UK Broadband Limited's response to Ofcom's Call for Inputs on its Strategic Review of Spectrum at 420 – 470 MHz

Industrial-grade LTE networks

UK Broadband ("UKB") believes that UHF Bands 1 and 2 (420 – 470 MHz) are of considerable commercial and public interest, due to the favourable propagation characteristics which Ofcom has outlined in this consultation document. We think that there is a strong need for an industrial-grade network capable of providing business-critical and mission-critical services for IoT and other industrial applications.

LTE, LTE-A and *e*LTE technology can offer features such as QoS, resilience, priority and pre-emption. There are many business-critical M2M, IoT, Smart City, public safety and utilities applications for which a normal consumer network is not suitable or adequate. Such applications require an industrial-grade network.

UKB's technology partner, Huawei, successfully provides mission-critical network services utilising LTE at 400 MHz in China. In order to test similar applications in this country, UKB has undertaken some product development and testing under a T&D licence from Ofcom in the 1400 MHz band as a proxy for 400 MHz. For example, we ran a trial with the City of London police in order to demonstrate the practical applications for lower frequency LTE. These tests were successful and, based on Huawei's experience, we are confident that use of 400 MHz would be even more effective for these applications, due to its more favourable propagation characteristics.

We agree that, in the case of utilities, Government should encourage development of a self-managed network that meets the operational needs of utilities and can be used as a replacement to meet the existing and future network monitoring and control and communication requirements. We believe that LTE and *e*LTE is well placed to provide the basis for such a network.

We strongly disagree with Ægis' assessment that there is no demand to deploy LTE 450 in the UHF bands. We think that the case for country-wide industrial LTE applications has been overlooked in this report.

Rural Broadband

We also disagree with Ægis' assessment that there is no demand for 450 MHz for rural broadband services. In the context of an LTE Fixed Wireless Access solution, UKB's interest in this spectrum would be to provide a "thin" layer of wide-area LTE coverage in sparsely populated areas to supplement UKB's 3.5GHz and 3.6 GHz spectrum.

Spectrum Management

We therefore think there is an overriding case for Ofcom to address the fragmentation which currently exists in the band and bring some of this spectrum together into at least 2 x 5 MHz blocks to make available for LTE and eLTE applications. Although LTE can be deployed in 1.4 and 3 MHz channels, 5 MHz channels are preferable as they enable much more efficient use of the spectrum.

We note that Business Radio ("BR") currently uses around 7 MHz of fragmented spectrum. We believe that this spectrum could be reassigned to LTE and that all or most of the BR users could use the LTE spectrum instead. Rather than each BR user having to acquire its own small frequency allocation, they could all, instead, purchase an industrial LTE service – all of the functionality that PMR offers can be replicated with eLTE. This would be cheaper for the users and would lead to more efficient use of the spectrum. There would therefore be no need to find additional spectrum to which these existing users could be migrated.

Availability of CPE

The Ægis report correctly notes Huawei's development of consumer premises equipment in LTE 450. We are aware of the following Huawei equipment in this band:

- eRRU3255: 400M（380MHz~400MHz，380MHz~450MHz）, 2 PATH
- Huawei rapid deployment broadband trunking system - "network in a box"
- Terminals:
    - EV750 (Vehicle mounted Radio)
    - EP820 (PTT Smart phone)
    - EP680 (PTT Ruggedized Handset)
- CPE：EG860 (IP65 Wireless Gateway)

The Aegis report notes that the propagation characteristics of 450 MHz would increase the interference into neighbouring cells and reduce the traffic that could be carried over the network and that it is considered highly unlikely that the 450 MHz band will be included in mainstream mobile handsets. However, in our view this does not preclude application of 450 MHz for industrial and M2M applications.

Conclusion

We would welcome the opportunity to meet with Ofcom to further elaborate on our vision for industrial-grade LTE networks.