



The IEE
Savoy Place
London
WC2R 0BL
United Kingdom
T +44 (0)20 7240 1871
F +44 (0)20 7240 7735
www.iee.org

Engineering the future

ANNEX

A response by the Institution of Electrical Engineers (The IEE) to the specific questions posed by Ofcom in their "Spectrum Framework Review" consultation document, issued 23 November 2004.

The numbering below corresponds with Ofcom's "Question #" numbering system. Questions to which there is a response are in bold type, with the response in italics.

Preamble

The IEE is broadly in support of the light touch regulation proposed by Ofcom, insofar as this may enhance future utilisation of radio spectrum. It also supports market mechanisms in many cases, but notes that shifting technology, for example, digital transmission and software-controlled RF circuits, may be changing the basis that is assumed for allocation.

We do, however, wish to point to a significant shortcoming, in that whilst the rights of users of spectrum are highlighted, there is no counterbalance of obligations on them in terms of effective use and lack of interference with other users. In our view this is an essential consideration.

In particular, we share the concern over current and future efficiency of usage, and note Ofcom's observations that we would summarise as 'Whilst unencumbered spectrum is a scarce resource wireless capacity is not'. This suggests weaknesses in the existing regime that Ofcom is clearly keen to address; indeed it is easy to show that fixed allocations are unlikely ever to maximise usage. An instructive analogy is with wireline communications in which ever more efficient sharing of capacity has driven down costs and increased performance ever since the days of the first telephone exchanges. In this context we note the rise in Internet Protocol (IP) data transmission, which has arguably moved beyond a simple capacity-market model because other economic factors, for example benefits from co-operation, are more important to users than the direct cost of capacity. One might also look at open-source software for a more distant analogy.

Even in this situation there is a role for regulation; assuming that one sees the role of regulator as promoting overall benefit. This might be defined in spectrum terms as maximising the value of activity associated with each spectrum/capacity allocation; often, but not necessarily, through market mechanisms (for example, unlicensed spectrum may be a high-value use). The role for regulation in these areas could well be more a matter of defining common standards for interfaces than of allocating capacity. As an ideal outcome a framework analogous to TCP/IP might be devised for the short-term dynamic adaptive user-controlled allocation of capacity that might dramatically improve efficiency of usage. Although this may not be an immediate prospect, planning for such a possibility may be appropriate even at this early stage. We are aware that Ofcom is discussing this internally.

The IEE notes that we stand at a cusp in radio regulation at which shifts in technology (notably the impact of digital techniques on interference and adaptive RF) and in patterns of usage (such as the rapidly growing number of transceivers and the possible rise of peer-to-peer) may radically change patterns of wireless usage.

List of questions: -

Q1: Are there any other major medium- to long-term spectrum management issues that this review should be considering? Are there any other significant technological or market developments that this review should be aware of when developing its thinking?

The IEE notes the issues referred to in the Preamble above, in particular the possible need to move from allocation-based to standards-based management.

The IEE also welcomes the suggested need to measure existing use in order to better regulate; though we also note that some increasingly significant very short-range applications may be difficult both to measure and to regulate.

Q2: Do you believe it is useful to publish a compendium of issues? How frequently should it be published? What information should be included?

The IEE considers that such a document would be useful in defining the terms of an ongoing debate in what is likely to be a very active area. Ideally, such a document should be 'live' and subject to revision on an as-necessary basis.

Q3: Are there any other issues of sufficient significance to merit mention in this document?

The IEE notes that whilst the consultation document deals with 'rights' it substantially avoids the issue of 'obligations'. Rights typically are assigned within a particular band, but the associated obligations to, for example, avoid interference, pertain to adjacent and harmonically related bands, and to other users of the band. This is a critical issue to be addressed.

Q4: Are there important lessons to be learnt from experience in other countries that is not addressed here?

Q5: Do you agree with Ofcom's intent to maximise the use of trading and liberalisation?

Q6: Are there other areas, apart from those identified above, where trading and liberalisation should be restricted? Are there areas identified above where you believe the trading and liberalisation could be fully implemented?

Q7: Do you agree with Ofcom's approach to providing spectrum for licence-exempt use?

Q8: Is Ofcom's proposed methodology to estimate the amount of spectrum provided for licence-exempt use likely to deliver the right results?

The IEE notes that the suggested trigger for increasing licence-exempt allocations is heavy usage; this suffers from a possible difficulty in speed of response, and in any case an intent to balance the economic value associated with licence-exempt and licensed allocations might be more efficient.

Q9: What is the appropriate timing and frequency bands for making available any additional spectrum needed for licence-exempt use?

Q10: Do you agree with Ofcom's longer term proposals for spectrum trading?

Subject to the concerns indicated above.

Q11: Is the approach set out here, and in Annex H, for developing technology-neutral spectrum usage rights appropriate? Are there alternatives?

Q12: Should Ofcom do more to resolve interference?

The IEE notes the many references to "Interference" in the consultation and welcomes the commitment given in section 4.7.1 that "Ofcom fully intends to remain responsible for investigating interference complaints that cannot be dealt with directly by the affected parties". We see this as an important part of Ofcom's duty to further the interests of citizens regarding communications matters. Ofcom should be proactive in policing and approving effects of interference – such as imposing the obligation on new users of spectrum to declare the interference that may be caused in other bands.

The IEE notes the historical resources applied by the former Radio Communications Agency to tracking down sources of interference and observes that there is still the need for such services by citizens (users of radio and television services), despite the communications environment progressively changing to digital technologies. The IEE fears that citizen access to such interference investigations may be financially constrained in the future.

It is noted that Ofcom intends to be an evidence based, 'light touch', regulator. We therefore suggest that the analysis and publication of complaint statistics will be a vital input to the evidence database that should support the updating of national and international policies and standards both for radio and for electromagnetic compliance (EMC).

Q13: To what extent should Ofcom intervene in promoting innovation?

The IEE believes that Ofcom should adjust regulatory mechanisms to avoid restricting innovation, indeed should, so far as possible, allow experimental usages. It also notes that, in order to get investors businesses that take high commercial risks must have the potential to receive a payback that reflects these high risks. Ofcom should choose policies that balance risk with reward and avoid those which discourage investment in new technology.

Q14: Do you agree with Ofcom's proposed approach to harmonisation?

Q15: Can you foresee any problems with the proposed approach to harmonization other than those listed above?

Q16: Do you agree with Ofcom's proposal to continue with division by frequency as the primary method of dividing the spectrum?

Q17: Is Ofcom's approach of not intervening to mandate entitlements in time appropriate?

This may be appropriate at the present time but the issue should be kept under review.

The IEE notes with interest the reference to "Hairdryers" and comments that "entitlement under the EMC policy to transmit into spectrum licensed to others" is at a level that has been established as being generally satisfactory after many decades of interplay between culprits

and victims. This level is based on statistical considerations of the mutual occupancy of time, space (physical proximity) and frequency that are appropriate to the products, applications, economics and environments concerned. For example, the limits set by EN55014 (CISPR 14- Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus.) for hairdryers take account of these being low-cost items producing spark interference in domestic environments, and used only for short periods of time.

The IEE believes that it is important that the potential benefits obtained from the broad-spectrum communications services such as power line telecommunications (PLT) and ultra-wideband (UWB) should be considered in conjunction the current European Community EMC regulations and standards. This view is based upon the wide acceptance of product emission limits. The sanctioning of new 'interferers' at higher levels could lead to pressure to raise these product emission levels (easier compliance, cheaper products) so putting at risk the benefits originally sought through electromagnetic compliance, and enjoyed by all users of the spectrum.

Q18: Do you agree with the RIA?

----00000000----