Further in sections 5.8 – 5.11 there are permanent restrictions proposed requiring coordination with radar operators for all 2.6GHz base stations within ~15km radius and for terminal stations very close to radar sites. This could be particularly restricting, and it is not clear to us why this should apply to the whole band and particularly for the TDD spectrum which is separated by at least 80MHz from any radar system.
- We have some specific comments with regard to specified power levels which we believe require clarification:
 - In Table 6.4: The consultation does not clarify if the EIRP is per TX path or is the combined EIRP - Reference MIMO has more than one path.
 - Table 8.2: The consultation does not clarify an EIRP limit for Terminal Stations in the restricted block; there appears to be only a restriction on the Base station EIRP

Arqiva's responses to the specific questions are provided below;

Question 1: Do you have any comment on the proposal to apply the limits defined in Case A of Commission Decision 2010/267/EU for out-of-block emissions from base stations into all frequencies in the range 470 to 790 MHz, as set out in Table 4.4?

Please refer to comments relating to this point in the Arqiva response to the coexistence consultation. Ofcom use different assumptions on the out-of-block masks used for LTE base stations in the interference study when compared with those allowed in the proposed licence conditions and this inconsistency should be addressed to avoid unwarranted interference.

Question 2: Do you have any comment on the proposal to set an in-block emission limit of 61dBm/(5 MHz) for base stations in the 800 MHz band?

Please refer to comments provided on this point in the Arqiva response to the coexistence consultation. The coexistence analysis is based upon a maximum EIRP of 59dBm, whereas the proposed licence conditions permit a maximum EIRP of 64dBm. The flexibility to use a higher power runs the risk of generating increased risk of interference beyond that estimated in the coexistence analysis.

Question 3: Do you agree with the proposed conditions on antenna placement that would permit the use of the alternative block-edge mask for restricted unpaired blocks? If not, please explain your reasoning and your alternative proposals, bearing in mind the need to remain consistent with the framework provided in Commission Decision 2008/477/EC.

We agree with the principle, but more information needs to be specified on the site configuration in addition to EIRP and distance, such as the height of the FDD base station which will have an impact on the interference.

In addition the restriction between TDD and FDD (or TDD and TDD) equipment would need to be reciprocal, to the extent that once TDD restricted block equipment is deployed, another licensee would not be able to deploy interfering TDD or FDD base stations within the separation distance.

Question 4: Meeting the conditions on the use of the alternative block edge mask for restricted TDD blocks would require certain licensees to share information about the locations of their base stations. Do you agree with this proposed approach?

We agree with this approach, but please note comments above.

Question 5: We welcome comments on stakeholders' preference for the dedicated or hybrid options for low-power shared access as discussed above.

No comment.

Question 6: We welcome comments on the appropriate frequency placement for low-power spectrum blocks.

No comment.

Question 7: Do you agree with our proposed technical licence conditions for low-power access?

No comment.

Question 8: We welcome comments from stakeholders on the additional restrictions and technical measures we have outlined for the management of interference under the hybrid approach, and the technical licence conditions that would be necessary to implement them.

No comment.

Question 9: Do you agree that a Code of Practice on Engineering Coordination, as outlined, is the appropriate approach to manage the coexistence between low-power licensees?

No comment.

Question 10: Do you agree that we should proceed with the approach that terminal stations complying with the relevant technical parameters be exempted from the requirement for individual licensing?

We fully agree with this principle.