

Sony Europe's response to Ofcom's consultation on the "Coexistence of new services in the 800 MHz band with digital terrestrial television"

1: Do you have any comments on our modelling approach and assessment of numbers of households affected?

We appreciate that Ofcom have made an enormous effort to assess the impact on DTT services and have tried to engage other stakeholders at various points in time. However, we have a number of concerns on this study – specifically:

- We believe the DTG 'zoo' lab test results do not accurately predict the true number of receivers affected, because the estimation of receivers sold relates only to a particular model using a specific chassis, and does not include all the model variants based on the same chassis.
- The field trial path loss measurements did not always agree with the theoretical models, with a significant number of points showing measured path losses that were lower than the theoretical values. Has the propagation model been updated to include these points?
- The field trial measurements are based on a single recording of a Base Station (BS) from a single vendor operating in idle mode because that was considered the worst case interferer available for some receivers at the time. Because the BS scheduling algorithms are vendor dependent, we would like to be sure that this BS configuration is really the worst case situation, but this will only be possible when more recordings from other BS implementations are available.
- There is concern that the consultation process is being driven by the timescales of spectrum auctions and we would rather see more extensive field trials in other areas of the country with more receivers and recordings of LTE interferers taken from other BS vendors.
- The BBC/Arqiva comments at the 5th July Ofcom co-existence with DTT workshop indicated that their own assessment of the numbers of homes affected was considerably worse (x4) than the Ofcom study. Given that BBC/Arqiva also have considerable experience in modelling, we think it is important to examine the reasons for the different outcomes and share this with other stakeholders.
- We would like clarification on how the requirement of 10 filters per house hold was derived? Is this because of the limited resolution of the model (100mx100m pixel size)? If this is true, given the different statistics of clutter etc within a pixel, has there been any work to study whether the factor of 10 is a realistic multiplier? If filters were to be mailed out to all households within the affected zone, is the factor of 10 sufficient to cover the worst cases? What is the backup plan regarding the additional costs if this proves to be too low?
- The study assumes professionally installed roof top antennas feeding the DTT receiver via good quality coax cable. In practice many homes will have long lengths of co-axial cable running from the antenna to various points around the home, and in many cases the coaxial cable may be old and terminated in unshielded junction boxes & wall outlets. Has the effectiveness of the screening of these cables and boxes been addressed as a source of interference entry from the BS or user equipment? If not, how will this problem be mitigated if it turns out to be significant?
- We believe the DTT consumers should see no change in the quality of their reception resulting from LTE deployment. If the interference problem turns out to be worse due to the above concerns, and the tariffs (if adopted) turn out to be too low so that MitCo will be under funded, what is the plan to remedy the situation?
- The study has been carried out using 59dBm/10MHz maximum EIRP but the licence allows 61dBm/5MHz (i.e. 64dBm/10MHz). The Ofcom technical report section 5.15 states *"It is clear that a large proportion of UMTS-2100 base stations radiate at close to the regulatory limit, despite the wide variety of environments in which they are deployed."* Therefore we can expect LTE BS to be operated up to the regulatory limit and that limit should be explicitly stated in the licence conditions both for maximum levels of in block BS EIRP and out of band

emissions. These levels should be no higher than those assumed in the interference study and possibly less in certain cases (e.g. LTE block A into CH60) where interference is caused to a large number of households. This also offers a degree of clarity to other interested parties such as filter manufacturers who will want to know the actual conditions in the network in order to avoid over designing their products.

- We support the proposed tightening up of the BS out of band emissions beyond the EC decision document values. It allows receivers to benefit from the additional BS filtering to improve receiver protection and will reduce the number of affected households.
- Has there been any investigation to check that there is no interference into the Satellite IF frequency range of 950-2160MHz, perhaps through badly screened cables or EMC weaknesses of the satellite receiver or LNB?
- How will the Cornish trial results be taken into account to validate the modelling approach?

2: Do you agree with our high level conclusions on mitigation options?

Not completely. We are concerned one option has been rejected too quickly and we have some additional mitigation options to suggest. We are also concerned by the lack of consideration towards secondary TVs in the home.

- We agree that the effectiveness of OCR's requires further study, and that in reality polarisation discrimination does not have as significant effect as anticipated. We also agree that filtering in both the BS and receiver ends can reduce the effects of interference particularly below CH60. However, one mitigation method that seems to have been rejected outright is the reduction of BS power in areas significantly affected by interference. We think this option needs to be considered more thoroughly.
- If it turns out that Ch60 cannot be used for DTT due to high levels of LTE interference, we think an additional mitigation option should be considered. We suggest moving the services on Ch60 to a lower channel in the UHF spectrum, maybe one that will be freed up in the '600MHz band' following ASO, or reducing LTE block A power.
- Our own tests have shown that some DTT receivers are more affected by the signal from a BS when the BS is idling i.e. very low or zero users. We suggest MNOs introduce a minimum idle mode limiting the minimum BS activity to 30% of full capacity. We recognise this will be inefficient from a power consumption point of view, particularly in the early days of LTE deployment, but overall this could work out cheaper than other mitigation options being proposed.
- While we recognise increasing the selectivity of DTT receivers using filters is a key mitigation technique, we are concerned that the implementation of suitable filters may prove more difficult than expected. Additionally, the designs we have seen so far are quite large and conflict with the trend of decreasing TV panel thickness allowing flush wall mounting. We think more time is needed to develop a viable technical and physical specification for the filters.

3: Do you have any comments, views or evidence that you would wish to be considered in our further work looking at the appropriate level of consumer support?

- After the introduction of LTE, the TV consumer will demand the same level of service and will not accept any degradation. We believe the UK should take the "proactive" approach and supply filters prior to a LTE launch in areas where interference is likely to occur, minimising any disruption. It's clear that not everyone will require the same level of support to resolve an interference problem. In the majority of cases people will be able fit a filter themselves, but the support must be flexible enough to meet all individual needs.

- A useful tool would be a postcode checker to inform consumers they are at risk of LTE interference and what type of filter they will need for their location. This role could be undertaken by MitCo.
- With reference to section 6.11, "It may also be the case that fitting a filter to a flat panel screen mounted close to a wall requires expensive additional work. Should this be covered?" Yes, where a customer has installed a flat panel screen on or close to a wall and the filter cannot be hidden from view, additional work should be financed to ensure the customer's installation is not compromised.
- MitCo's lifetime should be equivalent to the duration LTE operator's license.
- MitCo should be independent, balanced and share mitigation information freely to relevant industry groups.
- In order for MitCo to take proactive mitigation measures, it must know the service roll-out plans of the LTE operators. The operators must be compelled by the terms of their license to release this information in good time, to allow MitCo to operate proactively.
- Given the uncertainties of the data presented in the consultation document, we expect any funding scheme for MitCo would fully cover the costs of mitigation with a mechanism for obtaining additional funds from the LTE licensees or government.
- Although we recognise the use of indoor aerials along with secondary TVs is not a 'protected service', such use cases are essential. Any loss of TV service via this means will create a backlash against LTE deployment from users. We think it's important to consider how to communicate and actively engage with these users, even if no specific mitigation action will be offered.

4: Do you have any comments or views on how we have assessed the approaches and our preference for the hybrid approach?

- The positive aspect of the Hybrid approach is to allow the mitigation decisions to be taken in the most economic way, either by the application of DTT mitigation countermeasures, or by making changes to the network (power, antenna direction, location, network loading etc).
- However, by fixing a 'Tariff' as part of the Hybrid approach; it appears to carry very high financial risks, particularly as this approach is untested. A TV service is too important to people for a funding experiment. There is a lack of agreement in respect to the affected numbers of receivers between Ofcom, BBC, and Arqiva. How to cover the full funding of mitigation needs more careful consideration.
- For example, if monies were held within a 'Mitigation Fund' it is reasonable that remaining monies after the agreed period be refunded to the licensee if not required? Conditions to address under-funding will also need to be put in place to cover any shortfall.
- While the Tariff gives Ofcom easy criteria to carry out the auction process, the Tariff could result in a serious funding shortfall. We do not see why the Hybrid approach to mitigation, should not be disconnected from the 'Tariff' which carries unnecessary financial risks to the overall process.
- Within the TOR that either a Hybrid approach and / or MitCo operate to, there needs to be a minimum Level of Service stated and a clear understanding that services lost as a result of the deployment of LTE need resolution. Methods to clearly separate between installations which are already not adequate for DTT reception and installations affected by LTE, will need to be considered by MitCo / Hybrid.
- We feel very strongly that MitCo's activity must be overseen by a board of directors, who represent stakeholders from across the value chain. In our view the Board of Directors would include:- Telecom Operators representative organisation, Ofcom, Arqiva, DMOL, BBC (and other broadcasters), Intellect, DTG as a minimum.
- The structure, reporting and the way in which MitCo operates needs to be done in a transparent manner, ensuring that a level of confidence and trust is established and

maintained amongst stakeholders.

5: Do you agree with the options, the assessment approach and our initial conclusions? What are your views on cost risks and how to deal with them?

We think the current consultation moves the debate forward, but the cost risks remain too high to proceed with the auction, unless more work is completed.

- If the number of affected TV households is incorrect, the funding for MitCo could be too low. It's not clear from the consultation document how this would be resolved. As stated above we are very concerned about the gaps between Ofcom's figures and those mentioned by BBC/Arqiva (we have not been able to analyse the methods used by BBC/Arqiva).
- We think MitCo will need to be in existence for a time equal to that of the LTE license. Experience shows that educating the general public about these technical issues can take a long time, because it's natural that people will only take notice when they are personally affected. Several years after launch of LTE services, people who move home could suddenly become affected and need assistance. We would like to see the lifetime of MitCo equal the lifetime of the LTE license.
- Given the importance to LTE roll-out whilst maintaining DTT services for all, it is vital to get the planning right. We feel there are too many uncertainties at the present time, so we would like to see a 2nd consultation once all the data from this initial consultation has been analysed.
- This consultation raises many issues and we expect Ofcom's continued engagement to clarify and where necessary resolve stakeholders concerns. Through proactive engagement we look forward to the successful LTE launch in the UK, without impacting on existing broadcasting services.
- We need to see general agreement between Ofcom, BBC and Arqiva on the issue of affected households to be sure any funding of MitCo is accurate. We propose the Ofcom technical working group forum is re-established to address the issues raised in the Consultation process.