## Title:

Mr

## Forename:

Neil

## Surname:

Underwood

## Representing:

Self

## Organisation (if applicable):

## Email:

## What additional details do you want to keep confidential?:

No

## If you want part of your response kept confidential, which parts?:

## Ofcom may publish a response summary:

Yes

## I confirm that I have read the declaration:

Yes

## Additional comments:

The response I have given is based of my main interest of narrow band operation within the 2.3 GHz and 3.4 GHz bands and which will be unaffected if OFComs' preferred option is taken forward.

## Question 1: Do you agree that it is likely that the benefits to UK consumers and citizens will be greater from the MoD?s release of spectrum in the 2.3 GHz and 3.4 GHz release bands than from retaining the current amateur use?:

In general yes. Releasing additional bandwidth for mobile device use does not necessarily mean it will bring commercial benefit to the UK. It depends on what use is made of the extra bandwidth, (gaming, streaming video (movies or TV) or used for commercial purposes).

Clearly the mobile service providers will profit from the ever increasing demand to high speed data.

## Question 2: Are there current uses in the release bands other than those detailed in RSGB?s band plan and discussed in Section 3 of this consultation?:

I am not aware of any.

## Question 3: Are there further consequences of removing the release bands from amateur licences that have not been considered in our analysis?:

Probably not.

## Question 4: There is an option (although not preferred) to remove access to the adjacent bands, as well as to the release bands. What are the consequences of removing access to the adjacent bands from amateur licences?:

If access to both the 2.3 GHz and 3.4 GHz were to be removed from the amateur license then no amateur operation would be permitted between 1.3 GHz and 5.7 GHz. The propagation characteristics of 2.3 GHz and 3.4 GHz bands are significantly different from those bands either side to make them of scientific interest. As a senior professional scientist working within Government (but not in radio frequency research) propagation studies across the amateur microwave bands is one of my main interests within the hobby of amateur radio..

## Question 5: Are there current uses in the adjacent bands other than those detailed in the RSGB?s band plan and discussed in Section 3?:

None that I am currently aware of.

## Question 6: Are there additional mitigation measures which would provide demonstrable proof that amateurs would not cause interference into LTE in the release bands following the release?:

I think without exception the level of technical knowledge and expertise of amateurs that make use of the 2.3 GHz and 3.4 GHz bands is very high. Unlike the the HF/VHF/UHF amateur bands, equipment for the microwave bands is not available off the shelf (or where it is it consists of commercial modules that have to be assembled into a working system). Operator skills also need to be good to ensure communications between amateur stations is successful as received signal strengths are often very low. Although the comments above do not constitute mitigation measures it should demonstrate that the amateur microwave community has the skills sets needed to put in place mitigation measures if needed.

## Question 7: Do you agree with the proposed process for varying licences following cases of reported interference and our proposal to vary licences should dealing with the number of reported cases become too onerous?:

I don't see any real change in dealing with cases of proven interference caused by an amateur station (which could be closed down at very short notice if it involves a critical

communications system).
In view of the (surprisingly) low number of interference cases investigated recently (across all amateur bands) the likelihood of an increased number of cases that need to be investigated is probably very low (this conclusion is however not based on any scientific evidence). (It would have useful to specify if any cases investigated related to the 2.3 GHz or 3.4 GHz bands). It would have been useful to have specified how 'too onerous' is defined (a doubling or times ten for example).
There should be some mechanism in place to ensure OfCom informs the amateur microwave community (e.g. via the RSGB and hence the UK Microwave Group and BATC) that interference caused by amateurs operating in the 2.3 GHz and 3.4 GHz bands is becoming an issue to other users, to enable rapid mitigation measures to be put in place.
I understand the reasons for the proposed changes and (reluctantly) agree with them.

## Question 8: Do you agree with our preferred option?:

I don't see any real change in dealing with cases of proven interference caused by an amateur station (which could be closed down at very short notice if it involves a critical communications system).
In view of the (surprisingly) low number of interference cases investigated recently (across all amateur bands) the likelihood of an increased number of cases that need to be investigated is probably very low (this conclusion is however not based on any scientific evidence). (It would have useful to specify if any cases investigated related to the 2.3 GHz or 3.4 GHz bands). It would have been useful to have specified how 'too onerous' is defined (a doubling or times ten for example).
There should be some mechanism in place to ensure OfCom informs the amateur microwave community (e.g. via the RSGB and hence the UK Microwave Group and BATC) that interference caused by amateurs operating in the 2.3 GHz and 3.4 GHz bands is becoming an issue to other users, to enable rapid mitigation measures to be put in place.
I understand the reasons for the proposed changes and (reluctantly) agree with them.

## Question 9: Are there additional changes to the Amateur Radio Licence which would assist amateur in lowering the risk of causing harmful interference to new uses?:

I am not aware that the general amateur license specifies out of band emission levels, I have always assumed the ALARP (As Low As Reasonably Practical) principle for harmonic suppression etc. I know there are very strict requirements for repeater and propagation beacons. Perhaps similar or the same limits could be applied to non-repeater/beacon installations (home and/or portable) if interference to users in the release bands or to the higher that current occupancy of users in the adjacent bands were to become an issue. Practically this would be more of a challenge to achieve (compared to a handful of ATV repeaters and beacons) as it would require access to expensive test equipment.