## A consultation on the framework for managing spectrum used by licence-exempt devices

# Licence Exemption Framework Review

# Response by the Radio Society of Great Britain

**June-2007**

### Introduction

This response to the above Ofcom document is from the Radio Society of Great Britain (RSGB, www.rsgb.org.uk) on behalf of its members and the wider UK Amateur Radio community.

RSGB is recognised as one of the leading organisations in the world in the field of amateur radio. It collaborates with its fellow national societies via the International Amateur Radio Union (IARU) through IARU Region-1 (www.iaru-r1.org).

Amateur radio is a science based technical hobby enjoyed by over three million people worldwide. From a statutory point of view it is fully 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. The wide-ranging role of amateur radio from training/education to satellite and emergency communications was recently highlighted in an exhibition, “Amateur Radio, a European Resource”, which took place in the European Parliament at Brussels in March 2007.

We would be pleased to provide any additional information on request or participate in any future discussions, both with Ofcom or any other stakeholder who has an interest in this topic.

Permission is granted for a copy of this response to be placed in the public domain.

*RSGB, June 2007*

## Questions & Answers

***Question 1.***
*Do you agree that the spectrum commons model should be the preferred approach for licence-exempt use of spectrum, and that application-specific allocations should only be considered where technical constraints or safety issues require this?*

As we highlight in our answer to Question-11 there are current examples where coordination (eg similar power levels or standards) of license exemption has its benefits, whereas some general exemptions shared with higher power licensed services create problems for both parties. Cases need to be considered on individual merits.

At present there is a rather unhappy mixture in some existing bands in which the Amateurs Services are licensed. This can arise from interference to exempt (but socially useful) devices and their inability to cope, just as much as their own emissions being a problem.

***Question 2.***
*Do you agree with the proposal for multiple classes of spectrum commons?*

Our answers to Questions-1 and 11 reflect current experience. Looking forward we note that Ofcom does appear to recognise the case for coordinated classes etc (ie. different classes of commons), and perhaps LE-specific spectrum. We would welcome further detail and coordination in Europe in this respect

***Question 3 & 4***
*Do you agree with the distinction made between the licence-exemption and light-licensing regimes?*

*Do you agree with the view that the licence-exemption and light-licensing regimes will converge in the future?*

Light licensing has the benefit of some form of certainty, transparency, access to user databases and retains greater flexibility for managing problems of interference, compliance, inadequate standards etc. There are distinct roles for both regimes and we would not be in favour of default exemption.

***Question 5.***
*Do you agree with the proposed mixture of licence-exempt and light-licensed use of the 105−275 GHz spectrum? Do you agree with the bands that have been identified for such use?*

Within this range is a mixture of Primary and Secondary allocations to the Amateur Services. Technology development is quite challenging in this range and we see little proof of commercial demand that would justify wide scale spectrum release for exempt systems at this time.

We welcome Ofcom's identification of the Amateur Primary allocations in Group-3 where, for example, the 134GHz band is certainly the subject of active development.

In allocations where Amateurs have access to contiguous Primary and Secondary spectrum, development is usually concentrated in the Primary allocations. We favourably note that our Secondaries seem to coincide with Ofcom's Group-2 where light licensing would facilitate spectrum management should any issue arise.

***Question 6.***
*Do you agree with the view that the use of the 275−1000 GHz spectrum should be licence-exempt?*

The frequencies listed in Footnote 5.565 cover two distinct categories of services and also leave the door open to additional frequencies being defined. We would welcome comments by Ofcom on how stable any exemption or allocation would be relative to this footnote and developments at future WRC conferences. Such regulatory uncertainties can hinder equipment development just as much as the technology itself.

RSGB and IARU have an existing spectrum requirement for access to bands within this frequency range. In Germany and the USA there are already excellent examples of pioneering amateur experimentation in the 300-400GHz range. At present UK amateurs are denied such opportunities. Without prejudicing longer term formal allocations at a future WRC conference we believe there is a case for UK Amateurs to have experimental access to selected bands within the 275GHz+ range.

Current studies indicate 340-342GHz and 400-410GHz as priorities for low power narrow bandwidth experiments (of the order of a few milliwatts transmitter power). We would welcome further discussion with Ofcom in this respect on these and the fuller IARU requirements.

***Question 7.***

a) *Do you agree with the view on the levels of future demand for licence-exempt usage in the 40−105GHz spectrum?*

We suspect in practice that some of the demand will be slow to materialise and Ofcom seem to have taken a reasonable approach in holding back exemption of other spectrum apart from the 60 and 100GHz bands.

b) *Do you agree that the Group-A bands identified above should be considered for licence-exempt use?*

Some form of exemption in the vicinity of the 60GHz Oxygen absorption peak would be favoured on the grounds of:-

- Ease of frequency reuse due to high Oxygen absorption losses
- Encouraging mm-Wave equipment development which could benefit other mm-Wave bands
- The opportunity for relatively secure links that would support remote operation as per Section-10 of the new Ofcom UK Amateur Licence
- Reducing the demand by SRDs on lower frequency amateur microwave bands in which we share.

c) *Do you agree that licence-exempt and light-licensed use of the Group-C bands identified above should only be considered when there is evidence of demand for such use?*

Whilst we have no comment on the nature of licensing or release timing, a regime that encourages 100GHz+ chip development would be welcome.

***Question 8.***
*Do you think it could be desirable for transmissions at levels below certain power spectral density limits to be exempt from licensing?*

In general we do not agree with the approach suggested. Many amateur receivers are high performance and thermal noise limited to enable weak-signal reception. The Ofcom graphs (notably Fig-7) suggest permitting a rise of 20dB above the noise floor all the way down to the long range HF and VHF bands where we are already encountering significant rises in unintended emissions. The proposal therefore seems to give scope for further increases in harmful interference to licensed services and as such is unwelcome.

***Question 9.***
*Do you agree with the transmission limits proposed in this document?*

No. Ofcom have taken the UWB emission limits out of the context they were developed in where they have several caveats and assumptions in respect to mitigation, duty cycle, sunset clauses, limited outdoor use etc. In effect a largely indoor standard is being used to support a unilateral redefinition of the outdoor noise floor. This would be particularly risky as the lower microwave bands offer low loss long range outdoor propagation and would affect both amateur and commercial services.

This approach is entirely unwelcome. We also feel it is counter to the carefully balanced regime for UWB that ERO TG3 has developed and is the topic of implementation via a separate Ofcom consultation.

In the high mm-Wave and THz bands their may be some scope for this approach due to increases in thermal background/sky noise but any such approach should be fully studied and consulted upon at the European level

It is also unclear how any such new limits would integrate with the EU EMC directive

***Question 10.***
*Do you agree with the harmonisation strategy discussed above in the context of licence-exempt devices?*

Once licence exempt, it is difficult to manage devices and their international roaming. Therefore we agree with the Ofcom recommendations in Section-8.5 that being more pro-active and working within a harmonised EU/CEPT context is important. Regular reviews of decisions, market penetration and impacts are also encouraged at this level. We are comfortable with a proportionate approach that emphasises stronger protection of services in lower frequency bands compared to those particular high frequencies (eg 60GHz, 100GHz or >275GHz) where risks are rather lower.

***Question 11.***
*Do you agree with the view that no additional regulatory instruments, beyond those available today, are required for the protection of licence-exempt equipment?*

**Licence-exempt equipment should continue to operate on a non-protected, non-interference basis.**
The Amateur Services already encounter situations that raise concern.

- High levels of Interference are encountered from the increasing abundance of 2.4GHz Wifi and other exempt systems which affect reception of licensed and internationally harmonised Amateur Satellite Service downlinks. This is threatening major investments and forcing us to seek alternative allocations.
- In the 430MHz UHF band Repeater proposals frequently encounter deployment restrictions due to concern over non-protected 433MHz car alarms etc (where poor SRD Rx design is unhelpful).

In both cases sharing between low power (but socially useful) licence-exempt and licensed services is not working well. Slides shown at the Ofcom stakeholders event appeared to indicate that the capacity limits of lower frequency licence-exempt bands were being reached which is also a warning sign

The only regulatory instruments or other approaches that would be welcome would be those that favour licensed services. We encourage Ofcom to consider and promote, for example politer protocols, improved SRD Receiver standards, frequency migration to more suitable bands etc. The bands at 446 & 868MHz and DECT show how the benefits of properly planned licence-exempt spectrum.