Response to Ofcom Consultation:
Application for a variation to 3G licences (and consequent proposal to vary draft 2GHz MSS/CGC Base station licences)

We would like to thank Ofcom for the opportunity to offer our views on the application for a variation to 3G licences and the consequent proposal to vary draft 2GHz MSS/CGS Base station licences.

Wireless Cameras are now established as an essential component of both newsgathering and outside broadcast coverage. Demand for spectrum continues to increase and routinely there are occasions when demand threatens to exceed the supply. So far, only continued access to 2500-2690MHz and 3500-3600MHz has saved the day, but this resource will soon be lost to Programme Making and Special Events (PMSE) once these spectrum awards are completed.

The proposal to vary the licences for 3G and MSS/CGC base stations is one of a number of issues affecting the availability of spectrum for Wireless Cameras. The spectrum bands between 2025 and 2500MHz are subject to new or increasing threats at four spectrum boundaries. All have the potential to reduce the quantity and availability of Wireless Camera spectrum and are illustrated below in Figures 1, 2 and 3. The existing Wireless Camera channels are shown in blue.

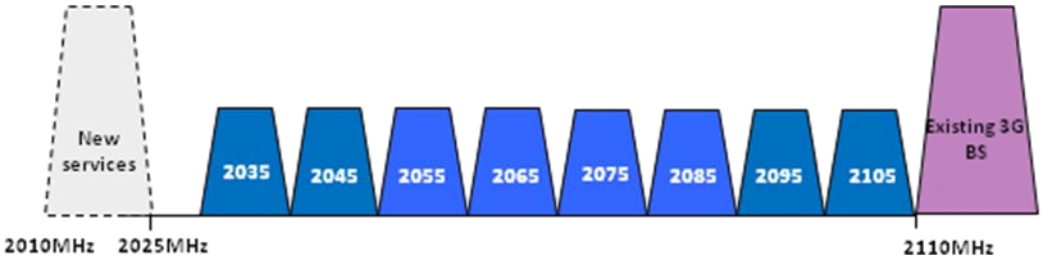


Figure 1: The award of spectrum in the range 2010-2025MHz and the proposal to vary 3G licences in range 2110-2170MHz

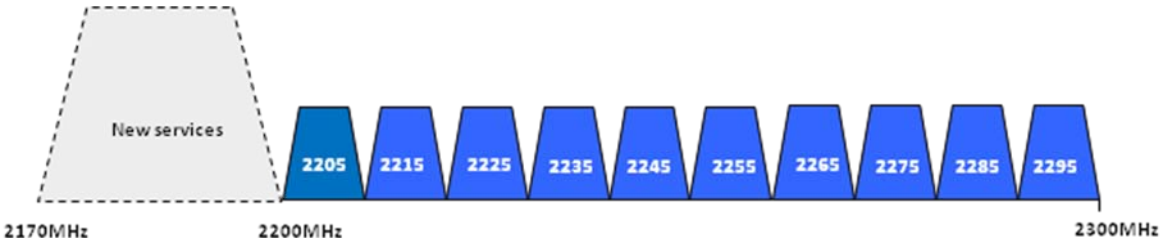


Figure 2: The introduction of MSS/CGC base stations in the range 2170-2200MHz

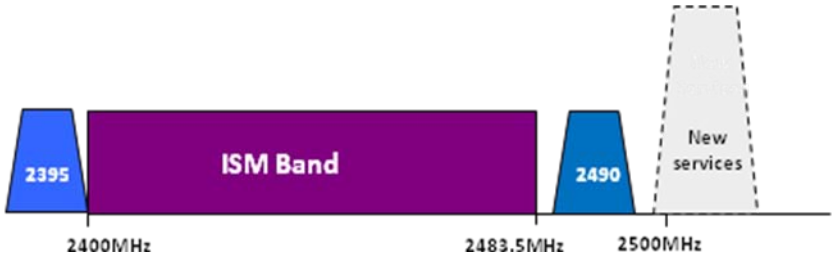


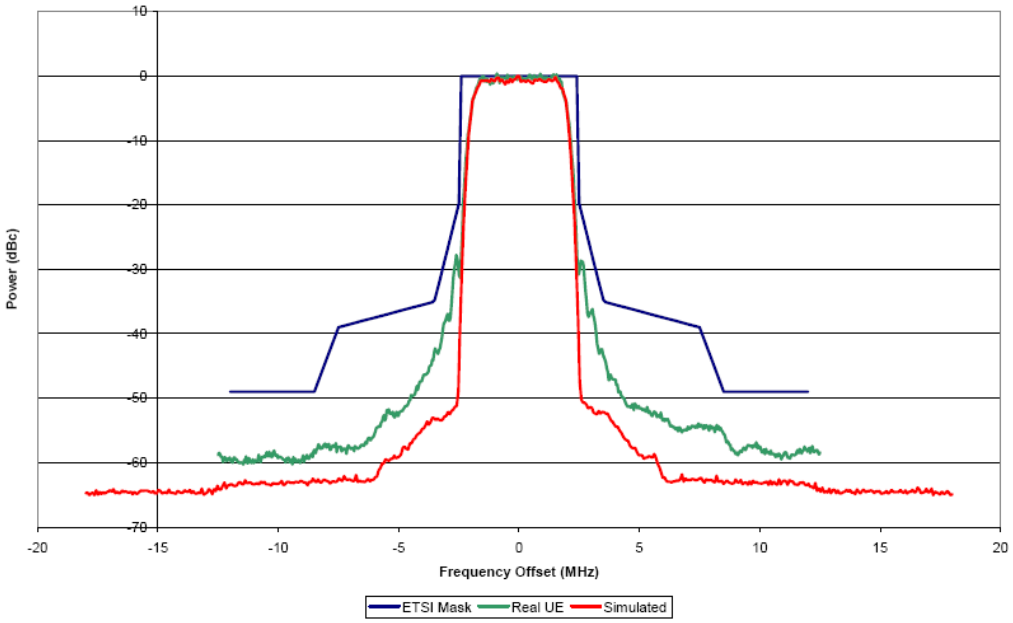
Figure 3: The award of spectrum above 2500MHz for new services

Broadly, where new high power services exist or are to be introduced adjacent to PMSE spectrum, the first adjacent Wireless Camera channel will be virtually unusable. This is already acknowledged by Ofcom for the 10MHz channel centred on 2105MHz adjacent to existing 3G base stations. Practical filters only benefit the second adjacent channel, reducing the minimum separation distance between base station and Wireless Camera receiver to tolerable values. Filters are also of benefit at the spectrum boundaries where additional frequency separation exists between high power services and the adjacent Wireless Camera channel, namely 2500MHz and 2025MHz.

As a consequence, of the twenty 10MHz channels available for Wireless Cameras below 2500MHz, two are liable to suffer greatly reduced availability such that they are practically unusable. These are 2105MHz and 2205MHz, with or without additional filtering. A further four will suffer to a lesser degree but will only be widely available with additional filtering. These are 2095MHz, 2215MHz, 2035MHz and 2490MHz. This equates to 30% of the available spectrum.

Our response to the earlier consultation, 'Award of available spectrum: 2500-2690MHz, 2010-2025MHz', set out our concerns over aspects of the technical analysis employed by Ofcom in relation to the impact on Wireless Camera receivers in adjacent spectrum. The current consultation continues to rely heavily upon the same work. It underpins the provisional view that whilst the impact on adjacent Wireless Cameras is already severe in the case of the 2110MHz boundary and will become severe adjacent to 2200MHz, a further 6dB increase in base station power does not make a bad situation appreciably worse.

As we set out in our earlier response we believe these conclusions to be optimistic. It is clear from the current consultation that out of band emission limits will retain the same absolute levels with the proposed 6dB increase in base station power. The existing limits however, particularly -15dBm/MHz from 3GPP TS 25.104, are relatively relaxed. Levels of out of band emissions are therefore likely to rise above current levels as base stations increase in power. Coupled to this we also highlighted a shortcoming in the compatibility analysis used to characterise the effectiveness of additional filtering to protect Wireless Camera receivers. We believe that the conclusions are optimistic because the out of band emissions from the test signal used were substantially better than the permitted base station spectrum mask, reproduced below:



Simulated UMTS signal with real UE handset and ETSI mask

Figure 4: Extract from ERA Report 2007-0447, page 4

That said PMSE has to co-exist with other radio services at spectrum boundaries. Robust receiver performance, supplemented by additional filtering, is fundamentally the only way to make best use of limited spectrum for Wireless Cameras. Over the past year the PMSE industry has started to take action and the use of filters has become more prevalent. We fear however that the predicted minimal additional impact of the proposed base station power increase is underestimated and may result in the availability of second adjacent and possibly further Wireless Camera channels becoming compromised.

1. Consultation Questions

***Question 1)**: Are there any reasonable grounds why Ofcom should not grant the request to vary the five Wireless Telegraphy Third Generation Mobile Licences by increasing the permitted maximum in-band EIRP to 68dBm as soon as practicable? If so, please explain your reasoning for this.*

We are not wholly convinced that an increase in the permitted maximum in-band EIRP to 68dBm can be managed without an additional adverse impact on PMSE channels for the reasons set out above. Despite retention of the current limits for out of band emissions there remains the likelihood of increased out of band emissions within the current limits. These have not been fully considered in the analysis of additional filtering for Wireless Camera receivers.

Before the request is granted we ask that further study is made of actual base station out of band emissions for the current maximum EIRP and actual out of band emissions for base stations with the increased EIRP. A more accurate assessment can then be made of the impact on adjacent spectrum for Wireless Cameras and the effectiveness of additional filtering.

The pattern of deployment for base stations receiving power increases will also have a bearing on the impact into PMSE spectrum. Please could further information be provided on plans for the likely mix of deployment across rural, suburban and urban areas.

***Question 2)**: Are there any reasonable grounds why Ofcom should not also apply the increased permitted maximum in-band EIRP to future 2 GHz MSS/CGC licences? If so, please explain your reasoning for this.*

We are not wholly convinced that an increase in the permitted maximum in-band EIRP to 68dBm can be managed without an additional adverse impact on PMSE channels for the reasons set out above. Despite retention of the current limits for out of band emissions there remains the likelihood of increased out of band emissions within the current limits. These have not been fully considered in the analysis of additional filtering for Wireless Camera receivers.

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