Ofcom consultation on

Coexistence of new services in the 700 MHz band with digital terrestrial television

Response from Andrew Dumbreck Media Limited

Question 1

The following comments reflect the experience of the engineering aspects of coexistence between TV and 4G mobile data gained during the current deployment of 4G services in the 800 MHz band. My role in that deployment is as technical advisor to the "4G/TV Co-existence Oversight Board" and as chair of the technical working group that has worked on improving the computer modelling of interference. The comments are my own and do not necessarily reflect the views of the other parties involved.

I agree that it seems likely that the numbers of homes affected by base station interference is likely to be in the same range as for 800 MHz. The conclusion that the number of homes potentially affected is in the tens of thousands assumes (I guess) that a similar mitigation campaign is run, and tens of thousands are diagnosed as 4G confirmed as a result of visits. It is worth remembering that, for 800 MHz, the number of homes affected is higher than the figures you give, perhaps by a factor of 2 to 10. Most of these do not turn into confirmed cases for the range of reasons, including those homes that don't qualify for a visit because they have cable or satellite TV reception, those in an a block of flats, and those that don't notice interference on channels they rarely use.

The comments leading up to question 1 on modelling could be read to indicate that predictive modelling of interference is so inaccurate that it is not worth doing. This would be wrong. The 800MHz scheme is underpinned by predictive modelling and this has provided the basis to analyse what actually happened, and so improve the modelling and guide policy decisions. Improved modelling should be considered for 700 MHz coexistence. Your consultation document mentions the improvement available from correctly taking account of household TV antenna gain, but not the much greater potential benefits of more accurately modelling: (a) clutter in the path between the 4G base station and household TV antennas; (b) better representing DTT transmitters in actual use in any location; and (c) more appropriate use of planning parameters, reflecting the difference between service planning and interference prediction. In my view, predictive modelling and a regime of comparing modelling and actual cases should form an integral part of any mitigation programme for 700MHz coexistence.

I find that the metric giving the number of interference events per 10 or 100 hours, is not particularly meaningful. It would be more helpful to consider how many homes would have a level of disruption to viewing that would be annoying for, say, 50% of viewers.

Question 2

In relation to set top antennas, it seems likely that TVs with set top antennas could experience interference from hand set emissions that could not be mitigated by filters, because the interference is partly in the TV band. When deciding a policy approach to this, it will be worth remembering that the publicly funded Switchover Help Scheme provided reception using set top antennas for some

elderly viewers. Some households rely on set top antennas because it is difficult for them (for a range of reasons) to use roof-top or loft antennas.

Question 3

Where you refer to receiver filters in Question 3, it is worth remembering that the most appropriate point to insert a filter depends on the reception system, not always at the receiver. Filters will clearly be important for mitigation work but it might reasonably be expected that, as for 800 MHz, installers doing mitigation work are likely to need to take other steps. For 800 MHz these steps have included: removal of unnecessary amplifiers; replacement of substandard or damaged amplifiers, fly-leads, and face plates; and (in some cases) replacement of antennas or cabling. These shortcomings may not have affected reception before the introduction of 4G signals, but made the reception system more susceptible to 4G interference.

On the recommendation on K-Band TV antennas (which tend to reject signals in the 700MHz band). Where the antenna is designed from scratch to respond best in K band, I would tend to agree with the recommendation. But in cases where the K band antenna is a wideband antenna with a filter added, as many commercially available antennas seem to be, I think a recommendation would need qualification. There may be cases where it would be better to fix a wide band roof antenna without a filter and then add a filter before the receiver or distribution amplifier. Care will also be needed with a recommendation in relation to continued reception of the multiplexes 7 and 8.

Andrew Dumbreck 17th July 2017