

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title: Spectrum Framework Review

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Name *Murray Niman & Peter Day* Signed (if hard copy)



UK Microwave Group Response to Ofcom Spectrum Framework Review

Who we are

The UK Microwave Group (UKuG, www.microwavers.org) is the representative body specifically for UK amateur radio enthusiasts who operate on the microwave bands. It is affiliated to the Radio Society of Great Britain (RSGB, www.rsgb.org) and the RSGB Spectrum Forum. This response is intended to complement and in no way replaces the RSGB's own comments which have been submitted separately but in co-operation with ourselves.

UK Microwave Group membership includes operators of terrestrial, amateur satellite and Earth-Moon-Earth links, using a variety of leading edge weak signal receivers. Systems also include Microwave Propagation Beacons, Voice Repeaters and Fast-Scan Television Repeaters

UK Microwave Group

Chairman: Peter Day G3PHO

Secretary: Martyn Kinder G0CZD

Treasurer: Steve Davies G4KNZ

On the RSGB Spectrum Forum, UKuG is represented by the RSGB Microwave Manager Mike Dixon G3PFR, and actively supported by UKuG committee members Peter Day G3PHO and Murray Niman G6JYB

Spectrum Framework Review

UK Microwave Group replies to Consultation 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 review is not sufficiently forward thinking as it advocates liberalisation of an amazingly high percentage of the spectrum now, with little regard for retaining a significant degree of freedom if other more attractive technologies come along in future.

Both Amateurs and professionals need areas of quiet spectrum to test and innovate. Such bands may be quite narrow, but as witnessed with 2.45GHz, the benefits can be considerable. Technologies which are fundamentally wideband and pollute the noise floor will make life difficult for future systems.

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

A quarterly or even more dynamic compendium of issues along with more informative frequency allocation tables is essential for all stakeholders to make more informed decisions. This would for example have obviated the need for a fundamental corrigendum to the 79GHz Car Radar 'consultation' which had previously assumed that band was empty.

Current tables only list frequency and very generic application. Tables should be available on the internet which are interactively searchable and include data on Power, standards/modulation, and where possible who the licensees actually are. Data should be made available in such a way that there is an easy ability to plot/tabulate, users, bandwidths, areas affected by new consultations/standards etc. This would save both amateurs and professionals much duplication of effort.

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

The UK Microwave Group is concerned in common with the RSGB and other Amateur Radio Services about the sensible management of the spectrum.. The Spectrum is a finite resource which needs to be conserved and managed on a sound engineering basis.

We would like to highlight two aspects which do not seem to have sufficient direct attention:-

Management by Bandwidth. Spectrum width in all domains is finite (whether it be exploited by frequency, time or power techniques is largely irrelevant) and basic capacity can be fundamentally maximised by favouring narrower bandwidth techniques. Amateur Services are excellent examples where many such narrow band techniques have been pioneered and continue to be developed. Consideration and favour should be given to techniques which preserve capacity/bandwidth, rather than waste it such as UWB and 24GHz Car Short Range Radars.

Management of Short Range Devices (SRDs). SRDs often have a major role for the citizen-consumer, and are usually low power and unlicensed. They are only successful if sound design standards are set and enforced and they are deployed in a sound manner. The document makes little reference to a viable SRD strategy. UKuG would like to highlight the success, convenience and economic benefits of the 860 and 2.45GHz bands versus the appalling chaos that reigns in the 430 MHz band where car alarms/immobilisers fail on a daily basis.

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

Despite what the document claims, there are few relevant examples of successful trading regimes. In any case the UK is a crowded island in close proximity to mainland Europe. Radio propagation is a cross-border phenomenon and experience suggests that a collaborative approach must be the norm within the EU. – See Answer-14 as well regarding radio propagation

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

NO. It's not proven as the best method, and is wholly unsuited for amateur radio. Ofcom seems intent on going headlong into uncharted territory with little practical evidence, or pilot scheme beforehand. Ofcom should also be clear as to what frequency bands that such ideas apply to. Furthermore both strategy and Impact Assessments should take into account international regulations, protection for existing services, UK design/manufacturing, cultural, science educational and training benefits as well as purely financial factors.

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?*

See Answer-5 above as well as....

Trading of capacity and licences is only appropriate in shared common bands such as those designated for GSM and UMTS operators. It should be restricted elsewhere until it is proven and adequate protection measures are in place. In the latter regard, Ofcom must acknowledge that not all services are financially/legally/technically capable of trading/bidding and safeguards must reflect this as well as dealing with speculators

Liberalisation is already a feature of Amateur operation, with its multiplicity of modes etc. However some restrictions still apply and we urge that an obligation to inherently favour applications for microwave beacons and repeaters is implemented.

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

NO. Ofcom suggest that only a percent or two more spectrum is needed to satisfy demand and concentrates in releasing it the 5GHz band. This seems to be naive and ignores where success occurs at present

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

NO. Ofcom should realise that it may well have underestimated the demand. Moreover it should pay attention to where the demand is at present and can be most easily satisfied within the 2.45GHz band and potentially the 860MHz area. It is not clear if the full impact of Home-RF Zigbee and Bluetooth-Lite has been accounted for.

Ofcom is urged to also factor in the need to reform and largely evacuate SRD applications from the 430MHz bands.

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

UK Microwave Group deplores any suggestion that Amateur Frequencies be set aside for Licence exempt devices. We also urge Ofcom to consult carefully with the Amateur Radio community on other suggestions in Review Paragraph 4.4.1 regarding the general structure and future of Amateur Licences.

UK Microwave Group opposes unrestricted use of USA UWB 'standards' in the UK and will be responding to the separate consultation on this, as it threatens three Amateur bands.

On the topic of 2.45GHz, we wish to highlight that capacity is potentially available at the upper edge of the current 2.45GHz band. **There seems little reason why Channel-14 at 2.484GHz cannot be released quickly in the UK.** This would have a particularly beneficial effect on the ability of current WLANs to pair channels up.

In parts of Europe (notably France) other 2.45GHz channels are restricted, preventing freedom of trade/services, and we urge Ofcom to press for these to be harmonised and released as well.

Above the 2.45GHz band Ofcom are considering the 2.5-2.69GHz area. Ofcom should consider extensions for WLAN applications either directly at 2.45-2.50GHz, or a separate band more suitable for higher power rural applications in the 2.5-2.69 range. **It is important that higher power LAN equipment is not permitted in the existing 2.40-2.45 band as the scope for interference to existing equipment is immense.**

Extensions at the top edge of the 2.45GHz band as outlined above would improve capacity in a very low cost manner for consumers and manufacturers, leaving the 5GHz band free for higher bandwidth services. It would also mean more applications would be protected from potential interference from UWB devices.

Finally we again urge Ofcom to consider an urgent resolution of Car Alarm/Immobilisation problems due to poorly designed SRDs in the inappropriate 430MHz band. The former Radio Agency had planned to migrate such devices upto 860MHz. Given the huge number in use and their lifetime, this move must be accelerated and restrictions put on any new devices in the 430MHz band.

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

NO. The concept is far from proven. Despite nearly three years of talk, not a single trade has yet occurred which suggests that stakeholders do not find it attractive.

Spectrum Trading is totally unsuited to Amateur Radio, Earth Science, Astronomy and other specialist, weak signal flux users who are unable to wield financial clout.

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

NO. Ofcom should avoid fashionable terminology and be clearer. Whilst we agree that rigid enforcement of one-standard only on a band is restrictive, that does not necessarily mean that the opposite of a free-for-all is any better. In many respects, Amateur bands are technology-neutral, but there are still standards/conventions in play to ensure inter-operability. There are occasions where Ofcom should (and sometimes already does) express a view as to what are the best techniques for efficient use. A statement of principles which favour modest powers, minimum bandwidths, lowest noise etc should be considered.

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

YES, Absolutely. Compared to the former Radio Agency, the services for countering both interference (Baldock) and EMC Compliance issues (Whyteleaf) has been severely diluted. Both these aspects need significant investment to not only restore, but enhance capability, both technically and in human resourcing out in the field. Ofcom needs to be far more pro-active if it is to maximise the value and capacity of the spectrum. A level playing field should exist and larger commercial companies must be seen to be equally subject to standards and the law as smaller concerns.

Amateur and Amateur Satellite Services many of which are weak signal-flux in nature and are Primary Status are being treated poorly with respect to protection from interference.

Managing denser spectrum occupancy combined with pressures from large quantities and build standards of consumer electronics will result in increased problems from EMC and other interference issues. Ofcom is urged to pay high priority to this area.

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

Ofcom must have due regard that its actions (or lack of them) do not inadvertently damage innovation, particularly by smaller players in the field. For example if regulation was too light a touch, potentially a large commercial concern could result in blocking the ability of newer technology find a slot in the spectrum. Measures to protect against this should be explicitly built into its Impact Assessment process as well. One example would be flawed PLT systems generating interference to Amateurs, and blocking new Digital Radio Mondiale (DRM) and Digital Radio Switchover at LW/MW/HF.

Amateur Radio always has been and continues to be a major source of innovation, often pioneering propagation research, frequencies and modulation techniques well ahead of commercial entities. The UK base of 60 000 amateurs, represents an undervalued national asset for innovation, science/engineering, education/training and emergency communications, all of which Ofcom should recognise and actively encourage.

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

NO. UKuG, and RSGB in general prefer the successful conventional (and consensus) approach used in the past. UKuG deplores the implication of Framework document paragraph 2.5.1 which advocates ignoring International Radio Regulations. So far as Amateur Radio is concerned, international harmonisation can be shown to be necessary right across the spectrum. VHF, UHF and Microwave bands require international co-ordination because these frequencies are used for amateur satellite and Earth-Moon-Earth communications on a world-wide basis.

For information, current UK microwave distance records for terrestrial operation are:-

Amateur Band	Distance
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. The well-known simple example of anomalous TV propagation exemplifies this at UHF. Space-borne interference can also be a problem across borders from sources such as broadcast and Galileo satellites

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

There seems to be an insidious trend to reduce or redefine interference standards to always accommodate the 'next guy'. We urge that sound science must apply. We would highlight that on many occasions market forces do not necessarily select the best technical approach. Given that spectrum is a finite resource and the consumer is best served by unified standards rather than confusing choices, encouragement and even intervention may be necessary.

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

YES. Fundamentally all allocations should be organised by frequency, and then secondary parameters such as bandwidth, power and mode. However as stated in answer to Q2, data should also be made available in a flexible format that does permit alternative views to be taken to assist planning and management.

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

This can only work where in a given band, all radios are cognitive. Operation in shared bands requires intervention and management to protect existing users.

Q18: *Do you agree with the RIA?*

NO, The current RIA suffers from a number of flaws and omissions

Impact Assessments should include damage to innovation, impediment to testing/experimentation elsewhere, overall EM Noise pollution, enhancement of UK Microwave Design and Manufacturing, excessive Bandwidth/Occupancy, and protection for Recreation, Education and Scientific purposes.

It is clear that Ofcom should undertake more direct contact with the stakeholders, including Radio Amateurs prior to advocating policy in 'consultations'. The former RA often seemed to handle this rather better.

All consultations should also make it clear what recourse or appeals procedure is open.

UKuG notes that Ofcom has recently launched a separate consultation to assess its own Impact Assessments, which surely implies that things are not perfect!

Good impact assessments would have avoided:-

- Technically and economically flawed broadband over powerline (BPL/PLT) causing HF interference, and undermining the future of Digital Radio Mondiale SW Broadcasting
- Permitting Car Alarms on 430MHz resulting in many thousands of jammed cars.
- Safety critical Car SRR facing interference from other users, and conversely 24GHz SRR impacting on the sacrosanct 23.6-24GHz band for Weather forecasting and Global Climate change research.