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## **Consultation**

### **on the allocation of frequencies in the 2500 – 2690 MHz band**

#### **WiMAX Forum<sup>®</sup> Response**

The WiMAX Forum<sup>®</sup> welcomes the opportunity to provide its views and comments concerning the issues raised in the public consultation document on the topic above.

The WiMAX Forum<sup>1</sup> is an industry-led, not-for-profit organisation formed to certify and promote the compatibility and interoperability of broadband wireless products based upon the harmonized IEEE 802.16/ETSI HiperMAN specifications. A WiMAX Forum goal is to accelerate the introduction of these systems into the marketplace. WiMAX Forum Certified<sup>™</sup> products are interoperable and support Metropolitan Broadband Fixed, Nomadic and Mobile Applications. Along these lines, the WiMAX Forum works closely with service providers and regulators to ensure that WiMAX Forum Certified systems meet customer and government requirements. For more information about the WiMAX Forum and its activities, please visit [www.WiMAXForum.org](http://www.WiMAXForum.org).

The WiMAX Forum responses to this consultation can be seen in Annex 1.

Yours Sincerely

Tim Hewitt  
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<sup>1</sup> "WiMAX," "Mobile WiMAX," "Fixed WiMAX," "WiMAX Forum," the WiMAX Forum logo, "WiMAX Forum Certified," and the WiMAX Forum Certified logo are trademarks of the WiMAX Forum.

## Annex 1

### 2.4 Current frequency use

If you currently use frequencies in the 2.1 GHz (UMTS FDD) band:

When would you expect to start using all of the frequencies (frequency packages) allocated to you in the 2.1 GHz band?

**WiMAX Forum:** The WiMAX Forum currently has no Certification profiles for the 2.1GHz UMTS FDD band.

### 2.5 Intended use

Do you intend to use frequencies in the 2.6 GHz band in the future?

**WiMAX Forum:** Yes

When do you plan to start using such frequencies?

**WiMAX Forum:** To support early commercialisation of the band, the WiMAX Forum has agreed equipment certification profiles for TDD equipment based on the IEEE 802.16e-2005 standard for the entire 2500-2690MHz frequency range (see Table 1). Equipment aligned with this profile is included in the IMT air interface family as OFDMA-TDD-WMAN identified in ITU-R Recommendation M.1457-7.

SYSTEM PROFILES	CERTIFICATION PROFILES		
	Spectrum	Duplexing	Channel Width
Mobile WiMAX (IEEE 802.16e-2005, OFDMA)	2.496 - 2.690GHz	TDD	5, 10 MHz (dual)

Table 1

The first 2.6GHz Mobile WiMAX products achieved WiMAX Forum Certification in Q2/3 2008 and currently over **30 products** have been certified against the MP05 profile for the 2.6GHz band and are available today.

### 2.6 Expected services

In your view, which services/applications would be especially well supported by the 2.6 GHz band?

**WiMAX Forum:** Mobile WiMAX devices and networks will support a full range of mobile broadband services. The WiMAX Forum fosters an open IP based network architecture that makes it simple to create a multi-service environment. WiMAX Forum profiles based on the IEEE 802.16e-2005 standard support mobile, nomadic and fixed services. WiMAX Forum network specifications also support interworking with IMS core systems thus enabling a multi-service environment encompassing today's 3G services. WiMAX 802.16e also supports QoS based on multiple service types thus allowing the provisioning of multiple types of services to different users based on defined metrics.

## 2.7 Technologies

Which technologies do you plan to use in the 2.6 GHz band (or: in your view, which technologies will be deployed in this band)?

**WiMAX Forum:** Mobile WiMAX as reflected in the response to Question 2.5.

## 2.8 Need for unpaired frequencies

What is your estimate of the frequency requirements of an operator planning to acquire unpaired frequencies? In your view, how much bandwidth would an operator want to acquire as an absolute minimum? How many interested parties would you expect?

**WiMAX Forum:** The WiMAX Forum has published an assessment of the spectrum requirements for widespread deployment of Mobile WiMAX systems in the WiMAX Forum white paper titled “A Review of Spectrum Requirements for Mobile WiMAX™ Equipment to Support Wireless Personal Broadband Services” from September 2007<sup>2</sup>.

## 2.9 Interest in unpaired frequencies

Are you generally interested in unpaired frequencies?

**WiMAX Forum:** Yes, unpaired frequencies facilitate the deployment of wireless internet access in which the inherent asymmetry of IP traffic flows plays a major role. Here, the TDD protocol offers significant advantages. TDD is also able to support voice applications. However, in some contexts FDD may be more appropriate and therefore the WiMAX Forum, together with the IEEE, recently submitted an update to the sixth IMT-2000 air interface IMT OFDMA TDD WMAN that includes an FDD component that could be deployed in paired frequency blocks. New Certification Profiles for Mobile WiMAX include FDD options.

In what amount? (minimum/maximum bandwidth in MHz)

**WiMAX Forum:** The WiMAX Forum recommends that regulators allocate spectrum blocks of a minimum of 30MHz of usable spectrum per operator to facilitate the timely and economic deployment of a full range of Personal Wireless Broadband services, with the caveat that local needs may require more spectrum to be allocated in some circumstances. See the response to question 2.8 above.

## 2.10 Need for paired frequencies

What is your estimate of the frequency requirements of an operator planning to acquire paired frequencies? In your view, how much bandwidth would an operator want to acquire as an absolute minimum? How many interested parties would you expect?

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<sup>2</sup>[http://www.wimaxforum.org/sites/wimaxforum.org/files/documentation/2009/spectrum\\_requirements\\_for\\_mobile\\_wimax\\_sept2007.pdf](http://www.wimaxforum.org/sites/wimaxforum.org/files/documentation/2009/spectrum_requirements_for_mobile_wimax_sept2007.pdf)

**WiMAX Forum:** The WiMAX Forum recommends that a minimum of 30MHz of spectrum is required to provide compelling broadband services. See the response to question 2.8 above.

### 2.11 Interest in paired frequencies

Are you generally interested in paired frequencies?

**WiMAX Forum:** The WiMAX Forum is aware of considerable interest in both paired and unpaired frequencies. However, since the current WiMAX Certified mobile broadband products all support the TDD unpaired allocations the WiMAX forum prefers award procedures to be flexible in a way that can allow the process to determine the ultimate mix of paired and unpaired spectrum in the band. This market based approach enables flexibility and is consistent with the provisions of EC Decision 2008/477/EC.

In what amount? (minimum/maximum bandwidth in MHz per duplex direction)

**WiMAX Forum:** The WiMAX Forum recommends that at least 30 to 40MHz (2x15MHz / 2x20MHz) of spectrum in total is required to provide compelling broadband services. See the response to question 2.8 above.

### 2.12 Expected rollout

What rollout scenario do you expect or plan for the 2.6 GHz band? In what regions will these frequencies primarily be used? Do you expect comprehensive network coverage or joint use with other frequency bands (e.g., at hot spots?)

**WiMAX Forum:** No Response

### 2.13 Subdivision of frequency band

In your view, what subdivision of the frequency band would be most reasonable? How many frequency packages (in what size) should be put up for allocation?

**WiMAX Forum:** The WiMAX Forum fully supports the EC Decision 2008/477/EC and particularly the flexibility this introduces in terms of FDD/TDD apportionment. Generally the WiMAX Forum supports procedures that allow this flexibility to be exercised as a part of the award itself rather than attempting a priori decisions which may not reflect the true market demand for one duplex technique or another. The award process itself should also be designed to allow the market to decide the appropriate block size and number of packages awarded.

The WiMAX Forum has sponsored an independent study<sup>3</sup> into flexible use of the 2.6GHz band that examines many of the perceived difficulties from the regulators' perspective. This concludes that these challenges are not insurmountable and that they are not new

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<sup>3</sup> Flexible use of the 2.6 GHz band in Europe – A report by PA Consultants.  
[http://www.wimaxforum.org/regulators/spectrum\\_policy/tdd\\_fdd\\_flexibility](http://www.wimaxforum.org/regulators/spectrum_policy/tdd_fdd_flexibility)

issues for regulatory authorities. This report is available on the WiMAX Forum Regulatory Portal<sup>4</sup> on the WiMAX Forum web site.

## 2.14 Arrangement of frequency packages

How important is it that the frequency packages allocated to an individual bidder are directly adjacent to one another? Why?

**WiMAX Forum:** The WiMAX Forum believes that it is important that the fullest utilisation is made of the spectrum available. Therefore specifically identified and unused guard channels between operators are not encouraged. However recognising that some isolation is needed between operators, particularly when operating in the same area, the WiMAX Forum again supports the proposals in the EC Decision 2008/477/EC to identify restricted channels that can be used under specific technical conditions along with lower but quantifiable protection from interference.

## 2.15 Differences between frequency channels

In your view, are there significant differences between the individual 5 MHz frequency channels? Does this apply to all frequency channels, or only to certain ones?

**WiMAX Forum:** Yes

Please indicate precisely which frequency channels you mean, and please describe the differences as well as their significance.

**WiMAX Forum:** Restricted channels as defined in the EC Decision 2008/477/EC. The WiMAX Forum supports the possibility to use lower power systems (or systems restricted in some other way) in these channels. The WiMAX Forum also strongly supports inter-operator cooperation to increase spectrum efficiency as far as possible.

From a technical/economic perspective, are the differences between the individual frequency packages so significant that it would be absolutely necessary to account for them in the allocation procedure, even if this would involve a far more complicated auction procedure?

**WiMAX Forum:** The WiMAX Forum believes that award procedures can be devised that can account for the differences without undue complication. Other countries in Europe have devised award procedures or identified block arrangements that take these elements into account. For example, in the UK, unpaired blocks are always accompanied by a restricted block at the lower frequency boundary.

Why?

**WiMAX Forum:** The WiMAX Forum believes that this type of award process will allow greater flexibility for operators, to the benefit of Austrian citizens..

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<sup>4</sup> Regulators and Government agencies can register as Regulator Observers to gain free access to the WiMAX Forum regulatory portal through a link on the WiMAX Forum web site at: <http://www.wimaxforum.org/membership/regulators>

**2.16 Duration of use** In your view, what minimum duration of use would be necessary? What should the maximum duration of use be?

**WiMAX Forum:** The WiMAX Forum has no specific view concerning licence duration except that sufficient time should be available to allow for a proper return on the roll out investment. Generally at least 15 years is appropriate and the WiMAX Forum advocates a rolling licence renewal procedure similar to other mobile licenses.

**2.17 Coverage obligations** Coverage obligations may be imposed in order to ensure the effective use of frequencies. In your view, what specific coverage obligations would be most appropriate for this purpose?

**WiMAX Forum:** No Response

**2.18 Schedule** As mentioned in the introduction, the frequencies could be allocated at the end of the year 2009. In your view, is that a reasonable time for allocation, or would allocation a later time (at the end of 2010) be more sensible? Please provide reasons for your response.

Auction at end of 2009

**WiMAX Forum:** No, sooner.

Reason(s):

**WiMAX Forum:** The WiMAX Forum believes that the mobile broadband market need for this spectrum exists today and therefore encourages the Austrian administration to start the award process **as soon as possible**. The WiMAX Forum supports the timing outlined in Article 2 of the EC Decision 2008/477/EC.

Auction at end of 2010

**WiMAX Forum:** No, sooner.

Auction at another point in time

When? Reason(s):

**WiMAX Forum:** The WiMAX Forum believes that the mobile broadband market need for this spectrum exists today and therefore encourages the Austrian administration to start the award process **as soon as possible**. The WiMAX Forum supports the timing outlined in Article 2 of the EC Decision 2008/477/EC.

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**Consent to full publication of your comments:**

Yes, with an indication of the company's name