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17.01.2008

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Consultation on the allocation of frequencies in the frequency bands 2010 – 2020 MHz and 2500 – 2690 MHz as well on the future use of the frequency bands 900/1800 MHz

Dear Sir or Madam,

Inquam Broadband GmbH appreciates the opportunity to provide its views on RTR's consultation regarding the frequency bands identified in the above public consultation document.

We hope that our response provides a helpful contribution for your further proceedings. Please feel free to contact me either by phone at +49 221 5000–201 or by email andrzej.cwik@inquam-broadband.de with any questions regarding the above.

Kind regards,
Inquam Broadband GmbH

Dr. Andrzej Cwik
CTO

Attachment
Inquam Broadband Responses

Consultation

on the allocation of frequencies in the frequency bands 2010 – 2020 MHz and 2500 – 2690 MHz

as well on the future use of the frequency bands 900/1800 MHz

Vienna, August 2007

Rundfunk und Telekom
Regulierungs-GmbH

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1 Introduction

Rundfunk und Telekom Regulierungs-GmbH is holding a consultation on the following subject areas:

- Allocation of frequencies in the frequency bands 2010 – 2020 MHz and 2500 – 2690 MHz.
- Future use of the frequency bands 900/1800 MHz.

The consultation procedure is intended to be an initial approach to the subject areas mentioned. The specified contents are non-binding and do not prejudice the decisions of the Telekom-Control Commission.

To guarantee efficient and market conforming use of the frequencies to the greatest possible extent RTR-GmbH addresses the public with this consultation, putting individual items up for discussion.

2 Allocation of frequencies in the frequency bands 2010 – 2020 MHz and 2500 – 2690 MHz

2.1 General

a) As to 2010 – 2020 MHz

The frequency band 2010 – 2020 MHz originally intended for so-called self-provided applications due to international requirements is now available for terrestrial digital mobile communications systems in general, according to the Decision of the Electronic Communications Committee (ECC) of the European Conference of Postal and Communications Administrations (CEPT) of 24 March 2006 (ECC/DEC/(06)01).

b) As to 2500 – 2690 MHz

The frequency band 2500 – 2690 MHz was identified in the course of the World Radio Conference 2000 (WRC 2000) for IMT-2000 systems. Mandated by the European Commission CEPT developed plans for spectrum arrangements. These are reflected in the CEPT Decision EEC/DEC/(05)05, which provides that 2 x 70 MHz can be made available for FDD and 50 MHz for TDD or FDD operation (together with frequencies from other bands). In view of the efforts regarding technology and service neutral frequency allocations, it cannot be ruled out, however, that the frequency band 2500 – 2690 MHz will be also used for applications other than the ones specified in ECC/DEC/(05)05.

In Austria the frequencies at issue are now already available for allocation. These frequency bands are designated for use by terrestrial digital mobile communications systems.

2.2 Market overview

In 2000 six licences for the provision of mobile communications services using UMTS/IMT-2000 technology were allocated in Austria; each operator was assigned approx. 2 x 10 MHz from the frequency bands 1920 – 1980 MHz / 2110 – 2170 MHz (paired) or up to approx. 10 MHz from the bands 1900 – 1920 MHz and 2020 – 2025 MHz (unpaired), respectively.

At present, the situation is as follows: four operators are active in the frequency bands mentioned, each operator (Mobilkom Austria AG, T-Mobile Austria GmbH, One GmbH, Hutchison 3G Austria GmbH) having frequencies totalling approx. 2 x 15 MHz. Mobilkom Austria AG and T-Mobile Austria GmbH have additional 2 x 10 MHz from the unpaired frequency band, Hutchison 3G Austria GmbH has 5 MHz.

2.3 Responsibilities in the field of frequency administration

The provisions governing responsibility in the field of frequency administration are laid down in Art. 54 Par. 3 TKG 2003. Accordingly, the regulatory authority (Telekom-Control Commission) shall be responsible for allocation of the frequencies that have been specifically designated in the frequency usage plan pursuant to Art. 52 Par. 3 TKG (restriction in number). Responsibility for allocation of the remaining frequencies lies with the telecommunications authority.

As regards the frequencies in question, the Federal Minister of Transport, Innovation and Technology designated the frequencies in so far as the maximum number of allocated frequencies will be restricted.

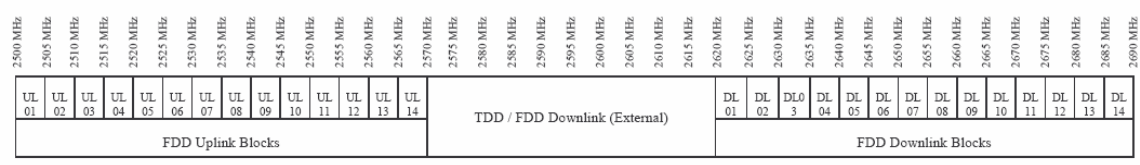
This means that the Telekom-Control Commission is responsible for allocation of the frequencies at issue.

In the run-up to such planned allocation by the Telekom-Control Commission, Rundfunk und Telekom Regulierungs-GmbH is now holding a consultation.

2.4 Consultation

2.4.1 Terms and conditions of use

- **The CEPT/ECC Decision ECC/DEC/(05)05 provides for the following channelling arrangements in the frequency band 2500 – 2690 MHz for FDD and TDD:**



Do you consider these channelling arrangements useful?

☐ Yes

Reasons:

☒ No

Reasons, alternative proposals:

The allocation for FDD deployments is too large which leads to insufficient spectrum to support TDD deployments. Currently a typical operator, planning to offer mobile broadband services with a TDD technology, would need at least 20–40 MHz to implement his strategies. The TDD space of 50 MHz would only allow two TDD operators, thus reducing competition and limiting TDD operators' business plans. The decision also suggests the need for guardbands between the TDD and the FDD blocks at the expense of the TDD allocation, which would further limit the available spectrum for TDD deployments. To account for asymmetric traffic applications, i.e. imbalanced requirements for Up- and Downlink, the TDD mode is more suitable. Imbalanced requirements for Up and Downlink applies to many applications and since the Up- and Downlink time ratio can be changed easily, TDD systems will achieve a higher spectrum efficiency. From the reasons mentioned above, Inquam Broadband suggests that TDD technology is allocated more than 50 MHz of spectrum, as for instance implemented by the Norwegian Regulatory Authority NPT recently. The rules to determine how best to balance the needs for TDD and FDD could be derived from the OFCOM UK proposal (Please refer to "Award of available Spectrum: 2500–2690 MHz, 2010–2025 MHz and 2290–2300 MHz", OFCOM UK Consultation, December 2006).

- **Is it useful to allocate the frequency band 2010-2020 MHz at the same time? If so, what should the terms and conditions of use be?**

[X] Yes

Reasons:

Given that technology is already available to use the 2010–2020 MHz band, Inquam Broadband suggests that this band should be made available preferably for new market entrants. This block should be handled as a single lot and awarded on a technology and service neutral basis. In any case, Inquam Broadband recommends to include this band into a spectrum cap scheme (see also below).

[ ] No

Reasons:

- **Do you consider it useful to use the band 2570 – 2690 MHz also as FDD downlink together with the frequency band 2010-2020 MHz not yet assigned?**

[ ] Yes

Reasons:

[X] No

Reasons:

Inquam Broadband's view is that the 2010 – 2020 MHz band should be handled as one single lot as earlier mentioned.

- **It cannot be ruled out the frequency bands 2500-2690 MHz and 2010-2020 MHz will be assigned according to the principle of technology and service neutrality, provided that in-band and out-of-band compatibility can be guaranteed. Which aspects do you think should be considered here?**

Inquam Broadband strongly supports a technology and service neutral assignment of the identified spectrum and would support such an approach.

Additionally, the spectrum should be full tradable, considering the economic laws regulating the competition. Furthermore, a licensee should have options to change duplex mode based on appropriate technical conditions.

Spectrum swapping between two operators using TDD technology should be allowed as well.

- **Against the background of technology neutrality, do you think it will be sufficient to define a field strength value or spectrum masks, or is advance coordination with preferred frequencies/preferred codes absolutely required?**

☒ Yes

Reasons:

Inquam Broadband supports the approach taken by OFCOM UK on corresponding spectrum masks. However, operators of adjacent block assignments should have flexibility to agree on lower coexistence conditions.

Inquam Broadband does not see a need for advanced coordination neither based on preferred frequencies nor on preferred codes.

Inquam Broadband likes to point out furthermore, that ITU-R WP8F has two ongoing working packages that are addressing compatibility studies between (amongst others) IEEE 802.16e-2005 based equipment and others belonging to the IMT-2000 family of standards. Coexistence matters are considered as well.

☐ No

Reasons:

- **What term of use do you consider practicable for the frequencies in question?**

The minimum licence term shall be at least 20 years and the term should be prolongable for successful and efficient operations.

2.4.2 Division of the frequency band

- **Do you consider it useful to divide the spectrum into individual abstract 5 MHz blocks (or pairs of 2x5 MHz with FDD) or shall the regulatory authority identify specific – larger – packages?**

☒ Yes

Reasons:

Inquam Broadband supports the award of single 5 MHz lots, since such an approach provides greater flexibility to new entrants to follow their business objectives.

☐ No (What kind of spectrum division do you consider useful and why?)

Reasons:

- **It is planned to restrict the maximum number of frequency packages a bidder may acquire. Which spectrum restrictions (in MHz or 5 MHz packages) do you consider appropriate?**

Inquam Broadband strongly recommends applying different limits for existing mobile operators and new entrants. New entrants should have access to at least 20-40 MHz spectrum (understood as unpaired or paired configuration) each. To achieve a fair and competitive environment, Inquam Broadband suggests to reserve a sufficient amount of spectrum for at least two newcomers.

- **It is planned to assign the packages on a nationwide basis (i.e. not regionally). Which aspects shall be considered here?**

Given that existing spectrum holders take advantage of already coordinated channels, Inquam Broadband strongly recommends that blocks, which are defined for new entrants, are placed in a manner, that new entrants will benefit from less demanding cross border requirements.

- **How do you rate the demand for and the availability of equipment in these frequency bands? Which technologies and services do you want to use or provide?**

Throughout Europe, the 2.6 GHz band is widely available for mobile (broadband) wireless access. The UK, the Netherlands, Belgium, Norway, Italy, Switzerland, Germany and Sweden have either consulted recently or are currently consulting on a technology neutral approach. From there, the 2.6 GHz band can be seen as a major band that facilitates global terminals and roaming between countries and regions. A couple of new technologies designed for operation in this spectrum are available or will be available soon. In a recent consultation OFCOM UK has acknowledged the existence of commercial TDD technologies now. Furthermore, the WiMAX Forum has stated that mobile equipment will be available in H1/2008 Inquam Broadband would like to offer fixed, nomadic and mobile broadband access and plans using a wholesale model in cooperation with local companies in the telecommunications market, which would be in charge of providing retail services. Based upon our access products, the local partners could define a whole set of innovative multimedia services.

2.4.3 Time schedule

- **The regulatory authority plans to start the allocation procedure in mid-2008. Do you think this time schedule is suitable to take account of the future spectrum requirements and the technological development?**

☒ Yes

Reasons:

Inquam Broadband is supportive in the approach, that considers i) the advanced status of equipment developments and ii) the increasing market demand for mobile data services, especially the increasing competition in the area of multimedia services.

☐ No

Reasons:

2.4.4 Secondary provisions of frequency allocation

- **Do you consider a newcomer's (attempt at) market entry in connection with allocation of the frequencies at issue realistic?**

☒ Yes

Reasons:

Inquam Broadband considers new entrant market opportunities in connection with the upcoming 2.6 GHz award as very promising. From the customer's point of view, new advanced broadband technologies hold the promise of meeting the increasing need for new broadband services, stimulating competition, as well as innovation.

However, this requires that new entrants have as soon as possible adequate access to the 2.0 GHz and 2.6 GHz band in addition to imposition of spectrum caps.

☐ No

Reasons:

- **Which measures shall be taken to facilitate market entry by newcomers (see e.g. national roaming obligation as on the occasion of IMT frequency allocation in 2000)?**

For facilitating the market entry for new entrants, Inquam Broadband strongly recommends to establish a spectrum cap scheme that includes the 2010 – 2020 MHz band as well. Hereunder, Inquam Broadband suggests some tighter spectrum caps for those operators, having significant spectrum holdings, i.e. in the 900MHz / 1800 MHz and 2GHz bands.

Existing mobile operators are using the same technology platforms and benefit from economies of scale for their network deployments. Furthermore, existing mobile operator have comparable cost structures and thus rather no stimulation to innovate. They have also existing customer bases which give them a powerful market position. Combining these factors together, synergies

between spectrum holdings, same technology platforms, same cost structures, existing customer base, lead to a significant market distortion.

Applicable measures to meet these market distortions consist of e.g. restricting the spectrum amount for existing mobile operators and reserving a sufficient amount of spectrum for new entrants.

Inquam Broadband likes to address a further factor, relating to coverage obligations. Coverage obligations are a handicap, especially for new entrants, and yet are ineffective in promoting deployments by existing mobile operators, since they already have nationwide existing network infrastructure.

- **Against the background of technology and service neutrality, what should the coverage obligations be like?**

As indicated already above, the 2.6 GHz band is widely recognized as a mobile service band and mobile services are already widely accessible nearly throughout the whole Austrian country. New coverage obligations will not provide any advantage to customers, but hinders new entrants significantly for in fact political reasons.

Coverage obligations just force mobile operators to follow a certain business strategy, regardless of their own business model approaches and strategies.

Inquam Broadband strongly recommends that no coverage obligations should apply to i) avoid any market distortions as well as to ii) ensure a fair and competitive environment and for iii) utilizing the full benefits of a technology and service neutral assignment approach. Please see also Inquam Broadband's comments above.

3 Future use of the frequency bands 900/1800 MHz

3.1 General

The European Commission is currently preparing a decision regarding harmonisation of the frequency bands 900 MHz and 1800 MHz (Decision on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community). The objective of this decision is to open the frequency bands 900 MHz and 1800 MH, which are currently reserved for GSM technologies, for use by other mobile communications technologies. The annex to the planned decision makes explicit reference to UMTS. However, Art. 3 No. 3 of the planned decision goes even further and aims at facilitating also technologies not listed in the annex, provided that they can co-exist in the same frequency band with the systems listed.

3.2 Market overview

In Austria the frequency bands 900 MHz and 1800 MHz have been assigned for the provision of mobile communications services by means of GSM technology. The frequencies are held by Mobilkom Austria AG (approx. 32 MHz), T-Mobile Austria GmbH (approx. 38 MHz) and One GmbH (approx. 32 MHz). The frequency allocations are limited in time until the end of 2015, 2017 and 2019, respectively.

3.3 Consultation

The activities at the European level also raise questions at the national level regarding the further course of action in respect of the use of the frequency bands at issue.

- **How do you expect GSM to further develop? In your estimate, what will the lifetime of GSM be?**

  Inquam Broadband assumes that the market need increasingly tends to more broadband service that requires more advanced technologies compared to GSM. Inquam Broadband expects that new broadband technologies will be introduced between 2009 and 2011 and will be widely deployed.

- **In which of the frequency bands listed here will it be useful to use new technologies ("refarming")?**

Inquam Broadband recommends considering both bands to use for new technologies.

- **How do you rate the availability of equipment for IMT in the frequency bands 900/1800 MHz?**

- **Where do you see critical aspects of a possible refarming solution? What kind of solution could satisfy all market participants?**

Inquam Broadband sees that due to advanced technologies (e.g. in signal processing, RF transmissions) spectrum efficiency will increase rapidly. Considering this, existing GSM operators should be in position to release some of their existing spectrum holdings for the new operators benefit without any drawback.

4 Participant

Name/company (address):

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Phone: +49 221 5000-251

Are you interested in 2500 – 2690 MHz spectrum use?

- [X] Yes
- [ ] No

Are you interested in 2010 – 2020 MHz spectrum use?

- [X] Yes
- [ ] No

Are you interested in 900 MHz and 1800 MHz spectrum refarming?

- [X] Yes
- [ ] No

5 Invitation for comments

Comments shall be sent no later than 28 September 2007 per e-mail to

Konsultationen@rtr.at

in a common format suitable for electronic processing (e.g. text, pdf). Unless requested otherwise, the comments will be published on the website of RTR GmbH.

I/We agree that the comment will be published in full.

- [X] Yes, by stating the name of the company
- [ ] Yes, without stating the name of the company
- [ ] No