

Rural community use of license exempt 2.4 GHz

Broadband Britain

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The Prime Minister has declared that the UK will have the best broadband connectivity for e-commerce in the EU by 2005.

There is a problem, in that the rural communities in the UK are lagging way behind. In Abbotsbury, Dorset (where this response is being written) there is no ADSL coverage, no GSM coverage, terrestrial TV coverage is variable, Power supplies frequently fail, and this situation is unlikely to change. With only 300 persons on the electoral roll it is highly unlikely that any of the mobile operators will have any interest in improving this situation. Satellite is an option but many of the households in the village cannot afford Mr Murdochs fees.

The solution that we are currently advocating, is to use 2.4 GHz to provide a local private LAN within the village, and then taking a single private circuit out of the village for backhaul connectivity.

This and other similar solutions offer the potential to deliver considerable benefit to rural communities, and I would ask, that this use, for societal benefit, should be considered and balanced/costed against the limited potential for licensing revenue arising from the same geographical locations.

Unreliable

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The 2.4 GHz band is used for Industrial Medical and Scientific applications, it is also emitted by Microwave ovens. This makes the band relatively unattractive in high population density locations. This is likely to get worse.

It is however perfectly suitable for low density population areas and in particular rural use.

Insecure

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2.4 GHz uses an insecure protocol 802.11b. It is relatively trivial to decrypt using available software (see <http://airsnort.sourceforge.net>). The time required to crack the protocol is described in the reference material as only a few seconds. This makes the frequency a dangerous solution to use for the nomadic hotspot portals where the majority of users will be commercial, the connections will be via roving laptops (nomadic), and the data will be sensitive.

Where the frequency is used in fixed wireless applications (ie non-nomadic PCs) additional layers of protection can be used (tunnelling) to defeat the underlying cryptographic weakness of the protocol.

This makes 2.4 GHz suitable for rural FW use, and unsuitable for nomadic RLAN use in hotspot portals.

Cost, Standards & Licensing

2.4 GHz is a global standard for license exempt products. Many product vendors exist, selling Bluetooth and other networking solutions in this part of the spectrum. Over the last 2 years I have asked many vendors of these solutions about licensing requirements. Not one was aware of the need for a license !!!

Alternative radio frequencies are being made available in the 3 and 5 GHz parts of the spectrum, these frequencies use 802.11a a much more secure protocol. These frequencies will be licensed and it is entirely appropriate that these frequencies be used for the nomadic applications.

Conclusion

I would argue that comparing the 2.4 GHz applications FWA & RLAN to ADSL, (as has been done in the consultation document) is entirely wrong. The only reason for doing this is that they offer comparable communication speeds. In fact 2.4GHz has more in common with GSM for mobile use. To use and restrict 2.4GHz for nomadic use will be a distortion in the marketplace (for RLAN products), dangerously insecure, and will ultimately be a massive lost opportunity for the UK.

I believe it is entirely appropriate for disadvantaged rural communities (with no GSM or ADSL coverage) to be allowed to use the license exempt 2.4 GHz spectrum. I believe such communities can easily be identified and I also believe that a recognition of the problems within those communities will be welcomed by the people living in those same communities.

I therefore ask that option 1 in the Draft Regulatory Impact Assessment should NOT be considered. Instead I would recommend Options 2 or 3 be recommended. If option 2 is selected, then restricting the use of spectrum to indoor applications should be extended to include outside use in rural communities.

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