

Response to Ofcom Consultation on 872 MHz

About Arqiva

Arqiva has its headquarters in Hampshire, with other major UK offices in Warwick, London, Buckinghamshire and Yorkshire. It now has 9 international satellite teleports, over 70 other manned locations, and around 9000 shared radio sites throughout the UK and Ireland including masts, towers and rooftops from under 30 to over 300 metres tall.

Arqiva has over 50 years' experience in delivering universal coverage broadcasting services with the highest levels of service 24/7, 365 days per year; 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 also include the BBC, ITV, Channel 4, Five, BSkyB, Classic FM, all 5 UK mobile operators, Viacom and Turner Broadcasting.

Arqiva is supported in all of the above by its extensive Spectrum Planning Group and a national field force, key assets underpinning Arqiva's rôle managing all of the technical aspects of the Digital Switch Over (DSO) from analogue television to digital (i.e. Freeview, of which Arqiva is a founder member) - the largest public policy infrastructure project other than the 2012 Olympics.

Arqiva is also the licensed operator of 2 of the UK's 6 Digital Terrestrial Television (DTT) multiplexes and has exploited its technical expertise to enhance the efficiency with which our multiplexes use their spectrum, increasing the number of video streams that can be delivered. Arqiva is also the licensed operator of the national commercial DAB multiplex, Digital One.

For broadcasters, media companies and corporate enterprises Arqiva has end-to-end capability ranging from –

- outside broadcasts (10 trucks including HD, used for such popular programmes as Antiques Roadshow, Question Time, Proms in the Park and a wide range of sporting events);
- satellite newsgathering (30 international broadcast SNG trucks);
- 10 studios;
- playout (capacity to play out over 70 channels including HD);
- satellite distribution (over 1200 services delivered); to
- terrestrial transmission, the latter including digital switch over and mobile TV development.

Arqiva has purchased spectrum in two Ofcom auctions (412 MHz and 28 GHz) and owns JFMG, the PMSE band manager.

Introduction

Arqiva welcomes Ofcom revisiting the opportunities presented by the spectrum award for the 872-876/917-921 MHz “872 MHz” band and developing further the points raised in its previous consultation on this band in June 2006. While recognising the difficulties Ofcom faces in setting the conditions and constraints for the band, Arqiva is disappointed that the proposed technical constraints on deployment within the band have been tightened even further when compared to the previous consultation.

This raises serious questions as to the potential value of the band for commercial use and consequently Ofcom and the Government. Arqiva urges Ofcom to reconsider these technical conditions taking into account the latest experiences of operators elsewhere in Europe.

(TEXT REDACTED)

Answers to Questions

Question 1: *Do you believe that the uses listed in this section (Section 3) are possible candidates of the 872/917 MHz bands?*

Yes, Arqiva agrees that the uses identified in Section 3 are credible uses for this spectrum.

Arqiva in particular is interested in the potential services under the full licensing approach including those identified under data applications. (TEXT REDACTED)

Arqiva believes that maximising the benefit to the UK necessitates a full licensing approach for these types of applications rather than a light licensing approach involving RFID or SRD. Indeed most of these potential uses would best be deployed in licensed spectrum.

While Arqiva recognises increased market interest in RFID and SRD devices, they are already accommodated in alternative spectrum, where the consultation document recognises that there currently isn't congestion. Consequently there could be no justification in the short-medium term for any decision in favour of RFID and SRD use of this band; especially given its current unavailability EU-wide for such uses.

Any risk of interference into GSM or GSM-R from higher power uses could be mitigated by any of:

1. restrictions on transmit power;
2. the use for guard bands;
3. geographic separation.

Question 2: *Are there additional applications/services (not listed above (from Section 3) that could make viable use of the 872/917 MHz bands that Ofcom should be aware of?*

(TEXT REDACTED)

Question 3: *What services do you believe should be authorised to use this band? Could you supply relevant information supporting your preference and include any economic data relating to the value of the spectrum in providing these services.*

Arqiva believes this band should be subject to Ofcom's policy of liberalisation and should therefore be licensed on an application and technology neutral basis. Ofcom themselves argue that this is the most effective way of making spectrum available to the market and will maximise the benefits to the UK.

(TEXT REDACTED)

It also needs to be recognised that it is far from clear whether liberalising and re-farming 900 MHz spectrum will actually result in deployment of UMTS900, given that 2G is a more efficient technology for carrying voice and there will be clear substitute spectrum available which is better suited to the deployment of cellular broadband.

Question 4: *Do you agree with the methods used to assess the potential to interfere with adjacent band services in a full licensed approach?*

Arqiva has less comment on the methods used by Ofcom to assess potential adjacent band interference than some of the assumptions used.

While Arqiva does not wish to see any undue interference caused to adjacent users, we are concerned about the potential impacts of the interference restrictions as currently proposed on the commercial viability of services,
(TEXT REDACTED)

It is not generally Ofcom's custom to propose licence conditions based upon potential uses of adjacent spectrum as opposed to existing use. In particular, Ofcom is assuming that UMTS will be deployed in adjacent spectrum when today it is only GSM. Although, as noted in the Consultation, it is the intention of the EU to make this spectrum available to UMTS rather than just GSM, which in fact supports the more liberalised technology independent approach, there is no certainty users of the GSM spectrum will in fact deploy UMTS and therefore we do not believe it is appropriate to impose technical conditions based upon guesses of what users may do in the future.

Arqiva does welcome the relaxation of the previous guard band requirements so that network operators may themselves decide on the allocation of guard bands to meet the technical licence conditions.

Arqiva also welcomes the additional studies undertaken by Ofcom into the deployment of enhanced filters to allow increases in base station transmit power in the upper band 917-921 MHz. We believe it is imperative that such filters are deployed by adjacent GSM users to allow transmission powers of up to 50 dBm in order to make the deployment of wide area networks feasible.

We are however disappointed that the mobile transmit power has been reduced to 23 dBm, limiting networks to small cells with low power devices and significantly reducing the scope of potential applications and thus the value of the spectrum.

(TEXT REDACTED)

Question 5: *Do you consider that the proposed technical licence conditions would be justified and appropriate?*

No, please see Arqiva's comments to Question 4.

(TEXT REDACTED)

Arqiva is also concerned about the coordination required for base stations within 720m of a GSM railway line. This particularly affects deploying networks in urban areas, London in particular which potentially has large numbers of lines with GSM-R. Further reliable information on established and announced GSM-R lines would be extremely welcome.

The range at 872MHz would be quite large with normal transmit powers, several kms, and under those conditions the coordination zone would not be such a problem, but as already noted, with the limits on mobile transmit, the range is more likely to be of the order of 1 km. As this is an uplink-uplink and downlink-downlink problem, it can be solved by co-siting, where this is feasible and the site owners agree. (TEXT REDACTED) Whatever the situation, though, it will add to the complexity and cost of deploying a network.

However, Arqiva is aware of tests undertaken to measure the impacts of adjacent channel interference with respect to GSM-R, and which demonstrates that the potential interference may be far less than anticipated. Again, Arqiva calls upon Ofcom to consider the evidence from these tests with a view to relaxing some of its proposed technical conditions.

Question 6: *Do you agree with the methods used to assess the likelihood of services interfering with adjacent band services under the light regulatory approach?*

Arqiva has no comments on the methods used with respect to SRD/RFID applications.

Question 7: *We would like stakeholder views on the cost and performance impact of the UMTS900 filters described above.*

Whilst not agreeing with the principle of setting licence conditions based upon potential future uses of adjacent bands, Arqiva believes that if UMTS were to be deployed in the adjacent bands, then the analysis of the UMTS900 filters as presented in the recently published independent study by Isotek Electronics Limited is appropriate. It should be made clear though that filters need to be fitted to both the transmitter of the interferer and to the receiver of the victim, not one or the other. An engineering solution needs to balance them both.

Question 8: *Are there any other methods that would give the same*

protection as the filters? What costs and performance impacts would these have?

See comments under Question 9.

Question 9: *What are your views on the need for and justification of such mitigation measures and how their cost should be borne?*

(TEXT REDACTED) Arqiva supports the view that the costs (of the filters and O2's reasonably incurred incremental costs) should be borne by the successful recipient of the 872 MHz licence award - the costs would then be taken into account in their valuation of the spectrum. Arqiva estimates this cost to be of the order of £5-10m depending upon the number of filters finally required. Part of this calculation depends upon the number of duplexers deployed on O2 base stations and this information would need to be made available prior to any licence award process.

If, following the 872 MHz licence award, UMTS900 were to be deployed, then enhanced filters would need to be deployed on the UMTS base stations to protect the prior deployment in 872 MHz. At least two filters per sector would be required with UMTS as all such systems use receive diversity. In this case, Arqiva believes that the costs should be borne by the UMTS operator as a future user. If the filters were specified as part of the UMTS base station procurement, then the unit costs will be less than with the existing GSM base stations, with no retrospective fitting required, although the total costs are not clear due to the uncertainty of how many UMTS base stations would be deployed. Alternatively, with new equipment, there are other engineering options to provide the necessary protection, including mast head amplifiers.

Question 10: *Stakeholders views are sought on whether the spectrum should be awarded as a single lot by frequency, or whether it should be split into smaller frequency lots?*

Concerning spectrum packaging under a full licensing regime, Arqiva supports the original proposals made by Mason/Analysis/.econ in their report to Ofcom in February 2005 to award the 2X4 MHz as one single national licence, as this will allow the deployment of innovative new wideband technologies as well as more traditional narrowband ones.

Despite this, if Ofcom should at a later stage in its considerations conclude that the spectrum needs to be subdivided into smaller lots, then Arqiva requests that the auction be designed so as to permit any bidder to bid for the complete band in addition to any bids made for underlying specific lots.

Question 11: *We would like stakeholder's views on whether the packaging should be split GB/NI or if we should proceed with UK wide packages?*

Arqiva's preference again is similar to that expressed in the study referred to above that the award should be on the basis of a single UK-wide licence for all available spectrum.

Question 12: *Would it be practical for RFID users and adjacent operators (e.g. GSM, UMTS, GSM-R) to co-ordinate locally on a case by case basis? The answers to this will help Ofcom develop its views on whether a database would be required.*

Arqiva does not believe the light licensing approach with RFID is the one which will bring most benefits to the UK. However, if it were the outcome, it is difficult to see how small, portable RFID tags at dynamic locations could easily, and cost-effectively be coordinated with adjacent operators.

Question 13: *Do you agree with Ofcom's preliminary proposal that the separation distances suggest a light licensing regime if SRD/RFID use in this band were to be supported? If not, how should the interference into adjacent bands be managed?*

If SRD/RFID use in the band were to be supported, a light licensing regime seems appropriate.