Weightless Special Interest Group

Additional comments:

Weightless Response to Ofcom Consultation "TV white spaces: Approach to co-existence"

Introduction

Weightless is an open global standard enabling machine-to-machine communications in the TV white space. M2M could bring enormous societal benefit, innovation and growth over the coming years, helping to solve problems such as assisted living and climate change. Opening up the white space is a critical component of enabling the deployment of ubiquitous Weightless networks and we are pleased to see this consultation and the progress it signals.

Weightless is a system with a cellular architecture where base stations are deployed and terminals (which act as slave devices) are located within the cells. Hence, we are most interested in the parts of the regulation pertaining to this architecture.

Achieving a balanced approach

We are pleased to see that Ofcom has recognised that much previous regulation on sharing and interference has been overly conservative. Indeed, it now appears that the estimates of interference from LTE to TVs, which is analogous to interference from white space devices (WSDs), might have been over-estimated by two orders of magnitude or more. Conservative regulation does not optimise the efficient use of the spectrum or the value that it creates and in the case of white space results in low spectrum availability and low power levels which might prevent the deployment of a Weightless network. We broadly believe that Ofcom has struck a fair balance with this consultation, although we urge that Ofcom continues to increase power levels as trials and deployments progress until such point as interference occurs, so that the real-world acceptable power levels can be determined.

Question 1: Do you have any comments on our proposed approach to ensuring a low probability of harmful interference to DTT services? Please state your reasons for your comments.:

We agree strongly with the approach of only protecting rooftop reception and not indoor reception.

We approve of the use of a noise floor rise as the metric for measuring interference as this is simpler and less prone to conservatism. Even so, we believe that greater than 1dB can likely be tolerated with no noticeable degradation and suggest that Ofcom allow greater powers in selected areas to monitor the effect.

We agree in general with the use of multiple device classes although we suggest that when devices are measured, rather than just using a single multiplex and a single interferer, a more realistic set-up comprising 6 multiplexes and multiple interferers is used. Otherwise, the impact of any burst interference on the receiver AGC may be seen as much greater than in reality.

Question 2: Do you have any comments on our proposed approach to ensuring a low probability of harmful interference to PMSE services? Please state your reasons for your comments.:

We broadly agree with these proposals.

A critical element of white space usage for Weightless will be the distribution of PMSE usage in a cell. Since slave devices will not be able to operate co-channel with PMSE devices, if there are PMSE devices scattered across many of the white space channels this will severely restrict availability. We would like to see JFMG charged with minimising the number of white space channels used for PMSE within a geography by restricting PMSE devices to a sub-set of channels as far as possible and by aggressively reusing the same frequencies, e.g. from venue to venue.

Question 3: Do you have any comments on our proposed approach to ensuring a low probability of harmful interference to 4G services above the UHF TV band? Please state your reasons for your comments.:

We accept that the prevention of use of channel 60 for WSDs is a pragmatic way to ensure no interference to 4G.

Question 4: Do you have any comments on our proposed approach to ensuring a low probability of harmful interference to services below the UHF TV band? Please state your reasons for your comments.:

No comment.

Question T1: Do you have any comments on our proposal to cap the maximum in-block EIRP of all WSDs at 36 dBm/(8 MHz)?:

We accept that it will bring greater certainty to have an upper limit. The limit of 36dBm is acceptable for Weightless base stations.

Question T2: Do you have any comments on our proposed approach for calculating WSD emission limits, as expressed in Equation (4.3), in relation to DTT coexistence calculations?:

No comment.

Question T3: Do you have any comments on our proposed approach for dealing with the uncertainty in the locations of DTT receivers in relation to DTT calculations?:

No comment.

Question T4: Do you have any comments on our proposed target of a 10% likelihood of a 1 dB rise in the noise-plus-interference floor at the edge of DTT coverage:

We approve of the use of a noise floor rise as the metric for measuring interference as this is simpler and less prone to conservatism. Even so, we believe that greater than 1dB can likely be tolerated with no noticeable degradation and suggest Ofcom allow greater powers in selected areas to monitor the effect.

Question T5: Do you have any comments on our proposed approach for calculating coupling gains in relation to DTT calculations?:

We agree with the approach proposed - this seems a pragmatic way ahead at this point in time. Once more is known about white space deployments, this coupling gain can be revisited as necessary.

Question T6: Do you have any comments on our proposed protection ratios in relation to DTT calculations? :

We agree in general with the use of multiple device classes although we suggest that when devices are measured, rather than just using a single multiplex and a single interferer, a more realistic set-up comprising 6 multiplexes and multiple interferers is used. Otherwise, the impact of any burst interference on the receiver AGC may be seen as much greater than in reality.

We also suggest that some measure of assumption is made that TV antennas are just good enough and therefore that TVs will almost invariably be operating with relatively low signal level even where the predictions are for high signal levels.

Question T7: Do you have any comments on our proposed approach for dealing with the uncertainty in the locations of WSDs in relation to DTT calculations?:

No comment.

Question T8: Do you have any comments on our proposed approach for calculating WSD emission limits, as expressed in Equation (5.2), in relation to PMSE coexistence calculations?:

No comment.

Question T9: Do you have any comments on the PMSE wanted signal power levels that we propose in relation to coexistence calculations?:

No comment.

Question T10: Do you have any comments on our proposed approach for calculating coupling gains in relation to PMSE calculations:

No comment.

Question T11: Do you have any comments on our proposed approach for dealing with the uncertainty in the locations of WSDs in relation to PMSE calculations?:

No comment.

Question T12: Do you have any comments on our proposed approach for dealing with the uncertainty in the locations of PMSE receivers in relation to PMSE calculations?:

No comment.

Question T13: Do you have any comments on our proposed approach for the derivation of WSD-PMSE coupling gains for non-geolocated slaves in relation to PMSE calculations?:

We agree with the approach of assuming 10m separation and that there is no building penetration loss. We suggest that these assumptions be revised over time as more is known about WSD deployment.

Question T14: Do you have any comments on our proposed protection ratios in relation to PMSE calculations?:

No comment.

Question T15: Do you have any comments on our assessment that a margin for uncertainties in radio propagation is not necessary given the proposed parameters for derivation of coupling gains in relation to PMSE coexistence calculations?:

We agree that no margins are needed in this case. To add margins would add unnecessary conservatism into the calculations.

Question T16 Do you have any comments on our proposed WSD emission limits in relation to PMSE use in channel 38?:

We accept that, at least for the moment, it would be prudent not to allow WSD emissions in channel 38.

Question T17: Do you have any comments on our proposal not to permit WSDs to operate in channel 60?:

We accept that the prevention of use of channel 60 for WSDs is a pragmatic way to ensure no interference to 4G.

Question T18: Do you have any comments on our proposal that, if the unwanted emissions limit (over 230-470 MHz) in the draft ETSI standard (EN 301 598) is tightened by 8 dB, there should be no further restrictions on the operation of WSDs in relation to services below the UHF TV band?:

no comment.

Question T19: Do you have any comments on our proposal that, if unwanted emissions limit (over 230-470 MHz) in the draft ETSI standard (EN 301 598) is not changed, there should be restrictions on the in-block powers of WSDs in channels 21 to 23?:

No comment.