

Radio Spectrum Policy Group
By email to: CNECT-RSPG@ec.europa.eu.

29 April 2013

Draft RSPG opinion on strategic challenges facing Europe in addressing the growing spectrum demand for wireless broadband.

EE welcomes the opportunity to comment on the RSPG's draft opinion on the strategic challenges facing Europe in addressing the growing spectrum demand for wireless broadband.

EE is one of the largest mobile network operators in the UK. We have 27 million customers and an annual turnover of £6.7 billion. We employ 15,000 people in the UK.

EE launched 4G services in 1800 MHz at the end of October 2012. We were the first operator in the UK to launch 4G and we currently remain the only mobile network operator in the UK that offers 4G services. We continue to invest £1.4m a day in our network and the upgrade to 4G. As of the end of March 2013, we have 318,000 4G customers, equivalent to 2.3% of our Pay Monthly customer base.

We believe that the recent trends in increasing mobile data usage will continue and more spectrum will be needed for mobile in the long term. However, meeting the future demand for mobile data is not only about identifying more spectrum for wireless broadband. As Ofcom in the UK has noted, there are three pillars that will jointly help to increase the capacity available on mobile networks:

- deployment of the most efficient radio access technologies, e.g. transitioning from 2G and 3G to 4G;
- the allocation and award of more spectrum to mobile; as well as
- deployment of more network sites in a way that is optimised to deliver more capacity where there is localised congestion, e.g. rolling out small cells in 'heterogeneous network' designs.

Over the past few years, policy initiatives such as the RSPG have been concerned with ensuring that licence restrictions that prevent the deployment of the latest access technology are lifted and that enough spectrum is allocated and assigned for radio access networks. This has been achieved through:

- setting deadlines for NRAs to award spectrum that has already been allocated to mobile broadband (800 MHz and 2.6 GHz); and
- pushing the liberalisation of existing spectrum licences in 900 MHz, 1800 MHz and 2.1 GHz for 4G.



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In our view this means that those operators who are willing to invest are now well positioned to upgrade the capacity of their radio access networks in the short and medium term according to customer demand.¹ We do not see a requirement for more spectrum by 2015 and with additional bands such as 1.5 GHz, 2.3 GHz and likely 700 MHz in the pipeline for mobile, the requirements for more access spectrum are being addressed in the intermediate term beyond 2015 as well.

Against this background, there is now a unique opportunity, and an urgent requirement, to address the third pillar, namely how to improve the conditions for deployment of more network sites and in particular small cells. From a spectrum point of view this means addressing the lack of commonality in spectrum bands used for wireless backhaul for these sites (also referred to as fixed links or microwave links). Currently, mobile operators in different Member States use a plethora of bands for wireless backhaul. A key reason for this is that different NRAs have made available and promoted different spectrum bands for backhaul through various different licensing methods. Whilst there are a number of ECC Decisions on harmonisation of spectrum for backhaul none of these are the result of an EC mandate and none have a 100% adoption rate in the CEPT countries. The lack of commonality in bands used for wireless backhaul may not previously have been perceived as a significant issue that warranted European co-ordination. This was probably because vendors could adapt their network equipment to different bands at a reasonable costs and there was not the same overwhelming case for achieving economies of scale in equipment as there was for end user terminals (handsets) for the radio access network.

However that is changing. With the forecast increase in demand for capacity, mobile network operators will increasingly need to deploy access spectrum in small cells. These cells will need a backhaul solution. EE is considering several options for small cell backhaul, both fixed and wireless, but one issue is clear: By definition there are going to be many such small cells and hence their deployment needs to be cost effective. For wireless backhaul to be a viable solution for small cells we need equipment that is manufactured to achieve economies of scale. For such an eco-system to develop, we need common spectrum bands used for wireless backhaul across Europe, and preferably globally, in the same way that we have common bands used for the radio access network. There is a clear relationship



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¹ For example, in the recent auction of 800 MHz and 2.6 GHz in the UK, EE acquired 2x5 MHz of 800 MHz and 2x35 MHz of 2.6 GHz to support future growth. We believe that we are well positioned to meet our customers' future demand through our investments in network rollout and our spectrum portfolio.

between the cost of deploying small cells and the demand for more spectrum for mobile access networks. Whilst they are complements, they are also substitutes: The more expensive it is to deploy small cells and 'reuse' access spectrum across our network, the more additional access spectrum would be needed to be deployed in our macro cellular network as an alternative.

EE would therefore like to suggest that a recommendation is added to the nine recommendations in the draft RSPG Opinion. This should recommend that the European Commission works to promote the use of common bands for wireless backhaul across the Member States. Spectrum for backhaul should also be considered as part of the actions under the other recommendations. Importantly, the strategic plan referred to in recommendation 1 and 2 to make the necessary spectrum available to meet the future demand for wireless broadband services, should also consider how commonality of use for wireless backhaul can be promoted and how the necessary spectrum for backhaul can be made available on a harmonised basis.

In terms of specific frequencies and candidate bands, EE would like to suggest that a sizeable spectrum allocation below 6 GHz is considered as a harmonised allocation for non-line of sight wireless backhaul, suitable for small cells. The frequencies around 4 GHz have particular good characteristics. To achieve the required capacity each network needs at least 40 MHz of unpaired spectrum, suggesting that 120-160 MHz is needed as a total allocation.

We are of course happy to discuss our suggestions further and provide detailed information about our current use of backhaul spectrum if this would be useful to the RSPG.

Yours Sincerely,

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