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11 December 2012

Dear Mr Moore,

Developments with spectrum for smart metering and smart grid applications

This letter is to express our interest in the acceleration of spectrum release of 870 – 876 MHz for, inter alia, Smart Meters and Smart Grids consistent with the direction of ETSI and CEPT. The vendor-neutral availability of licence-exempt spectrum for the energy sector, Home Automation, Alarms and other Short Range Devices (SRDs) has the potential to realise huge benefits across Europe over the next ten years. A study commissioned by BIS and DCMS[1] observed:

"Another growth area within licence-exempt spectrum is M2M communications. M2M connections in the energy/utility sector in particular – for smart meters and smart grids – are forecast to grow at a 50% CAGR over the next decade, reaching 1.3 billion connections worldwide by 2021. Growth is being spurred by the need of energy and utility companies to respond to regulatory and legislative changes, as well as the need to access more granular demand- and supply-side data in near-real time, reduce their capital and operating costs, and increase service offerings."

In the energy sector, alone, availability of this spectrum has the potential to greatly expand the benefits of the Smart Metering Implementation Programme, by allowing use of communications technologies beyond those currently open to the market. Specifically, based upon proven scale deployments of existing technology in the Americas and Australia, and the DECC Smart Metering Impact Assessment; we project ***an additional £6.9bn in net benefits*** if this sub-GHz spectrum is made available immediately.

By immediately allocating these bands on a licence-exempt basis, Ofcom can enable - in the energy sector alone - the rapid deployment of cost-effective, standards-based communications technology that will place the UK among the worldwide leaders in deployment of Smart Grid, with substantial benefits to UK consumers, the energy sector and the environment. In the longer term, the band will be able to support many new applications, such as Alarms, Home Automation and Automotive.

We note that the 870 – 876 MHz band, in lying between the GSM-R allocation and the SRD band, has attracted little commercial interest and so has lain fallow for over ten years. A CEPT workshop held in Mainz, Germany in 2009, identified a significant demand for additional spectrum in Europe and instructed the relevant technical working group, SE24, to carry out studies investigating the feasibility of sharing between new licence-exempt technologies/applications. That study is now well advanced and appears to be on track to recommend the bands be released to licence-exempt devices, now that sharing with the small number of primary services in the band is feasible.

[1] 'Impact of radio spectrum on the UK economy and factors influencing future spectrum demand', November 2012, report for BIS and DCMS by Analysis Mason

In countries where suitable spectrum is available, utilities have overwhelmingly chosen sub-GHz wireless mesh for Smart Grid communications over alternative technologies. For example, utilities representing over 40 million homes in the US and Australia are now implementing wireless mesh-based communications platforms for Smart Grid, almost all in the 902-928 MHz ISM band. These networks have been expressly designed to meet the Smart Grid communications requirements described above. UK utilities have shown strong interest in having wireless mesh as an option for UK Smart Grid. In countries where licence-exempt spectrum was previously unavailable for the aforementioned applications, regulatory entities have taken steps to allocate sub-GHz spectrum (i.e., Japan, China).

Smart Grid standards have been developed at IEEE, TIA, ETSI and IETF, which will create a worldwide ecosystem, expanding choice and driving down cost. Unlike some technologies proposed for the DECC Smart Metering Implementation Programme, ETSI wireless mesh standards have been earmarked as valid technologies in both EC M/441 Smart Metering and the EC M/490 Smart Grids reference architectures. UK consumers, energy suppliers and distribution network operators would benefit if they had access to this ecosystem.

Current frequency allocations and rules do not permit a practical, cost effective use of ubiquitous wireless mesh as an option for Smart Grid in the UK. The 870-876 MHz and 915-921 MHz frequency bands, at reasonable power levels and duty cycles, are ideally suited for Smart Grid, in terms of range and penetration. The proximity of these bands to the ISM band used in the Americas and Australia offers the potential for the UK to benefit from substantial economies of scale, since it should be possible to use the same radios across all markets.

We urge Ofcom to accelerate the process as fast as possible to ensure that the considerable investment that is being made into the Smart Metering roll out does not become a single use network which, on its own, would offer limited utility to UK Plc and represent a huge wasted opportunity for both the UK and European consumers. It would also accelerate the development of other licence-exempt applications in the UK, putting the country at the forefront of the roll out of these wider SRD applications.

Kind regards

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Appendix: Summary of Energy sector case for Immediate Release of 870 – 876 MHz

Societal Benefits. Given the limitations of currently available communications technologies, the £11bn smart metering rollout could be at risk due to inadequate coverage and a very constrained set of benefits: consumers could become justifiably skeptical and unsupportive. Based upon proven scale deployments of existing technology in the Americas and Australia, we posit an additional £6.9bn in net benefits if sub-GHz spectrum is made available prior to the smart metering rollout. (based on DECC's Smart Metering Impact Assessment).

Sharing. The regime we propose is vendor neutral, license-exempt for Smart Metering and Smart Grids. This scheme conceivably could be extended to other Smart Infrastructure applications such as Smart Cities (e.g., street lighting). Both utilities and communications service providers could exploit the same spectrum, deploying orthogonal networks in the same geographic territory. This operating model is open: it is analogous to WISPs and MNOs deploying competing WiFi networks in the same geographic area.

Standards. We propose the use of an IEEE standard and an ETSI standard. These activities focus on reliable, low duty cycle, low bit rate applications such as those needed by smart utilities. The nature of low duty cycle applications helps to ensure that many devices can share the same spectrum.

Growth and Innovation. UK plc can take the lead within the EU in developing, deploying, and exploiting an ETSI standards-track technology. Deploying the infrastructure for "sensor network dial-tone" and ensuring that the smart metering deployment is not slowed or gated will ensure that job growth coincident with the nationwide metering deployment is not slowed or gated.

Support. Our proposal (and its underlying philosophy) has the support of many significant industry stakeholders and participants. Interest has been expressed by the Energy Networks Association (representing all UK distribution network operators), the Joint Radio Company (spectrum management for the UK utility industry), and Cable&Wireless Worldwide. In addition to these initial expressions of interest, we expect letters of support from others with an interest in the utility industry, integrated circuit vendors, and progressive voices in the M2M and Internet of Things communities.

Risk Mitigation. While the societal benefits highlighted above are enormous and the potential for growth and innovation is immense, the risk of deploying low duty cycle radios is minimal. We have documented (in multi-million device deployments on similar sub-GHz spectrum) that the transmit times for smart meter radios is, on average, no more than 40 seconds per day. Spread across 30 200 kHz channels, these radios will occupy discrete air space for no more than 2 - 4 seconds per day. The ETSI specifications are on track regarding reasonable duty cycles, but should the standards deviate markedly from today's path, the risk of interference is demonstrably close to non-existent.