

Prepared (also subject responsible if other) LMELWIE, LMEHOHL, ENOFCL		No. ENO/X/07:074 Uen		
Approved ENOPHW	Checked	Date 2007-07-31	Rev A	Reference

**Ericsson Comments to iDA's Consultation Paper  
"Proposed Framework for the ReAllocation of Spectrum  
in the 900 MHz and 1800 MHz Frequency Bands"**

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# 1            **Distribution List**

## **For your Information**

### **Receiver**

Mr. Andrew Haire  
Deputy Director General (Telecoms)  
Infocomm Development Authority of Singapore

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## 2 Ericsson Comments

### 2.1 Question 1

iDA invites views and comments on whether there are any other potential technologies and services that may be deployed in the 900 MHz and/or 1800 MHz frequency bands in the near term (1-5 years), and whether there is demand for low power GSM in Singapore.

#### Ericsson Comment:

WCDMA/HSPA will be the global solution for broadband wireless access currently with around 120 commercial networks in about 60 countries.

WCDMA/HSPA will be deployed in Europe during year 2008 in the band 900 MHz.

The bands 900 MHz and 1800 MHz have been identified to IMT-2000 by ITU. Accordingly, 3GPP has specified these bands as two of in total 10 FDD frequency bands for WCDMA/HSPA. In extension, the 3GPP family of technologies, from year 2010, could provide, if required, further improvements into the LTE technology which will provide support for bandwidths ranging from 1.25 MHz up to 20 MHz.

Today the explosive growth of broadband access and the availability of cheap last-mile IP/Ethernet transport are factors that enable Low Power GSM, eg Femto cells, to replace the fixed phone, for homes as well as for small and medium enterprises. Ericsson believes that with appropriate business strategy and models, Low Power GSM can provide a way to offer dedicated tariffs and services only available in the office or at home. It also increases revenue by increasing indoor coverage and capacity as well as cutting expenditure by off-loading the macro network. And eventually service operators can consider deploying WCDMA/HSPA and LTE usage in the 900/1800 MHz band when the market demand arises.

### 2.2 Question 2

iDA invites views and comments on the proposals to allow the 900 MHz and 1800 MHz frequency bands to be used for the provision of nationwide PCMTS using 2G or 3G technologies and other technologies which share a similar platform and allow higher speed data services, such as GPRS, EDGE or HSDPA/HSUPA/HSPA, and whether iDA should allow other services or technologies to be deployed, and the implications of doing so.

#### Ericsson Comment:

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Economy of scale was paramount for a global market success such as we have experienced for GSM today. Therefore, predictions clearly show that WCDMA/HSPA products, based on the GSM family of technologies, will be the only technology able to create a cost efficient mass-market to meet the demands in the bands 900 MHz and 1800 MHz.

It is of fundamental importance to keep globally harmonized spectrum arrangements public mobile communication systems. If this spectrum, is kept for these GSM/WCDMA/HSPA compatible radio technologies a conflicting usage is avoided.

iDA also invites views on the traffic patterns for 3G services going forward, eg whether traffic is likely to be more data-centric in future. Based on these projections, would the 3G spectrum rights issued in 2001 be sufficient? If not, when would there be a need for additional spectrum for 3G services?

Ericsson Comment:

The GSM/IMT-2000 family of mobile standards already has more than three billion subscribers connected globally.. Notably, by 2010, more traffic will be generated by data and information-based services than by voice in mobile networks. **The broadband related traffic volumes in mobile networks are predicted to grow at least 30-fold by 2012**, and we expect there to be 1.8 billion broadband subscribers. Out of these 1.8 billion broadband subscribers, 1.2 billion will be **mobile** broadband subscribers, suggesting that the mobile broadband subscribers will be twice as many as the fixed broadband subscribers.

According to ITU Report ITU-R M.2078, the total spectrum bandwidth needed for both existing mobile cellular systems – including pre-IMT-2000, IMT-2000 and its enhancements, as well as IMT-Advanced – will be between 1280 MHz and 1720 MHz by year 2020. This implies an additional spectrum requirement of 700 – 1200 MHz of spectrum. If there are several parallel network deployments per country, spectrum requirements will be even higher.

## 2.3

### Question 3

iDA seeks views and comments on whether the spectrum should be allocated in lots of paired 5 MHz spectrum per lot.

Ericsson Comment:

Regarding further spectrum allocation, Future Wireless Broadband Services (such as LTE, IMT-Advanced) support a range of spectrum options from 1.25MHz to 20MHz. It is definitely more desirable to allocate a large contiguous spectrum blocks for broadband services.

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However, IDA needs to consider the timing for this, in relation to the load/traffic on today's 2G networks, and studies are needed to evaluate how to transit from current allocations to make such a transition possible in Singapore. CEPT and 3GPP have developed several reports and specifications that can be used in such studies.

## 2.4 Question 4

iDA invites views and comments on the potential demand for spectrum in the 900 MHz and 1800 MHz frequency bands in the next 7 years. In particular, iDA seeks views on:

(i) the amount of spectrum that existing 2G operators would require for continuity of 2G services or other value-added services;

Ericsson Comment:

Contiguous spectrum allocations are necessary for efficient usage for future broadband IMT-2000 services.

For current 2G services operators, they will need time, subject to market situation and business decisions, while migrating the 2G subscribers to a new WCDMA/HSPA networks. Hence it is imperative for these 2G operators to have access to enough spectrums in order to maintain the necessary quality of services.

(ii) whether existing 3G operators would require spectrum in these bands for 3G expansion or other value-added services, and if so, the amount of spectrum likely required; and

Ericsson Comment:

An established rule of thumb by international organizations is that an amount of 2 x 15 MHz is regarded to be a minimum amount of spectrum for a viable business case for a individual public mobile communication network operator using IMT-2000.

(iii) whether there is potential for new players to enter the market obtaining spectrum in these bands, and if so, the minimum amount of spectrum required by a new entrant.

Ericsson decides not to comment on this sub-clause.

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## 2.5 Question 5

iDA seeks views and comments on the minimum size of the guard band required in cases where 2G networks co-exist with 3G networks and/or other services or technologies such as WiMAX, in order to ensure minimal risk of interference among networks. iDA also seeks views and comments on the proposed arrangement for the provision of guard bands.

### Ericsson Comment:

Such compatibility studies have been carefully analyzed by 3GPP and a project team of the CEPT/ECC regional organization, resulting in the referenced Decision ECC/DEC/(06)13 on designating the bands 900 MHz and 1800 MHz to also WCDMA/HSPA and the CEPT/ECC Report 082 describing in more detail the possibility to introduce WCDMA/HSPA in the 900 MHz and 1800 MHz bands while keeping GSM in operation. All the relevant 3GPP documents (both Specifications and Reports) are listed at the end of Report 082 and can be downloaded from [www.3gpp.org](http://www.3gpp.org) free of charge if further information and details are needed.

For information also a CEPT Report (Report 096) is included describing compatibility study made between adjacent bands when introducing WCDMA/HSPA in the bands 900 MHz and 1800 MHz.

## 2.6 Question 12

iDA seeks views and comments on the potential uses of the 800 MHz spectrum band, whether there is industry interest in the band and the potential for new entrants obtaining spectrum in the band.

### Ericsson Comment:

Currently this band is considered by ITU under WRC-07 agenda item 1.4 where the band 470 – 862 MHz is one of the candidate bands for IMT-Advanced. This will give a large opportunity for mobile use if harmonized globally.

In some countries this band is considered from the point of view of a digital dividend while the broadcasting TV is transitioned from an analogue to digital technology.

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### 3 Summary

- WCDMA/HSPA will be deployed in band 900 MHz in Europe during year 2008
- The bands of 900 MHz and 1800 MHz have been identified to IMT-2000 by ITU. Accordingly, 3GPP has specified these bands as two of in total 10 FDD frequency bands for WCDMA/HSPA.
- WCDMA/HSPA products, based on the GSM family of technologies, predictably will be the only technology able to create a cost efficient mass-market to meet the demands in the bands 900 MHz and 1800 MHz.
- Contiguous spectrum allocations are necessary for efficient usage for future broadband IMT-2000 services.
- It is necessary for the 2G operators to have access to enough spectrums in order to maintain the necessary quality of services while migrating their 2G subscribers to WCDMA/HSPA networks.