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## **Qualcomm response to RTR consultation paper on the release of the 2500-2690 MHz frequency band**

### **Frage 1: 2.4 Aktuelle Frequenznutzung**

**Für den Fall, dass Sie Frequenzen im Bereich 2,1 GHz (UMTS FDD) nutzen:**

**Ab wann rechnen Sie mit einer Nutzung aller Ihnen zugewiesenen Frequenzen (aller  
Frequenzpakete) aus dem Bereich 2,1 GHz?**

NA

### **Frage 2: 2.5 Beabsichtige Nutzung**

**Beabsichtigen Sie, Frequenzen im Bereich 2,6 GHz in Zukunft einzusetzen?**

**Ob ja, ab welchem Zeitpunkt planen Sie, diese Frequenzen einzusetzen?**

**Ob nein, warum nicht?**

NA

### **Frage 3: 2.6 Erwartete Dienste**

**Für welche Dienste/Anwendungen ist der Bereich 2,6 GHz aus Ihrer Sicht besonders  
geeignet?**

Mobile broadband has been recognized as a key driver of national economic competitiveness. Mobile broadband is crucial for economic growth and efficiency gains. Qualcomm considers that the 2.6 GHz will sustain the fast market growth of 3G services and future 4G services. With more than 705 million subscribers worldwide, 3G technologies are continuing to evolve towards higher data rate capabilities (such as HSPA+ and Long Term Evolution - LTE) that will benefit from the 2.6 GHz which offers the unique opportunity of wider bandwidths up to 20 MHz and additional capacity.

**Frage 4: 2.7 Technologien**

**Welche Technologien werden Sie im Bereich 2,6 GHz einsetzen bzw. werden Ihrer Meinung nach in diesem Frequenzbereich zum Einsatz gelangen?**

3G technologies are evolving towards higher data rate capabilities with HSPA+ and Long Term Evolution (LTE). However these technologies require 10 or 20MHz channel bandwidth to deliver optimum performance.

Qualcomm plans to integrate support for the 2.6GHz band into its UMTS and LTE chipset portfolio. Qualcomm's OEM customers are expected to launch end-user devices based on these solutions in 2009. Operator trials of 2.6GHz OEM devices may start earlier in 2009.

Qualcomm is also committed to the success of the Long Term Evolution (LTE) standard. Qualcomm has already announced the Industry's first Standards-compliant LTE/3G Multi-mode solution. LTE testing agreements are in place with a major vendor and Qualcomm is looking forward to enabling LTE access to the market. LTE trials are expected late 2009 with commercialization in 2010.

**Frage 5: 2.8 Frequenzbedarf ungepaarte Frequenzen**

**Wie schätzen Sie den Frequenzbedarf eines Betreibers ein, der gepaarte Frequenzen erwerben will? Wie hoch schätzen Sie die kleinstmögliche Bandbreite, die ein Betreiber unbedingt erwerben möchte? Wie viele Interessenten würden Sie erwarten?**

Qualcomm believes that in order to enable innovation, competition and the successful commercial development of wireless technologies in Austria and in Europe, the spectrum policy framework should be based on technology neutrality through standards competition, application neutrality and pan-European implementation of harmonized technical spectrum usage rights and band plans. Therefore, Qualcomm strongly recommends RTR to adopt the ECC/DEC/(05)05 harmonized band plan based on 2 x 70 MHz FDD and 50 MHz TDD.

The candidate technologies for unpaired spectrum operate on channel bandwidth multiples of 5MHz. In previous auctions of the 2.6GHz band, there has been little or no interest for the unpaired spectrum in the 2.6 GHz compared to FDD spectrum and a single operator has often obtained the whole unpaired spectrum. Furthermore, this interest has appeared to be diminishing rapidly over the past two years:

- In Norway (November 2007), 45MHz out of the 50MHz of unpaired spectrum has been won by a single company at approximately the same price as FDD spectrum (per MHz). It is important to notice that a company acquired unpaired spectrum to pair it and realign the Norwegian band plan with the CEPT band plan (ECC Decision ECC/DEC/(05)05).
- In Sweden (May 2008), the whole 50MHz unpaired spectrum band has been acquired for the approximately same amount as a single 2x5MHz paired spectrum block.
- In Hong-Kong (January 2009), all winners bids went to paired spectrum, no unpaired spectrum has been allocated.

**Frage 6: 2.9 Interesse an ungepaarten Frequenzen**

**Haben Sie grundsätzliches Interesse an ungepaarten Frequenzen?**

**Wenn ja, in welchem Umfang (minimale/maximale Bandbreite in MHz)?**

**Wenn nein, warum nicht?**

NA

**Frage 7: 2.10 Frequenzbedarf gepaarte Frequenzen**

**Wie schätzen Sie den Frequenzbedarf eines Betreibers ein, der ungepaarte Frequenzen erwerben will? Wie hoch schätzen Sie die kleinstmögliche Bandbreite, die ein Betreiber unbedingt erwerben möchte? Wie viele Interessenten würden Sie erwarten?**

The 2.6GHz frequency band offers the unique opportunity to deploy technologies with higher data rate based on HSPA+ and LTE due the availability of wider FDD channels up to 20MHz bandwidth. It is expected that the main interest in the 2.6 GHz award will be directed to larger bandwidth (10 or 20MHz) paired spectrum.

Qualcomm urges Austria to adopt the 2.6 GHz European harmonized band plan as set in ECC DEC (05)05 and which comprises 2x70 MHz FDD and 50 MHz TDD. Indeed irrespective of what standards or services that may be deployed, a common and harmonized band plan reduces the risks of interference and facilitates economies of scale, which in turn brings benefits to consumers and citizens. Other countries in Europe such as Germany and Sweden acknowledged those benefits and decided to adopt the ECC(05)05 harmonized band plan for the 2.6 GHz band. Therefore, Qualcomm strongly supports to allocate the 2500-2570MHz

band to uplink transmission (mobile to base station) and the 2620-2690MHz band to downlink transmission (base station to mobile).

**Frage 8: 2.11 Interesse an gepaarten Frequenzen****Haben Sie grundsätzliches Interesse an gepaarten Frequenzen?****Wenn ja, in welchem Umfang (minimale/maximale Bandbreite in MHz je Duplexrichtung)?****Wenn nein, warum nicht?**

NA

**Frage 9: 2.12 Erwarteter Rollout****Welches Rolloutszenario für den Bereich 2,6 GHz erwarten/planen Sie? In welchen Gebieten werden diese Frequenzen primär zum Einsatz kommen? Erwarten Sie flächendeckende Netze oder die Nutzung gemeinsam mit anderen Frequenzbereichen (z.B. in Hotspots?)**

Very high data rate networks at 2.6GHz will require a dense network of transmission points. It is expected that such networks will be a combination of hotzones, i.e. contiguous coverage over a medium-size geographical area such as a large town, and hotspots for specific areas of high demand (airports, stadiums). The coverage of the mobile broadband service is expected to remain continuous through the ubiquitous coverage provided in the short term by other bands such as the 2.1GHz (HSPA/HSPA+) and the 900MHz (HSPA/HSPA+) band and in the longer term by the 800 MHz band (Digital Dividend).

**Frage 10: 2.13 Stückelung****Welche Stückelung der Frequenzen für die Vergabe ist aus Ihrer Sicht sinnvoll? Wie viele Frequenzpakete in welcher Größe sollen Ihrer Meinung nach zur Vergabe gelangen?**

Qualcomm supports an allocation method allowing the award of contiguous 20MHz blocks for the paired spectrum based on 5 MHz blocks, in order to offer the possibility to operators to deploy technology operating on 20MHz paired (20MHz uplink paired with 20MHz downlink) spectrum.

**Frage 11: 2.14 Anordnung der Frequenzpakete**

**Wie wichtig ist es, dass die an einen erfolgreichen Bieter zuzuteilenden Frequenzpakete direkt nebeneinander liegen? Warum?**

**Q. 11. 2.14 Frequency packages arrangement**

LTE, which is currently being standardized by the 3GPP, only fulfills its promises over large bandwidth such as 20MHz channels. Over 5MHz channels, the performance of LTE is not substantially better than the performance of HSPA+, which can be deployed today in the 2.1GHz band.

It is of utter importance to grant contiguous blocks of frequencies to operators in order to allow them to reap the full benefits of LTE. Awarding fragmented/interleaved spectrum would prevent Austrian citizens to benefit from the higher data rate promised by LTE.

**Frage 12: 2.15 Unterschiede zwischen den Frequenzkanälen**

**Gibt es aus Ihrer Sicht signifikante Unterschiede zwischen den einzelnen 5 MHz-Frequenzkanälen? Sind davon alle oder nur einzelne Frequenzkanäle berührt? Wenn ja, bitte geben Sie genau an, welche Frequenzkanäle betroffen sind und worin die Unterschiede liegen und wie bedeutsam sie sind.**

Qualcomm would like to draw the attention of the RTR on both:

- the CEPT Report 19 on “Least restrictive technical conditions for WAPECS frequency bands”,
- the ECC Report 131 on “Derivation of a Block Edge Mask (BEM) for terminal stations in the 2.6 GHz frequency band (2500-2690 MHz)”.

The CEPT Report 19 concluded that 5MHz restricted blocks are required between TDD and FDD bands. Restricted blocks in CEPT Report 19 are blocks with limited emission rights and not protected from frequency neighbors. Based on the ECC Decision ECC/DEC/(05)05 band plan, it is clear that the unpaired blocks 2570-2575MHz and 2615-2620MHz should be restricted blocks and therefore are expected to generate a much lower interest from operators.

**Frage 13: 2.15 Unterschiede zwischen den Frequenzkanälen**

**Sind die vorhin angesprochenen Unterschiede zwischen einzelnen Frequenzkanälen in technisch- wirtschaftlicher Sicht so bedeutsam, dass im Vergabeverfahren unbedingt darauf Rücksicht genommen werden muss, auch dann, wenn dies ein erheblich komplexeres Auktionsverfahren erfordern würde?**

**Wenn ja, warum?**

Qualcomm agrees that the award system needs to take into account the fact that the unpaired blocks 2570-2575MHz and 2615-2620MHz are restricted blocks. This fact does not necessarily need to result in a significantly more complex award as they could essentially be excluded from the award by associating them with adjacent unpaired blocks (provided all operators agree that the value of these restricted blocks is significantly lower than the value of other frequency blocks).

**Frage 14: 2.16 Nutzungsdauer**

**Welche Nutzungsdauer ist aus Ihrer Sicht mindestens notwendig? Welche Nutzungsdauer sollte nicht überschritten werden?**

Qualcomm is of the view that the license duration should be long enough (e.g. 20 years) to ensure sufficient regulatory certainties for operators' investments in the 2.6 GHz band.

**Frage 15: 2.17 Versorgungsverpflichtung**

**Um eine effektive Nutzung der Frequenzen sicherzustellen, können versorgungsverpflichtungen auferlegt werden. Welche konkreten Versorgungsverpflichtungen sind aus Ihrer Sicht am besten dazu geeignet?**

Qualcomm supports coverage and services requirements in license conditions to ensure that available funds are invested in infrastructures and services which will benefit the Austrian economy rather than a purely auction-based approach. It is recognized that mobile network and digital communication have a large impact on the economic competitiveness of a countries. Following the current economic crisis, Qualcomm argues that all available funds should be directed towards investments rather than taken away from the market.

Therefore, Qualcomm would generally recommend shifting the focus from the purely auction-based approach to an approach based on more ambitious obligations of coverage and services, noting that the 2.6 GHz is more adapted to considerably increase the capacities of mobile networks mainly in urban areas (hot zones) and hot spots.

**Frage 16: 2.18 Zeitplan**

**Wie in der Einleitung beschrieben ist eine Vergabe Ende 2009 möglich. Ist dieser Vergabezeitpunkt aus Ihrer Sicht sinnvoll oder wäre eine spätere Vergabe – Ende 2010 - sinnvoller? Bitte begründen Sie Ihre Entscheidung.**

**Wenn Auktion Ende 2009, Begründung:**

**Wenn Auktion Ende 2010, Begründung:**

**Wenn anderer Auktionszeitpunkt ,welcher? Begründung:**



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Mobile Broadband is crucial for a sustainable economic growth. Therefore, Qualcomm believes that citizens' best interest lies in ensuring the rapid deployment of networks and services. Taking into account the most technology advanced networks and products availability in the 2.6 GHz, an auction in either 2009 or 2010 would be acceptable. The exact auction year would need to be set based on Austrian operators views and requirements.

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