

## Responses to Spectrum Framework Review

1.

Q1. Not applicable to a Radio Amateur.

Q2. Yes. Quarterly. Everything affecting users including Radio Amateurs.

Q3. See attached submission.

Q4. Do not know of anything now. Some inappropriate proposals banded about, such as PLT.

Q5. As Amateur Radio is non commercial its allocations should not be part of trading arrangements.

Q6. So long as the Amateur spectrum is left out.

Q7. Yes providing there is no conflict with the amateur service.

Q8. Not for Radio Amateurs to comment.

Q9. Not for Radio Amateurs to comment.

Q10. Provided the amateur allocations are not included.

Q11. Provided that as stated in Spectrum Review Framework "at the same time neither reducing the efficiency of spectrum use or increasing the interference caused to others.

Q12. Ofcom should be responsible for resolving any systematic interference resulting from approved systems.

Q13. Respond to it positively in an independent & unbiased way.

Q14. So far as Amateur Radio is concerned, International harmonisation can be shown to be necessary right across the spectrum. (See note 1.).

Q15. It has been the experience of the Radio Amateur community that harmonisation is desirable as equipment, systems & signals frequently cross international boundaries.

Q16. Yes.

Q17. Not for radio Amateurs to comment

Q18. No - Harmonisation is considered to be essential to Ofcom's spectrum management

Submission.

Amateur Radio is an international, regulated, science based hobby which offers a number of advantages to society including educational and social benefits. In return for achieving qualifications that assure their competence, radio amateurs are given the privilege of using various small segments of the spectrum with equipment that is not type approved and in many cases designed and built by themselves. Clause 1 Paragraph 1 of the amateur radio licence says "the licensee shall use the station for the purposes of self training in communication by radio telecommunications which use (without limiting the generality of the foregoing) includes technical investigations."

In order to maintain a vibrant amateur community it is essential that the present privileges are largely maintained right across the spectrum. The different aspects of amateur radio include:- self training to different levels, social and public service, educational and technical investigations which often lead to developments in communications.

Many of the interesting projects by amateurs use weak signal modes. Much work is being carried out in the microwave spectrum at levels limited mainly by ground noise. The Ultra Wide Band systems proposed for the microwave spectrum will raise this noise level and the onus that they will not adversely effect other services, should be placed on the commercial interests proposing such systems.

Firm regulation is essential to amateur radio because of its self training and experimental elements. If Ofcom wish to delegate this regulation it would be sensible to discuss the possibility of the RSGB, our national society, administering the amateur bands.

Note 1.

Microwave bands do require international harmonisation as they are used for satellite and earth-moon -earth communications on a world wide basis. Communication from the south & east coasts of England with Europe in the 1.3, 2.3, 3.4, 5.7, 10, 24 and 47 GHz bands, occur regularly.

2.

*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?*

There is a need to maintain scope for future innovation. Particular attention should be paid to technologies employing waveforms that generate large bandwidths. By taking up most of the spectrum they could inhibit future development.

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

Compendium of documents specific to users and applications should be published quarterly. For example, frequency allocation lists must be much more informative and interactive to allow identification of user intentions and applications and must encompass EU issues.

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

If OFCOM is to embark on a revision of the Amateur licence structure I suggest the following actions are taken:

1. The entry-level licence, Foundation, be permitted full access to the Amateur Satellite Service. For reasons I do not understand there is currently an anomaly where Foundation licence holders are allowed to transmit on Amateur Satellite Service frequencies but are not permitted to carry out communications through Amateur Satellites. This is unnecessarily restrictive. All Amateurs should be permitted to

- communicate through Amateur satellites.
2. The entry-level licence, Foundation, be permitted full access to all Amateur Bands between 1.240 GHz and 5.850 GHz subject to the proviso that only commercial equipment is used. There is no valid justification for the current policy of restricting operations to frequencies below 440 MHz.
  3. The three-tier licence structure is over-complex. Courses covering all three licences are only available at a handful of centres across the country. This makes it impossible for Amateurs in 80% of the UK to upgrade to the highest licence - Advanced (Full). No more than 2 licence tiers are required, Foundation and Full.
  4. The syllabus for the Foundation and Full should be broken down into modules. Each module would have a separate exam at the end. If a candidate failed an exam for a particular module then they should only be required to re-sit the exam for that module.
  5. The current system of differentiating licence classes by power is unenforceable. The bands licence holders are allowed to use should primarily differentiate the licence classes. Radio Amateurs are very attached to their call signs. This would introduce a self-policing effect since it would be obvious from a person's call sign whether they were permitted to be on a particular band.
  6. The power level given to Foundation is too low for effective communications and should be increased. A strong argument could be made for allowing 100 watts on the HF allocations. This power level is used for the entry-level class in many other countries. 100 watts corresponds to the output power available from most commercial transceivers designed for HF Amateur Operation between 1.81 and 29.7 MHz. For the VHF/UHF bands from 50-440 MHz a power level of 50 watts is appropriate. Due to safety considerations lower power levels should apply on the bands above 440 MHz. 10 watts would be appropriate for the 1.240 GHz band and 1 watt on the bands above that.
  7. The entry-level, Foundation class is currently denied access to the 28.0 – 29.7 MHz band. They should be given full access to this allocation.
  8. To provide an incentive to upgrade the following bands should be **removed** from the Foundation licence schedule:
    - 135.7 – 137.8 kHz
    - 10.100 – 10.150 MHz
    - 14.000 – 14.350 MHz
    - 18.068 – 18.168 MHz
    - 21.000 – 21.450 MHz
  9. The annual renewal of licences should be scrapped and replaced with an Operators Certificate valid for life for a single fee of £15

The Consultative Document places the future of a National Asset, namely Amateur Radio, in jeopardy. In particular the following are of great concern:

- a) Proposal to withdraw from amateur licencing. Withdrawal of Amateur licences will generate a "free for all" on our present bands and

undisciplined attempts at communication could result in abuse and denial of facilities. A similar rationale to licencing aeronautical radio (Section 4.4.1) should read across to Amateur Radio; the same importance and intent applies.

- b) The disregard of existing international agreements such as those in force with the ITU and EU can only result in disruption to international amateur communications.
- c) The suggestion that cognitive radio could potentially operate without warning on top of Radio Amateur stations is a major hazard to our operations.
- d) The deployment of Ultra Wide Broadband transmissions would constitute a major source of electronic pollution. If UWB goes ahead it should be restricted to 6-9.5 GHz

Amateur Radio in the United Kingdom performs the following National and International functions.

1. It provides a source of interest and expertise, which encourages and supports careers in electronics industries and services.
2. Amateur Radio operates and maintains National and International emergency communications networks for disaster relief viz. Mexican and Californian earthquakes, Lockerbie air crash, East Anglia floods, rescues of ocean-going yachts-people, Balkans uprisings and civil wars, New York's September 11<sup>th</sup>, and the Tsunami aftermath. Also its application to assist in countering the effects of a major terrorist attack should be recognized. There are some 60,000 licenced Radio Amateurs in the United Kingdom.
3. Amateur Radio provides a pool of telecommunications, computer and electronic expertise, which can be readily drawn upon in times of national emergency.
4. The Amateur Radio fraternity bridges cultural, political and ethnic boundaries. Its various modes of operation assist in overcoming language barriers and contributing to international understanding.
5. Amateur Radio participants provide one of the World's largest R&D facilities (unpaid) which contributes to the many fields of communications viz. propagation, new systems of transmission such as HF Digital Voice, meteor scatter, data modes and satellite communications.

*Q.4 Are there important lessons to be learnt from experience in other*

*countries that is not addressed here?*

Benefits are said to have accrued to other countries but in reality there is little hard data from countries that are comparable with the UK.

*Q.5 Do you agree with OFCOM's intent to maximize the use of trading and liberalization?*

No.

*Q.6 Are there other areas, apart from those identified above, where trading and liberalization should be restricted? Are there areas identified above where you believe the trading and liberalization could be fully implemented?*

The bands current allocated to the Amateur Radio Service and Amateur Satellite Service should not be subject to trading. These bands are the spectrum equivalent of National Parks and should be protected from unwarranted development.

*Q.7 Do you agree with OFCOM's approach to providing spectrum for licence-exempt use?*

Allocating just 7% for licence-exempt use seems an unnecessary restriction, however, the existing Amateur Radio Service and Amateur Satellite Service allocations should not be used to provide additional licence-exempt spectrum. There is spectrum available between 2.5-2.69 GHz. Consideration should be given to raising the upper limit of the current 2.45 GHz licence-exempt band by another 50 MHz.

*Q8. Is OFCOM's proposed methodology to estimate the amount of spectrum provided for license-exempt use likely to deliver the right results?*

OFCOM's conclusions are a considerable underestimate of the requirement for licence-exempt spectrum.

*Q.9 What is the appropriate timing and frequency bands for making available any additional spectrum needed for license-exempt use?*

No comment.

*Q.10 Do you agree with OFCOM's longer term proposals for spectrum trading?*

It would be useful to audit current programmes to arrive at conclusions.

*Q.11 Is the approach set out here, and in Annex H, for developing technology-neutral spectrum usage rights appropriate? Are there alternatives?*

Technology-neutral spectrum rights are the correct approach given the rate of

new developments in communications technology.

*Q12. Should OFCOM do more to resolve interference?*

Yes, OFCOM's withdrawal from such issues should be revised. The enforcement of Regulations especially with respect to interference issues should remain an OFCOM responsibility.

*Q.13 To what extent should OFCOM intervene in promoting innovation?*

Radio Amateurs have been responsible for many new developments in communications. OFCOM should intervene to ensure that Interference Free spectrum is available for both the Amateur Radio and Amateur Satellite services.

Segments of Interference Free spectrum are required within the following ranges:

- 1.240 – 1.325 GHz
- 2.310 – 2.450 GHz
- 3.400 – 3.475 GHz
- 5.650 - 5.850 GHz
- 10.000 – 10.500 GHz

Radio Amateurs specialise in the reception of very weak signals and require protection from degradation of the noise floor by technologies such as UWB and Cognitive Radios.

There are many examples of innovative weak signal work carried out by Radio Amateurs. The Amateur Radio Mars Orbiter due for launch in 2007 will transmit data from a satellite in Mars Orbit for Radio Amateurs on Earth to receive. Its signals will only be receivable by Amateurs in the UK if the Amateur Satellite Service allocation is noise free. Earth-Moon-Earth communications, which provide worldwide coverage, take place in all the Amateur Radio Service allocations above 1 GHz. They can only be successfully carried out in interference free allocations.

Radio Amateurs have built more than 50 satellites; the signals they produce are typically only about 10 dB above the noise floor. Even a small increase in noise level would put in jeopardy the valuable scientific and experiment work carried out by Amateurs using these satellites.

The demand from UWB interests to use 3-10 GHz is excessive. Their requirements would still be met if they were restricted to 6-9.5 GHz.

*Q.14 Do you agree with OFCOM's proposed approach to harmonization?*

Harmonisation has to be achieved with the rest of the EU and the ITU. There must not be a UK unilateral approach.

*Q.15 Can you foresee any problems with the proposed approach to*

*harmonization other than those listed above?*

See our answer to Q.14.

*Q.16. Do you agree with OFCOM's proposal to continue with division by frequency as the primary method of dividing the spectrum?*

Yes.

*Q.17 Is OFCOM's approach of not intervening to mandate entitlements in time appropriate?*

No comment.

*Q.18 Do you agree with the RIA?*

The listed approach from risk litigation is not rigorous.

3.

**Question 1 – 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 review needs to recognise that the current fast pace of technological change is unlikely to reduce, and will probably increase. Accordingly, there should be some mechanism for the review to be repeated in say five years' time. This becomes even more important if major changes are to be made to the spectrum management process, in case the changes do not operate as intended.

**Question 2 – do you believe it is useful to publish a compendium of issues? How frequently should it be published? What information should be included?**

I believe it is not only useful but also essential to publish a compendium of issues. There needs to be a balance between the amount of information given and the time scale envisaged for the various issues. In my view, such a compendium should be published annually.

**Question 3 – are there any other issues of sufficient significance to merit mention in this document?**

Not that I know of.

**Question 4 – are there important lessons to be learnt from experience in other countries that is not addressed here?**

Clearly, the other countries that have implemented Spectrum Management models must have undergone a similar process to this Review. I suggest that the discussion and review papers from those countries also are closely examined as they already probably answer, or would have researched, a number of the issues covered in this Review.

**Question 5 – do you agree with Ofcom’s intent to maximise the use of trading and liberalisation?**

I see no reason why trading and liberalisation cannot be used in Spectrum Management, but there will have to be considerable safeguards to ensure that interference issues do not become a severe problem, and that small users are not priced out of spectrum used by large conglomerates. If the purpose is to liberalise use of the spectrum there will inevitably be a number of small uses that will be developed, some of which may well go on to be major uses in the future. If the trading structure allows the creation of large blocks of the spectrum held by very few organisations such innovation could well be almost completely stifled.

Many frequency bands are shared, with some users having a primary status and others having secondary status. There needs to be sufficient safeguards to ensure that the secondary users, who would be regarded as parasites, by the primary user, are properly protected.

**Question 6 – are there other areas, apart from those identified above, where trading and liberalisation should be restricted? Are there areas identified above where you believe that trading and liberalisation could be fully implemented?**

I think it is important to ensure that any uses where trading and liberalisation are implemented cannot cause interference with any of the services where trading liberalisation cannot be fully applied. This applies particularly in respect of those uses such as radio astronomy and radio amateurs where weaker signal operation is the norm rather than the exception.

**Question 7 – do you agree with Ofcom’s approach to providing spectrum for licence-exempt use?**

Yes in principle, but I do not believe that removal of licences for amateur radio to be wise, or likely to be cost effective.

Amateurs rely on their callsigns for identification, particularly when international communication is undertaken. Allocation of callsigns predicates some form of central approval process.

The need for a licence in amateur radio tends to ensure that only people with a real interest in radio technology take part, reducing the risk of abuse and enhancing positive usage of the allocated spectrum. The technical knowledge required begins simply, with facilities to match, and then progresses on an incentive basis. This procedure ensures competent people use the privileges

granted by an amateur licence and gives a very low risk of interference by the amateur service to other users of the spectrum. This low risk keeps the extent and cost of, enforcement to a very low level indeed.

Amateur radio has many positive benefits for individuals and society as a whole due to the self-training in radio technology that it provides. For house-bound or otherwise disabled people it can offer a lifeline of contact with other human beings, for young people it can be the trigger for a career in science and technology, and it still contributes to research in the fields of propagation, digital communications and various other fields. For others it is a totally absorbing hobby, and provides society with a pool of trained radio operators to assist with communications in local or national emergencies.

It would be wrong to lose these valuable benefits by removing the need for a licence, with the resultant risk of degradation in technical and operating standards. Costs for investigation of interference would inevitably rise under this scenario.

Deregulated access to the spectrum is already provided via Citizens Band and PMR446. In my view any expansion in licence free activity should be on these uses, particularly the latter.

**Question 8 – Is Ofcom’s proposed methodology to estimate the amount of spectrum needed likely to produce the correct results?**

I am not qualified to give a detailed answer to this question, but from a layman's view I would say yes.

**Question 9 – what is the appropriate timing and frequency bands for making available any additional spectrum for licence-exempt use that might be needed?**

The timing and frequency bands for additional spectrum in relation to license-exempt use will depend on technological progress. This is another reason why I mentioned above (Q1) that the review should be repeated in five years' time.

**Question 10 – do you agree with Ofcom’s longer term proposals for market-based spectrum management methods?**

Plases see my comments on Q5 and Q7 above. I agree, but great care will be required combined with regular review of the process.

The licensing arrangements for amateur radio should be reviewed to ensure that they are appropriate and economic to manage. The overall principle expressed in the Framework Review of providing a set of rules that define boundaries for various uses, but then allowing freedom within those boundaries, should be fully applied to amateur radio licensing.

In my view CB allocations need not be altered. Mobile telephones have largely replaced the need for communication over similar distances for most

non-technical people. CB provides some non-technical people with the means to experiment with radio, subject to considerable safeguards. However, there are risks of abuse as has been found with illegal equipment etc., so such risks should not be exacerbated by extension of spectrum allocation.

Such risks are also another very good reason why the amateur service should not become licence-free.

PMR 446 is a valuable service for users where frequent but short-term use is made of radio, for example visits to outdoor events. As it is short range and low power any abuse is by definition limited in both scope and distance. The number of available channels could therefore perhaps be increased?

**Question 11 – is the approach set out here, and in Annex H, for developing technology neutral spectrum usage rights appropriate? Are there any alternatives?**

Not qualified to answer.

**Question 12 – should Ofcom do more to resolve interference?**

In a market-driven environment interference issues are likely to become greater as the parties involved will be more interested in their own spectrum than the effects that they may be having on others. This is inevitable given human nature when an object has been paid for. Therefore, while Ofcom may be able to reduce involvement in directly regulating spectrum use they will inevitably have an increased involvement in policing of that spectrum. Interference resolution services need to be developed so that they are quick, simple and economic for all users.

Interference between and to all users of the spectrum is a vital issue as if it occurs spectrum use can be nullified. This means that Ofcom will need to pay attention to all users, and not just those paying the most money.

**Question 13 – to what extent should Ofcom intervene in promoting innovation?**

In my opinion Ofcom should strongly intervene to promote innovation. This relates to my concerns noted in my comments above to Q5, and is a one way of ensuring that the small users are not forced out of spectrum by large corporations. I suspect that the amount of money involved will make it impractical for the market to find a solution to such matters, and direct intervention will be essential.

**Questions 14 and 15 – do you agree with Ofcom's proposed approach to harmonisation? Can you foresee any problems with the proposed approach to harmonisation other than those listed above?**

Ofcom itself has to recognise that a number of uses require international

harmonisation. The United Kingdom has obligations under various treaties, and it is essential that those treaties are respected and obeyed to maintain the status of the United Kingdom in the international arena. If we simply ignore those harmonisation measures that we might not totally agree with, then we would have no right to complain if in another field a foreign country ignored measures that serve the United Kingdom's interests.

However, having said that where use of spectrum cannot extend past the United Kingdom borders then harmonisation becomes a little less important as non-harmonised uses would not cause interference to other countries. The only difficulty with such non-harmonised use would be the poor availability of the necessary apparatus as manufacturers would tend not to supply just for the United Kingdom if they were "odd man out", as the potential sales volume would be too low.

For those bands where harmonisation would continue on the current basis the use of "sun set provisions" is an excellent idea, so as to continue to promote innovation in a period of fast technological change.

**Question 16 – do you agree with Ofcom's proposal to continue with division by frequency as the primary method of dividing the spectrum?**

Yes, as this has to be the best way of avoiding mutual interference between various uses.

**Question 17 – is Ofcom's approach of not intervening to mandate entitlements in time appropriate?**

No. Cognitive radio is a new technology and should have trials first, before permanent arrangements are made. Again, great care will have to be taken to ensure that weaker signal services are not totally prejudiced by such technology, in particular if those services are not paying users of the spectrum.

In my view, Ofcom should ensure that the cognitive radio is not used in bands where such use could be prejudiced. The appropriate location would be to share the considerable amount of under utilised spectrum that is currently allocated for military use.

**Question 18 – do you agree with the Regulatory Impact Assessment?**

As a lay person I would need considerably more information before commenting on whether I agree with Annex E - Regulatory Impact Assessment. However, I do not agree that the costs imposed on licence holders are voluntary. The use of radio spectrum is becoming more and more important to every day life and it is incorrect to say that if the costs are unacceptable the use should not occur.

For some uses where substantial commercial profit can be made then clearly this is the correct approach. Mobile telephony services spring immediately to

mind. Conversely, non-paying uses such as radio astronomy and radio amateurs should not be bullied out of their use of the spectrum just because other users have more financial resources available to them.

As in all such things, there needs to be a balance between total reliance on the free market and protection to "minnows" within that free market.

4.

What is Amateur Radio?

Amateur radio is a science based technical subject enjoyed by people world wide, and should not be classed as just a hobby. Amateur radio is recognised by the International Telecommunication Union (ITU) as a service and is listed in the ITU Radio Regulations as the amateur service and the amateur-satellite service. Amateur radio is a regulated Service. World wide, to become a licensed radio amateur, you have to undertake training and then take the examinations.

In the UK the amateur radio examination, known as the Radio Communications Examination, is sponsored by Ofcom and administered on its behalf by the RSGB. Amateur radio has a tradition of scientific investigation and experimentation which continues to the present day and radio amateurs have been at the forefront of almost all technical innovations in the field of radio communications.

Amateur Radio – A major Spectrum Stakeholder World wide

In the UK licensed radio amateurs have been granted access to the radio spectrum in bands from 135Khz to 250GHz. These allocations are on both a Primary and Secondary basis. For use of this spectrum allocation radio amateurs pay a licence fee to the UK government.

### **Spectrum Framework Review – Response**

I welcome the opportunity to respond to the Ofcom consultation on the future management of the radio spectrum. Although written with the commercial market (users) of the spectrum in mind the document does provide an evocative view of spectrum management in the future. Ofcom's view on spectrum management may be shared by some larger commercial users but I feel it is unlikely to have the wide spread support of the majority of radio spectrum users in the UK. In preparing this response I have used the RSGB's format for my guidance and Incorporated my views into this document. The form that this response will take is to answer the 18 question posed by Ofcom in the Spectrum Review document followed by a short summary.

*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?*

**Response: I find this question disturbing for Ofcom to ask, the regulator should be fully informed and aware of the technological and market**

developments. Ofcom in embarking on this consultation from the outset seeks approval of its views on how the spectrum should be managed in the future, yet apparently acknowledges that many issues have not been identified. To ask of the spectrum stakeholders what significant new technology/innovation may be around the corner, and in veiled language put a price on it shows, that the authors of this review did very little if any research before writing the paper. Ofcom as the government's designated manager of the spectrum should be on message as to new technology and its worth to the exchequer, and should be fully aware of the implications of the new and old technologies.

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

**Response:** Again I find the lack of direction in this question disturbing, Ofcom should be fully up to speed in the efficiencies of good communication between interested parties and the regulators. Spectrum stakeholders/users should always be aware of issues that affect their operation/business. They should be involved in planning from an early stage and any method of keeping stakeholders informed has to be of benefit to all. Previous annotated frequency tables have, amongst other things, given rise to the voluntary Band Plans adopted within the amateur radio community both in the UK and across Europe. I can see problems in the provision of a comprehensive annotated frequency table if adequate consultation and agreement by the stakeholders is not included in the original research before publication. The frequency of publication should be flexible as the pace of technology and its innovations are so rapid.

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

**Response:** This portion of the consultation lays down the possible boundaries of spectrum management. Whilst I would welcome some changes in the way the radio spectrum is managed, particularly in the area of Primary and Secondary usage I could not support option 2; Management of the spectrum by technical parameters set by the regulator or option 3; Self management of the spectrum through the market according to rules laid down by the regulator. I must again make the observation that the authors of the consultation document show a total lack of insight into radio communication, the practical workings of using and managing of the spectrum. The radio spectrum is a valuable limited natural resource in providing communications in whatever form. The word 'valuable' in conjunction with the consultation seems to mean how much revenue it will generate. The release of military bands may have benefit for all users, including amateurs and I support this.

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

**Response:** This is an extremely well written and at the same time is a

**misleading question! The examples of countries where new spectrum management models have or are being considered do not take into account the small land mass that is the British Isles and our close proximity to mainland Europe. Of countries listed none have near neighbors or large population usage. It is a veritable 'Red Herring' to suggest that spectrum management in Australia can be compared to the UK. Further, the information given in Annex G has apparently been drawn from a document submitted for consideration at an ITU conference which was held in February 2004, a full report of which has not yet been published. I think it fair to observe that until a major European country actively considers adopting a similar model of spectrum management, the jury is still out. Any adoption of this by us in the UK would be a mistake if consideration is not given to the facts surrounding the technical difficulties raised by this type of model.**

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

*And 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?*

**Response: I believe that the spectrum trading concept is hardly applicable to frequencies below the UHF level. I recognise the importance the UK Government may attach to the use of electronic communications in stimulating the UK economy and bringing about organisational change in public services. However, it should be recognised that wired networks are likely to continue to dominate electronic communications in the UK for the foreseeable future. In terms of capacity and potential development, a justification of this view can be seen in the large installed base of fibre optic trunk and street level communications and the widening provision of DSL services. It is also noted that radio services at the HF & VHF level are international, either in terms of the broadcast reach or harmonisation of frequency allocations. In this sense, it would appear that the spectrum trading concept will not be applicable. Also note that in terms of Amateur radio operation the Amateur Satellite Service is a separately designated service under ITU regulations and the frequency allocations for it are harmonised at the International level. As such they should have the same protection as the amateur HF bands and as such are not suited to spectrum trading. Whatever the opening intentions for the spectrum trading concept, it is vital that not all should be determined on economic grounds and there should be a balance with public and cultural interests. Ofcom should also observe the legal obligation to protected radio services.**

*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 needed likely to deliver the right results? Q9: What is the appropriate timing*

*and frequency bands for making available any additional spectrum for licence-exempt use that might be needed?*

**Response:** I do not agree with the license-exempt concept and therefore cannot support the release of any frequencies, for licence-exempt use. My position is widely supported by the UK licensed radio amateur community. It has been shown that problems with licence-exempt equipment under some propagation conditions can even cross international borders, all use of the spectrum should be on licenced basis to enable the relevant identification of possible causes of misuse or interference.

*Q10: Do you agree with Ofcom's longer term proposals for market-based spectrum management methods?*

**Response:** I do not believe that market based spectrum management is possible with frequencies below 30MHz and above 30MHz it is only likely to be successful when applied to short range or low power devices in the GHz range. This part of the spectrum is not exempt from variances in propagation and there is already written evidence of low power, short range devices causing interference across national and international boundaries. I must make the observation that the very suggestion that the radio spectrum can be managed using market based spectrum management as a model, illustrates that the authors of the document have little understanding of the technical operation of radio communications particularly the science and behaviour of radio waves and radio propagation.

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

**Response:** The question should be reversed, what does Ofcom mean by technology-neutral? The electromagnetic spectrum is a limited natural world resource, to enable this resource you use technology. Industry in general is still getting to grips with the term technology-neutral. Again the jury is out as to whether this is 'market speak' jargon or a recognised management concept.

*Q12: Should Ofcom do more to resolve interference?*

**Response:** One of the key roles of the regulator is to protect spectrum stakeholders from interference. I am concerned that Ofcom is absolving itself of its responsibility in this area by moving from a proactive position to a reactive position. I have seen and noted a dilution in both service and manpower since the inception of Ofcom in what was under the Radiocommunications Agency (RA), the Radio Investigation Service and is now known as the Enforcement and Interference Policy unit. Amateur radio is a non protected service and has a policy of self policing, which due to good training, discipline and radio housekeeping, has been very successful in

preventing interference problems from amateur radio operation. A reactive approach is an unknown quantity and one must wonder if a market driven, self managed spectrum would not suffer from a lack of focussed attention on interference matters. I think invariably bullying would take place whereby a 'large player' causing interference to a smaller spectrum stakeholder will pay only lip service to any enforcement action that may ensue, using the prohibitively expensive methods of redress through the legal systems as a method of avoidance and/or delay.

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

**Response:** Ofcom should actively pursue a policy of supporting and promoting innovation. However, such a policy should acknowledge opportunities for all persons involved in developing and extending the use of the electromagnetic spectrum to contribute to innovation whether they be from industry, education or even private citizens. It is a known and recorded fact that amateur radio and radio amateurs have been at the forefront of technical innovation in radio communications since the time of Marconi. The historic pronouncement "That's one small step for man, a giant leap for mankind" was transmitted over a radio designed and built by a radio amateur. Recent innovations such as Packet Switching and Voice over IP (VoIP) have been developed by radio amateurs and are now being taken up by the industry in general. Such work should be encouraged by both the UK government and its appointed agents.

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?*

**Response:** The conventional approach to harmonisation would be preferred by most radio amateurs. I am concerned that a previous liberalisation of interference standards could be lowered even further, apparently to encourage technological developments that have not become commercially viable (do not mislead yourself in to thinking that BPL is a new technology, it comes from the beginnings of communications), in particular the use of power lines to transfer data. I would not wish to see any further degradation of interference standards in fact I would like to see a return to more stringent standards to protect the limited natural resource of the radio spectrum still further.

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

**Response:** Yes I support this proposal.

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

**Response:** If Ofcom's expectation, that entitlement in time will only apply to single band owners, is realised then the approach of not

**intervening to mandate entitlements would seem appropriate. I would expect intervention where a band has multiple users/owners and for adjacent band users.**

Q18: *Do you agree with the Regulatory Impact Assessment (RIA)?*

**Response: If one was being cynical, you could summarise from reading the Spectrum review document that it was Ofcom's intention to gain maximum revenue for the exchequer, and at the same time relinquish as much of the burden and cost of managing and administering the electromagnetic spectrum as possible. I takes a grown up approach to the issue and whilst broadly in agreement with some aspects of the Regulatory Impact Assessment I am wholly against the concept of the deregulation of the Amateur Radio Service or the Amateur Satellite Service (as so defined in ITU Radio Regulations). I am of the view that if Ofcom wishes to simplify its regulatory burden it should apply some other strategy, market driven self management is not the answer.**

## 5. Summary

I must make the observation that from my perspective the Spectrum Framework Review document as published is a mixture of contradictory statements. In one area it talks of the need for continued harmonisation of the spectrum and licensing to meet international obligations. It further talks of the need to retain the training and examination element of the activity, but it also states that it is the intention of Ofcom to consider the deregulation of amateur radio. It is very apparent that the authors of the document do not know the difference between licensed amateur radio and citizens band radio (CB). Also very visible is the author's lack of technical understanding of how the radio spectrum actually works in 'real time'. Whilst the review document is designed to canvas the views of the large commercial interests, primarily the mobile telephone network providers and broadcasters, it must be remembered, the radio spectrum is a limited natural resource in the public domain, and there are many more stakeholders with an interest in its management and use. I would like it noted that the UK's corps of licensed radio amateurs are a national resource and should be recognised as such. Amateur radio has a key role to play in education, Amateur radio provides primary services to the emergency services in time of need and to emergency planning officers of the Government. Amateur radio has a key role to play in industry. The 'wireless' world we live in today is being held back because of the shortage of RF designers and engineers to develop and maintain emerging systems. This is particularly of concern in the mobile telephone industry where the introduction of 3G technology is being held back because of the shortages of skilled labour. These shortages will also affect the commissioning of the proposed, 21st Century Network (21CN). Amateur radio is the traditional source of this skill base and the introduction of the new amateur radio examination structure has led to around 9000 newcomers entering the activity in the last three years, over a third of whom are under the age of 21. There exists an acknowledged failure to encourage young people to migrate from education to science based careers. Several areas of scientific endeavour including as previously stated developments in communications are beginning to suffer

from a lack of qualified engineers. The regulatory impact assessment E.3 (Annex E page 58/59) fails to address this shortcoming even when such a skill shortage is recognized in other parts of government. These shortcomings are already having an impact on the competitiveness that Ofcom is trying to create. A healthy and expanding amateur radio community contains a pool of skills able to contribute to addressing this area of risk. Amateur radio is a science based technical activity whose history is the very foundation of radio communications. This activity should continue to be regulated and fully supported by the UK government and its appointed agent and communications regulator Ofcom. It should not be treated with 'a light touch'. Likewise relaxation of standards in the sphere of interference levels and action taken against offenders will lead to the degradation of the usefulness of this limited natural resource, to the benefit of no one. Radio waves know no bounds and each small impingement on background noise levels and interference has a small cumulative effect on the whole planets ability to get the most out of this resource, in the time since the end of World War II technological innovation has moved on relentlessly dragging commercial interests along with it, commercial interests often need to be reminded and required to respect the long term management of the natural resources of the planet, and as long as the regulatory powers of the Governments representatives in Ofcom are not weakened and undermined by uninformed ill planned short term policies, commerce will perform better by meeting higher standards. Please remember in this litigious time that interference generated in the UK can and does in many cases cross international boundaries like wind and sea but at the speed of light, and decisions made in haste can be regretted at leisure and will cost many times more to put right.

5.

I am a radio amateur of 12 years standing.

I would be very much against any dilution of the radio amateur licence privileges and loss of spectrum.

Amateur radio has given me tremendous help in my chosen career and I feel it would be a very retrograde step to introduce any sort of "free-for-all" in the amateur spectrum. I would also be very much against any form of type approval of equipment to be used within the amateur bands.

If however the above can be achieved under some sort of licence free way then so be it but I would still have reservations.

6.

I support the need for this review and the use of spectrum to provide more wireless-enabled Internet technology; it has much potential for all of us. However, in reply to your Question 1 under Section 1.8, *Key Points for Consultation*, I do have significant concerns for both specific spectrum users and the more general use of spectrum to the public. I see problems existing

already, which are not being adequately addressed, and fear these issues will become even more significant in a less regulated spectrum unless they are specifically targeted.

### **Market Forces**

A market force driven philosophy for managing the world is the current trend and has been since the 1980s. On the whole this approach has provided more commercial opportunities and economic growth but it has proved not to be a universal panacea.

Since the CAVE report, we have experienced a high-profile example of where market forces alone have proved to ultimately deliver less for all. The Post Office now has reduced access to the public, reduced potential market, reduced delivery frequencies and reduced service rates. No doubt that organisation was in need of some market force changes but too harsh a wind can blow out the candle! Another example is the declining use of public buildings by local activity groups such as The Scouts. This has reduced to near zero over the last twenty years through charging for use and driving public use out of existence, as I've witnessed in my village.

We shouldn't assume that market forces always provide more and better for us as individuals or society in general – sometimes all stakeholders appear to lose out! We must exercise careful judgement whether or how much of a market doctrine is appropriate for a given situation. And indeed, whether expensively funded intensive lobbying by commercial interests are blinding the decision making process!

It is my belief that moving too far towards a market force controlled spectrum would be highly likely to compromise one of your primary roles 'the protection of spectrum from interference caused by other spectrum users'.

### **Broadband use of RF**

An issue which affects most radio listeners, both public and amateur, in varying degrees, is the broadband interference caused by domestic appliances. It is so widespread now that it is almost beyond your control and yet strictly you should have prevented this problem getting so out of hand.

I observed in my own house that my early PC equipment is properly RF filtered, however my more recent equipment, from the same supplier, had no RF filtering at all. Of course RF filters cost money! I had to fit filters myself inside some equipment in the home so that I can enjoy my Amateur Radio interests. As I regularly work away from home on business it is interesting to observe how often I find broadcast radio reception in hotels (both MF and VHF) to be extremely poor due to locally created interference.

I believe that many manufacturers and suppliers of domestic appliances, including digital equipment, ignore the law with regard to spectrum interference. For suppliers, I suspect this is probably due to ignorance rather than malicious intent; for manufacturers, maybe a cost based decision is the cause, as they compete in the market. The illegality of these devices is clear

and yet they pervade our spectrum. Consequently, I believe Ofcom need to give much thought to this type of problem and to maintain a critical eye on the market as being the supreme natural selector of what is best; every gardener knows that nature needs managing to deliver what's best for mankind!

Specifically, I fear that technology used to scavenge UHF spectrum, seeking that which is unused at that moment in time, won't be sufficiently discriminating because of cost pressures to cheapen design. A scenario where say 15% of these devices are inadequately filtered or inadequately frequency controlled, causing 'free radical' RF transmissions crashing around the spectrum, would cause havoc generally, not just within the Radio Amateur community.

It is vital that spectrum is properly managed and regulated to optimise the interests of all users, not to be confused with *the majority of users*. I would like to see Ofcom to demonstrate, through this review, that it has a robust strategy to address these potential dangers that are arising from market forces.

#### **Ultra-Wideband and Power-Line Technologies**

The RSGB provide a thorough examination of the impact of these technologies, which are intended to enable greater use of Internet via RF. I support their concerns in these matters and as they are allied to my previous point I will not comment further on these.

#### **Protection of Amateur Radio spectrum**

My interest is primarily in protection of the amateur spectrum allocation, used by millions of radio amateurs worldwide. The review paper gives a heavy hint that that demand for UHF spectrum, in particular, will put pressure on current users to release their current allocation. This is the prime reason for the move to get broadcast TV out of analogue transmission modes and into Digital.

Whilst HF is my primary interest in Amateur Radio, I do make significant use of the 144-146MHz and 430-440MHz segments. For many Radio Amateurs these segments and those of higher frequencies are their main interest and access to them has provided technological discoveries upon which commercial use of the spectrum relies. Radio Amateurs, tend to look at new innovations with a scientific, critical and enquiring mind. The natural curiosity and imagination of UK amateurs using UHF and above has the potential to provide economic advantages to the UK through innovation but only if appropriately protected by Ofcom. It is vital that Amateur provision of spectrum, even those frequencies at a premium, should be protected to nurture such innovation and discovery. Even discoveries that have negative implications can have great value to us all.

Additionally, our license conditions and Raynet specifically, are called upon by the emergency services to provide communications where conventional communications are unsuited to specific situations. Living in the Pennines, I am very aware of Raynet activities required by emergencies on the moors. Even the cities sometimes need these services as Manchester recognised

earlier in 2004. The availability of many and varies bands across the Spectrum sustains Radio Amateurs in being able to bring together their specialist technical knowledge and specific pieces of specialist equipment. Should the Radio Amateur allocation become more constrained, this would necessarily reduce the ability to provide emergency communications that are currently taken for granted.

7.

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?

Not able to comment as far as Amateur Radio is concerned.

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

Yes – Quarterly. Everything likely to impact upon any existing users of spectrum in our case including Radio Amateurs.

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

See attached submission.

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

Not aware of any at present although there have been some worrying proposals for inappropriate technologies such as PLT.

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

Amateur Radio is not a commercial activity and its allocations should be left out of trading arrangements.

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?

So long as the Amateur spectrum is left out and see main body of the submission.

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

Yes so long as there are no interference issues with the amateur service.

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

Not for radio amateurs to comment.

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

Not for radio amateurs to comment.

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

Provided the amateur allocations are excluded - no comment.

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

Providing that as stated in the Spectrum Framework Review "at the same time neither reducing the efficiency with which spectrum is used or the interference suffered by others."

Q12: Should Ofcom do more to resolve interference?

Having set the framework, Ofcom must be responsible for resolving any systematic interference resulting from approved systems. This we believe is OFCOM's prima facia task.

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

It is not Ofcom's function to promote innovation but to respond to it positively in an independent and unbiased way.

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

So far as Amateur Radio is concerned, International harmonisation can be shown to be necessary right across the spectrum. (See Note 2).

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

It has been the experience of the Radio Amateur community that harmonisation is highly desirable as equipment, systems and signals frequently cross international boundaries.

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

Yes.

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

Not applicable to amateur radio so far as we are aware.

Q18: Do you agree with the RIA?

No – We consider harmonisation to be an essential feature of Ofcom's spectrum management.

Main body of submission

Amateur Radio is an International, regulated, science based hobby which offers a number of advantages to society including educational and social benefits. In return for achieving qualifications that assure their competence, radio amateurs are given the privilege of using various small segments of the spectrum with equipment that is not type approved and in many cases may have been designed and constructed by themselves. This is a very clear and necessary distinction between Radio Amateurs and other users of the spectrum such as Private Business Radio and Marine Radio users. Clause 1 Paragraph 1 of the UK amateur radio licence says "The Licensee shall use the station for the purposes of self-training in communication by radio telecommunications which use (without limiting the generality of the foregoing ) includes technical investigations. For more information on amateur radio, a video has been prepared by the national society the Radio Society of Great Britain and this seven minute presentation can be viewed on-line if you have access to "broadband" at:-

<http://www.essexamateurradio.org.uk/prehighpres.htm>  
<<http://www.essexamateurradio.org.uk/prehighpres.htm>>

In order to maintain a vibrant amateur radio community it is essential that the present privileges are largely maintained right across the spectrum. The different aspects of amateur radio include:- self training to various levels, social and public service, educational and technical investigations which often lead to new developments in communications. (see Note 1). For such developments to continue allocations are required on all the present bands. Where rationalisation is needed amateurs could trade some spectrum for smaller, preferably exclusive and internationally co-ordinated bands in the interest of ongoing developments by amateurs.

Many of the interesting investigations undertaken by amateurs involve weak signal modes. The assertion that "Amateur receivers already work in the presence of a degraded noise floor" is not true in the microwave spectrum proposed for UWB. Much work is being done at levels limited mainly by ground noise.

Proposals to allow "Cognitive access" to our frequencies would destroy our ability to do useful work of this kind. Cognitive mechanisms are unlikely to

pay attention to our pre-existing low level signals and thus regard our allocations as clear to use.

With proposed Ultra Wide Band systems that raise the noise floor, the "Genie" will be out of the bottle and unable to be put back once such schemes are approved. The onus should be heavily placed on the commercial interests proposing such schemes to prove beyond reasonable doubt that they will not adversely effect other services.

Firm regulation is essential to amateur radio especially because of it's experimental and self training elements for which permission to use non "type approved" equipment is a vital part. If Ofcom wish to delegate this regulation it would make a great deal of sense to explore the possibility of getting the national society, the Radio Society of Great Britain to administer the amateur bands on their behalf in much the same way as the MoD manage their parts of the spectrum.

#### Note 1

A good, current, example of outstanding development in amateur radio is WSJT by Joe Taylor, a Nobel Physics Laureate (US call-sign K1JT). (See <http://pulsar.princeton.edu/~joe/K1JT/index.htm> <<http://pulsar.princeton.edu/~joe/K1JT/index.htm>> for more details)

#### Note 2

Microwave bands do require international harmonisation because these frequencies are used for satellite and Earth-Moon-Earth communications on a worldwide basis. Also current UK microwave distance records for terrestrial operation are:- 1.3GHz - 2617Km,

2.3GHz - 1083Km,

3.4GHz - 980Km,

5.7GHz - 1244Km

10GHz - 1275Km

24GHz - 391Km

47GHz - 203Km. Thus all these bands have the potential to cross international boundaries even from terrestrial stations. Indeed it is a fact that from the east and south coasts of the UK, international, cross border, propagation is a daily occurrence on the microwave bands.

8.

1 Release slowly.

2 Issues should be published every 6 months.

3 Amateur Radio Licences should be continued.

4 High density populations should be considered.

5 Could be negotiated.

6 Yes many areas.

7 No some could be exempt.

- 8 No. Best results through consultation.
- 9 Later.
- 10 Must agree on proposals.
- 11 Guidelines are needed.
- 12 Interference must be controlled.
- 13 Should not intervene.
- 14 Consistent approach needed.
- 15 Must be slowly introduced if possible.
- 16 Frequency division should be continued.
- 17 New technologies should not cause interference.
- 18 Radio spectrum should not be used for high gains.

9.

Re: Response to Spectrum Framework Review

I have read through this document and I am most concerned about the laissez-faire 'approach to spectrum allocation. It seems that the company with the most money (not scientific expertise) will have control. I believe that command and control by Ofcom over a larger section of the spectrum would be more appropriate, to protect the valuable natural resource which is the electromagnetic spectrum.

I am most concerned that PLT for broadband is being considered in the U.K. where there are more cost effective ways for broadband distribution. It has been banned in Japan! PLT will cause so much interference that it will wipe out the HF bands (below 30 MHz).

My specific interest is in the protection of the Amateur Radio Bands. I would be grateful if you could liaise with the Radio Society of Great Britain and accept their proposals.

10.

**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?*

Relying on the market place to deliver Ofcom's objectives is a positive move and commendable in principle however there are some issues that may have a significant impact on this. Distortions to the market may come about through influences from Ofcom in terms of Pricing (AIP), timing of release of spectrum to the market place as well as the type of spectrum. Technology and change of use may introduce interference which in turn may cause variances in spectrum quality and result in disputes both with the regulator and between users. Ofcom will need to be aware of these potential pitfalls and retain the ability to combine a light touch, more relaxed regime with more direct involvement where necessary.

On a technology front, it is wrong to assert, as is the case in 2.3 para 4, that

digital PMR in the form of TETRA has not met expectations. The issue here was not about the technology but one of the positioning of the digital PAMR service offering in the market place. There is still a very strong (and growing) demand for digital PMR technology for on-site systems, a market place which is currently being held back by the lack of available spectrum. (a market distortion introduced by Ofcom?? See above)

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

A compendium of issues would be very useful. It should be published annually and detail current and future issues that may affect spectrum users as well as progress and updates on actions taken to resolve or mitigate such issues in the preceding year.

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

Re-allocation of the now dormant ex-Dolphin spectrum

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

Yes it should be maximised but with regard to the points under Q1

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

Another area of concern may also manifest itself in a more significant way in the future with the extension of licence exempt spectrum. We have already witnessed cases where the 'landlord' of a facility has imposed its own controls over the proliferation of licence exempt devices in order to 'minimise and control levels of interference'. On the face of it, whilst this may be a valid reason in itself, it could also be seen as a way of ring fencing the physical area in order to limit the choice of services to those which bring greatest direct or indirect commercial benefit to the landlord.

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

Yes although practices such as those outlined under the response to Q7 could well introduce artificial limitations on availability and therefore result in islands of 'under utilisation'

**Q10:** *Do you agree with Ofcom's longer term proposals for market based spectrum management proposals?*

Broadly yes and agree with the sentiment around the emergence or otherwise

of commercial band managers

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

This would appear to be a common sense approach although there would need to be a sensible balance and clear definition between those 'specific' and 'restrictive' rights. Once again, the ability for the 'light touch' regulator to become involved in order to resolve disputes around abuse of or change in these rights must be in evidence.

**Q12:** *Should Ofcom do more to resolve interference?*

Ofcom would need to be able to deploy sufficient resources in order to detect and/or resolve what must inevitably be an increasing number of issues related to interference in a lighter regulated environment.

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

As we have already witnessed, reliance solely on licence exempt use to promote innovation can encounter other barriers (see Q7). Whilst Ofcom should not need to intervene directly, it should reserve the ability to allocate spectrum on a temporary basis for an agreed period against which an initial investment could be made, perhaps then leading to a permanent allocation or a revocation whichever is appropriate at the point of review.

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

Yes

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

Yes

**Q18:** *Do you agree with the RIA?*

Really not sure overall as the results, especially in terms of cost/benefits, seem to be very speculative. Agree with the risk assessment subject to the above comments

11.

### **Response to spectrum framework review.**

1. As usual, Ofcom like a lot of other organizations has assumed that

everyone has access to the Internet, it has ignored the fact that a lot of citizens of the country either do not need, cannot afford, or particularly want such access, this of course will be regarded as a somewhat "Luddite" view however it is nevertheless valid, if it had not been for reading about this in a hobby radio magazine, I would have known nothing of the review and thus unable to give even this limited response.

2. Amateur radio. So far as the review affects this area, I feel that the present system should be retained, it would encourage more young people into the hobby with the benefits that it can bring in terms of knowledge and employment prospects if the license fee was removed, BUT I do not feel that the present qualification requirements or the need for a licence should be altered, much innovation has been achieved over the years by radio amateurs and this must be encouraged, particularly in young people who seem to be more interested in the Internet, as it does not require any "effort" on their part, however if more was done to promote the hobby and give said young people the sense that they had really achieved something in getting a license, then maybe the decline of hobby radio would be halted.

It is to be hoped that none of what is contained in the review, nor commercial pressures will affect the amateur allocations, the great thing about amateur radio is the fact that there is such a wide range of interests within the hobby and this must continue to be encouraged, it would be useful if Ofcom could find a way to promote interest in this use of the spectrum by possibly giving us a bit more "leeway" for experimentation especially in the GHz bands, maybe with restrictions in terms of power but in effect more of an experimenters licence that could be issued to those of us with an interest in this area, we as a group can still provide innovation, but the current restrictions on licensing of repeater and beacons is frustrating to those of us with an interest in developing local area networks of low power systems for amateur television for instance, a simple solution would be to grant us the right to use the current "free" areas for experimentation on an equal footing with current users, subject of course to the need not to interfere with others enjoyment.

3. Citizens Band radio. Whilst many saw CB as a "fad" and the Internet has drawn away many young people from it, there still remains a core of citizens that (especially older and less able) that would be at a great loss if the UK allocations were withdrawn, the idea of allowing the broadcasting of religious services (which may well turn into propaganda for groups whose best interests do not coincide with this country shall we say is immense, who will monitor the content ??), is to me as a non religious person somewhat offensive, and unnecessary, surely if groups wish to do this they can apply for a specific community broadcasting licence, if Ofcom allow this every religious zealot will wish to spread his or own brand of religion as far and wide as possible, and as we found out when CB was first initiated, despite "official" theory, 4 watts of power could go a long way under the: right conditions, even with restrictions on antenna height, design etc, so I and I am sure a lot of other CB enthusiasts who probably know nothing of this consultation, would think this a BAD IDEA!! , PLEASE, leave the small amount of space we take

up which for some in this country is a lifeline to the outside world (disabled, blind etc operators) alone, the ED band is for most of the time virtually unusable owing to propagation of signals from countries that do not crack down on the use of high power amplifiers, or where SSB is allowed (if you have ever listened to this band when there is even a sniff of enhanced propagation you will know what I mean) , if you must remove this band, maybe Ofcom could think about giving us an allocation in say the 446 MHz area , this could even generate a whole new CB industry with MHz band is already being used as a " new" CB band with enthusiasts being able to talk to others at fairly long range using only different ( directional) antennas and about 2 watts of power or even the standard 500mw , propagation being what it is at these frequencies, worth thinking about.