Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title: Making Spectrum Available in the 71-76 and 81-86 GHz Bands

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Representing (self or organisation/s): GigaBeam

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CONFIDENTIALITY

What do you want Ofcom to keep confidential?

Nothing	X	Name/contact details/job title	
Whole response		Organisation	
Part of the response		If there is no separate annex, which parts?	

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Name Jonathan Wells Signed (if hard copy)

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Comments Regarding Ofcom Consultation: "Making Spectrum Available in the 71-76 GHz & 81-86 GHz Bands"

Executive Summary

Gigabeam congratulates Ofcom on producing this consultancy on a light licensed approach for high data rate fixed wireless systems in the higher millimetre-wave bands. Ofcom's proposed approach will encourage innovative use of the 71-76 / 81-86 GHz spectrum, stimulating technological development and promoting competition in communication services, opening up a host of exciting broadband opportunities within the UK in the near future.

The wide bandwidth available at 71-76 / 81-86 GHz, coupled with the favourable propagation characteristics make these bands ideally suited for multi-gigabit per second transmissions with high availability over distances of 1 to 2 km, offering for the first time a true cost and performance competitive wireless alternative to fibre based solutions.

GigaBeam believes Ofcom has carefully considered the growing demand for the services that can be satisfied by the release of the upper millimetre wave bands. Ofcom's approach of a light license process, keeping regulation to a minimum, will enable and encourage the authorization and deployment of competitive radio services in a rapid and flexible manner. GigaBeam believes Ofcom has suggested an appropriate regulatory framework to manage these bands, taking appropriate account of the international framework already in place.

About Gigabeam

Gigabeam was instrumental in opening up the 71-76 GHz and 81-86 GHz bands in the USA, where 71-76 GHz and 81-86 GHz fixed link products offering gigabit data rates are freely available in the wireless marketplace. Gigabeam's founders provided the initial filing to the FCC to open up this spectrum, and also chair the Wireless Communications Association's (an international wireless industry group) "Above 40 GHz Spectrum Development Committee" who championed the spectrum release and subsequent rule development through the FCC. GigaBeam is also active on the CEPT and ETSI committees that have developed the equivalent European framework for these bands.

Response to Ofcom's Questions

Question 1
Do you agree that the Amateur and Amateur-Satellite allocations in the 75.5 – 76 GHz band should remain in the UK Frequency Allocation Table after 31st December 2006 on a secondary basis? If not, what would you suggest as an alternative approach?

Also, what is your view on permitting the secondary Amateur and Amateur-Satellite allocation in the 81 – 81.5 GHz band within the UK Frequency Allocation Table?

With regards to the 75.5 – 76 GHz Amateur and Amateur-Satellite allocations, GigaBeam agrees with Ofcom that this should remain in the UK Frequency Allocation Table after 31st December 2006 on a secondary basis.

With regards to the 81 – 81.5 GHz Amateur and Amateur-Satellite allocations, GigaBeam notes that this service is currently not available in the UK. However GigaBeam has no objection if Ofcom opens these frequencies, provided the allocation is properly managed to allow 71-76 / 81-86 GHz fixed services to coexist.

Question 2
Do you agree that a light licensed approach is appropriate to facilitate access to the 71-76 GHz and 81-86 GHz bands?

What are your views on the need to provide a regulatory mechanism for interference protection of fixed links operating in the 71-76 GHz and 81-86 GHz bands?

Do you agree that links registered in the database require a date/ time priority rule for establishing interference protection of links?

GigaBeam strongly supports Ofcom's proposal for a light licensed approach to the 71-76 / 81-86 GHz bands. A non-exclusive light license process, keeping regulation to a minimum, will encourage the adoption of competitive radio services in a rapid and flexible manner. Gigabeam believes the light licensing registration process should be conducted online and make link registration quick and easy. Prospective licensees should first enter the technical parameters of their link, and then the system should provide upfront interference analysis with existing commercial systems, and identify any potential interference conflicts. Applications should be date / time stamped, forcing the later licensee to make changes to their system as necessary to mitigate interference with the initial installation.

GigaBeam believes that the likelihood of interference from 71-76/81-86 GHz links is very small. GigaBeam has demonstrated on real life installations that many links operating on the same frequency can coexist on a single tower with just angular separation of the transmission path or alternating antenna polarizations (horizontal and vertical) required to provide interference free operation. Nevertheless, GigaBeam believes that an interference protection mechanism is an important and necessary part of this licensing process. Given the high data rates that the 71-76 / 81-86 GHz bands permit, users will be able to transport fibre-like services, which could include important or sensitive information (e.g. banks using wireless as a back-up or replacement of fibre, or enterprises performing large-file backups).

Alternatively, wireless carriers could be carrying significant revenue-bearing voice or data traffic at any one time. As such, GigaBeam believes that the users will demand some form of interference protection.

GigaBeam notes that interference analysis of 71-76 / 81-86 GHz is relatively easy. With tight control of antenna characteristics (as has been recommended by CEPT and adopted by ETSI), millimetre wave radios produce "pencil beam" emissions that are straightforward to register and coordinate. Much analysis has been undertaken to characterize how such "pencil beams" interfere with each other under numerous clear air and weather scenarios. Ofcom is referred to WCA Document Number WCA-PCG-7080-1, "Path Coordination Guide for the 71-76 and 81-86 GHz Millimeter Wave Bands," Version 1.0, June 2004. This detailed, technical study, written by an experienced industry consortium including representatives from Cisco and Comsearch, analyses in great detail numerous interference scenarios and recommends how links can be coordinated together under these conditions. This analysis forms the basis of the coordination and interference analysis in effect in the USA. In summary, if two link's bore sights and end coordinates are within 5° AND 100 m respectively of one another, then a risk of interference is raised and a more detailed analysis per the WCA Path Coordination Guide is performed. This system is described fully in FCC Public Notice DA 05-311, "Wireless telecommunications bureau announces permanent process for registering links in the 71-76 GHz, 81-86 GHz, and 92–95 GHz bands," February 3, 2005.

Question 3
Do you agree that a fee based on £50 per link per year provides the right balance between allowing access to spectrum and discouraging the hoarding of 'paper' links within the registration database? If not, what would you suggest as an appropriate fee to achieve these aims?

GigaBeam believes that a £50 per link per year fee is a suitable charge for a light license. It should be noted that a rule can be appended to licenses that requires links to be installed within a suitable time period to discourage the hoarding of 'paper' links. The FCC enforces such a rule in the USA, giving licensees 1 year to use any licenses, else the license is forfeited.

Question 4
Do you agree that the CEPT channel plan ECC/Rec(05)07 should not be mandated and that a flexible band structure comprising of two national spectrum blocks of 4.75 GHz is appropriate for facilitating access to the 71-76 GHz and 81-86 GHz bands?

GigaBeam supports Ofcom's proposal for a band structure consisting of two national spectrum blocks of 4.75 GHz each. GigaBeam believes that the flexible approach proposed will enable and encourage the introduction of innovative broadband solutions.

GigaBeam notes that CEPT channel plan ECC/Rec(05)07 defines 19 x 250 MHz channels in both the 71-76 GHz and 81-86 GHz bands, and permits aggregation of up to all 19 channels in each band. As such, the Ofcom proposal of two spectrum blocks of 4.75 GHz is equivalent to the limits of the CEPT recommendation.

Question 5
In addition to the date/time priority rule do you think it would be beneficial for Ofcom to set a maximum interference threshold policy for the 71-76 GHz and 81-86 GHz bands?

If so, do you have suggestions for the criteria and how this could be assessed?

GigaBeam believes that interference criteria are necessary given the large data rates that the 71-76 / 81-86 GHz bands can support. A similar system to that described in GigaBeam's response to question 2 is recommended. In its most simplistic, this could boil down to an initial check that if two link bore sights and end coordinates are within 5° and 100 m respectively of one another (these are numbers used in the FCC light license implementation, but Ofcom should adjust as it feels appropriate), then a potential interference flag is raised and a more detailed analysis per WCA Path Coordination Guide (referenced in question 2) is performed.

Question 6
Are there any regulatory impacts or other considerations not otherwise mentioned in this consultation that you believe are relevant to the 71-76 GHz and 81-86 GHz bands?

GigaBeam believes Ofcom has carefully considered the use of the 71-76 / 81-86 GHz bands and has proposed a complete and workable set of proposals (providing some level of interference protection is included, as argued above).