



June 15, 2009

Mr. Peter Hill  
Director, Spectrum Management Operations  
Radiocommunications and Broadcasting Regulatory Branch  
Industry Canada  
300 Slater Street  
Ottawa, Ontario K1A 0C8

**By Email: [spectrum.operations@ic.gc.ca](mailto:spectrum.operations@ic.gc.ca)**

**RE: Comment to Canada Gazette, Part I, Gazette Notice DGTP-005-09 dated March 10, 2009 and entitled “Consultation on Transition to Broadband Radio Service (BRS) in the Band 2500-2690MHz”**

Dear Mr. Hill:

Ericsson Canada is pleased to submit its comments to Industry Canada’s Gazette Notice DGTP-005-09 “Consultation on Transition to Broadband Radio Service (BRS) in the Band 2500-2690MHz” (“Consultation Paper”).

As a global leader in implementing telecommunications solutions, with a strong Canadian presence since 1953 and more than two billion dollars invested in Canada over the past 10 years, Ericsson Canada strongly supports Industry Canada’s view in the Consultation Paper regarding the importance of the 2500-2690MHz spectrum “as it is the only band identified by the ITU for next generation mobile services on global basis”.

For the reasons that are summarized below, Ericsson supports transition to Broadband Radio Services in the 2500-2690MHz band. This course of action by Industry Canada will provide additional valuable spectrum to meet the anticipated capacity demand for mobile broadband traffic by Canadians. Moreover, in adopting an internationally harmonized band plan as advocated by Ericsson, Industry Canada would create an environment where Canadians and Canadian wireless industry would be able to reap the benefits of mainstream technology operating in a large ecosystem such as economies of scales, international roaming and the opportunity to compete on the same footing with global wireless players.

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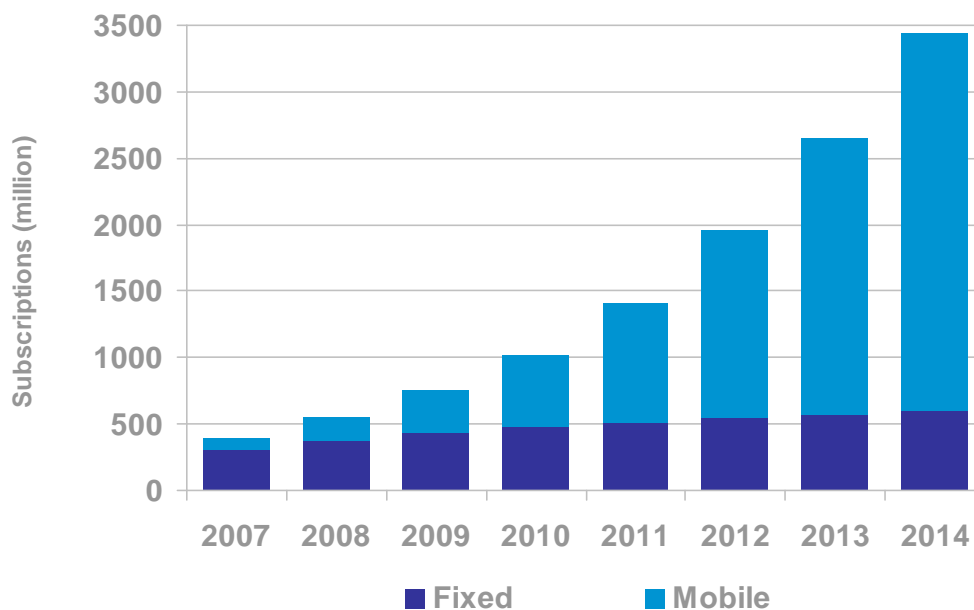
**Ericsson Canada Inc.**

5255 Satellite Drive, Mississauga, Ontario L4W 5E3  
Telephone: (905) 629-6700 Fax: (905) 629-6701 Toll-free (Canada): 1-800-661-4201

## Growth in Mobile Broadband Traffic

Since mid 2007, data traffic has surpassed voice traffic on the current mobile Wideband Code Division Multiple Access (WCDMA) networks globally, based on Ericsson's internal studies. From that period to today, voice traffic has since increased by a factor of 2 while data traffic has multiplied by a factor of 14. Today, Ericsson estimates that there are approximately 600 million fixed and mobile broadband subscriptions worldwide. By 2014 we estimate that there will be 3.4 billion broadband subscriptions, 80% of which are likely to be mobile traffic mainly carried by High Speed Packet Access (HSPA) and Long Term Evolution (LTE) technologies. We also estimate that fixed broadband subscriptions worldwide will grow from today's 400 million subscriptions to well above 600 million by 2014 and mobile broadband will grow even faster, from the current 200 million subscriptions to 2.8 billion, a growth of more than 14 times. This expected exponential growth is driven by the global demand for personalization of services, ubiquitous access for broadband as well as connectivity available in consumer devices and enterprise equipment. Mobile broadband infrastructure alone is not what benefits society. Rather, it is what mobile broadband access enables that is the true benefit: the applications, services, remote businesses, and transfer of ideas are what will improve the lives of Canadians and people around the world. Mobile broadband applications and services are what will eliminate barriers to economic growth, education, healthcare, and other public services and make them more convenient, efficient, and accessible. Accordingly, Industry Canada must consider this rapid growth of mobile broadband and its benefits when designing the band plan and licensing this spectrum in Canada.

*Figure 1: Impressive Growth in Mobile Broadband Traffic*



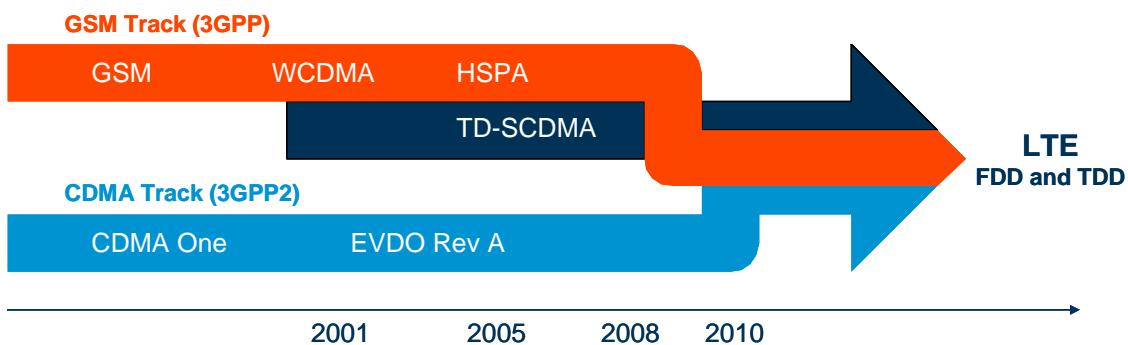
Mobile Broadband includes: CDMA2000 EV-DO, HSPA, LTE, Mobile WiMAX & TDSCDMA. It includes handsets (vast majority), USB dongles, embedded modules etc.  
Fixed broadband includes: DSL, FTTx, Cable modem.

Source: Internal Ericsson

## Convergence in Mobile Broadband Technology

Along with the trend of rapid growth in mobile broadband subscriptions and capacity demand, today's telecommunication industry is presented with a unique inflection point. For the first time in the recent history of mobile communications, major mobile network providers around the world are embracing the same technology path converging towards LTE. Coupled with mobility, LTE will push the maximum wireless speed past the 100 Mbps barrier. Ericsson has demonstrated an LTE link at over 160 Mbps, and one industry test has shown that LTE is capable of delivering data at over 300 Mbps<sup>1</sup>. The evolution step towards LTE is even endorsed by the world's largest CDMA operators, such as Verizon Wireless, that selected Ericsson as one of its major suppliers for a LTE launch in 2009. Similarly, Global System for Mobile communications (GSM) and WCDMA/HSPA operators around the world are highlighting their commitment to LTE, and those that have already secured spectrum for LTE in their jurisdictions are already announcing deployments, such as TeliaSonera in Sweden. This operator has already announced the deployment of a first commercial LTE base station provided by Ericsson. These technology selections will further accelerate the growth of wireless broadband technologies as the technology itself becomes more uniform and interoperable throughout operators worldwide. A larger global ecosystem of standard based and mainstream technology will also promote innovation which produces feature rich products and services accessible to a larger segment of the Canadian population. Therefore transition of the 2500-2690MHz band to BRS is an enabler for the Canadian wireless industry to be part of this global community.

*Figure 2: Mobile System Evolution*



Source: Internal Ericsson

<sup>1</sup> See Ericsson Press Backgrounder, HSPA, LTE And Beyond – Delivering Rich Communication, Connectivity And Entertainment Over True Mobile Broadband, at 2 (February 2009), available at [www.ericsson.com/ericsson/press/facts\\_figures/doc/hspa\\_lte.pdf](http://www.ericsson.com/ericsson/press/facts_figures/doc/hspa_lte.pdf); See Michelle Donegan, LTE Hits 300 Mbits/s, Heavy Reading, (Feb. 6, 2008), available at [http://www.heavyreading.com/document.asp?doc\\_id=145112&site=gsma](http://www.heavyreading.com/document.asp?doc_id=145112&site=gsma); See Light Reading, LSTI Touts LTE Speeds (Feb. 5, 2008), available at [http://www.lightreading.com/document.asp?doc\\_id=144980&site=gsma](http://www.lightreading.com/document.asp?doc_id=144980&site=gsma)

## **Global Harmonization of the 2500-2690MHz Band**

Today, worldwide, there are many frequency bands allocated to public mobile systems. Despite these multiple frequency bands, international roaming has been achieved with equipment that can support many combinations of these frequency bands. This hodgepodge of frequency bands is an impeding factor for the promotion of low cost and less complex equipment which will ultimately lead to increased consumer accessibility to cost effective wireless broadband services and applications; the accessibility that will be particularly beneficial for currently unserved or underserved areas in Canada. Ericsson's position is well illustrated and aligned with Industry Canada's views regarding the band contained in the Consultation Paper: "High-capacity mobile services may be offered in this band because of good radio propagation characteristics, the prospect of relatively low-cost equipment and the large spectrum blocks that can accommodate the latest broadband technologies. These factors make this spectrum unique and valuable."

Furthermore, in addition to the above mentioned benefit, an additional advantage with a globally accepted technology combined with a globally harmonized spectrum, is that the Canadian wireless industry will have the valuable opportunity to contribute its expertise and solutions to the global technology market and will be able to compete on equal footing with other global players. Very simply, when spectrum is not harmonized, Canadian carriers and consumers are disadvantaged.

Accordingly, Ericsson Canada recommends that Industry Canada works towards the adoption and alignment of the 2500-2690MHz band plan that has been identified by many global organizations such as International Telecommunication Union (ITU), Inter-American Telecommunication Commission (CITEL), and European Conference of Postal and Telecommunications Administrations (CEPT).

In the appendices attached, Ericsson provides comments on the specific sections to Industry Canada's Consultation Paper.

We trust that you will find these comments to be of value and as always, we are ready to work with Industry Canada in this consultation and further consultations on this very important frequency band.

Sincerely,

Viet Nguyen  
Director, Regulatory Affairs and Government Relations  
Ericsson Canada Inc.

cc: Mark Henderson, President and CEO, Ericsson Canada Inc.  
Dragan Nerandzic, CTO, Ericsson Canada Inc.

## **Appendix I: Comments on specific sections**

### ***Section 2 “Background”***

As described earlier, Ericsson strongly supports Industry Canada’s view on the importance and value of this band and its potential of creating an environment of low-cost equipment for mobile broadband technologies “*At the World Radiocommunication Conference in 2000 (WRC-2000), the band 2500 to 2690 MHz was identified for IMT-200 radio service (also known as third generation mobile or 3G services). The identification of this band by the ITU has created significant interest, as it is the only band identified by the ITU for next generation mobile services on a global basis. High-capacity mobile services may be offered in this band because of good radio propagation characteristics, the prospect of relatively low-cost equipment and the large spectrum blocks that can accommodate the latest broadband technologies. The factors make this spectrum unique and valuable*”

### ***Section 3 “Consultation on a Firm Transition Date”***

When it is feasible, Ericsson recommends a transition date so that it is possible to license large and contiguous spectrum blocks, instead of small and fragmented spectrum blocks, that are suitable for wireless broadband for a wide range of applications including multimedia applications.

### ***Section 8 “Stakeholder Proposal Development on a Band Plan for BRS”***

Ericsson supports Industry Canada’s view on the important role of frequency planning and the details of implementation as noted in the consultation paper: “*Frequency planning and the details of implementation have a significant impact on the usability and value of spectrum. The effects can range from enabling substantial economies of scales, allowing new applications and technologies and facilitating roaming arrangements, to severely curtailing deployment and leading to significant guard band required to avoid harmful interference*”

All aspects of frequency planning such as starting frequency, ending frequency, block sizes, duplex spacing, pairing and guard bands etc. have to be clearly described because some band plans look similar on a high level but very different in detail.

Based on the reasons discussed in earlier sections, Ericsson strongly recommends Industry Canada to adopt the internationally harmonized band plan as per ITU’s Recommendation ITU-R M.1036, CEPT’s ECC DEC/(05)05 and CITEL’s Recommendation PCC.II/REC. 8 (IV-04). The band plan would have two paired blocks (2500-2570 MHz paired with 2620-2690 MHz) and a single unpaired block (2570-2620 MHz). Duplex spacing for the paired blocks is 120 MHz. The upper block should be used for the Frequency Division Duplex (FDD) base station transmitter while the lower block should be used for the FDD terminal transmitter. To take advantage of the latest mobile

broadband technologies, when it is feasible, licences should be awarded as large as possible up to 20 MHz blocks (20+20MHz for paired spectrum).

The recommended band plan addresses several important aspects.

*Economies of scale and global roaming:* As described in earlier sections, only globally harmonized spectrum will allow Canadian wireless industry can fully take advantage of widely available equipment based on standardized technologies leading to the lowest possible price points, feature rich equipment and applications for both end users and operators. Globally harmonized spectrum will also enable global roaming without the need of complicate equipment supporting multiple bands.

*Spectrum Efficiency:* Since radio spectrum is a finite and valuable public resource, it is critical to make sure to adopt a band plan that minimizes the need for guard bands and coordination between operators. As indicated in Industry Canada's Consultation Paper "...that significant guard bands may be required between spectrum using FDD and TDD technologies, as well as between unsynchronized TDD systems...", Ericsson urges Industry Canada to avoid a band plan that allow sharing of TDD spectrum blocks and FDD blocks in the same sub-band to minimized wasted valuable spectrum resource allocated for guard bands. Other studies also point to this complication, impracticality of co-existence of TDD/TDD and FDD/TDD such as Mason Research's November 2006 study commissioned by OfCom<sup>2</sup>:

*"The results of the worst-case analysis demonstrated that FDD/TDD, and TDD/TDD, co-existence is not feasible at either 10 or 15 MHz offset without suitable interference mitigation. At 10 MHz and 15 MHz offset, the separation distance between base stations in the BS-BS interference scenario is, again, in excess of 1km, with excessive interference also occurring between mobiles (though less than the 5MHz offset case). This suggests that operation of FDD and TDD systems in adjacent frequency blocks in the same frequency band is not feasible without consideration of suitable interference mitigation techniques." Further on, the study notes that "the results of our analysis suggest that interference will be noticeable when the distance between mobiles is less than 10 metres"*

Ericsson estimates that, currently globally the amount of spectrum allocated for unpaired operations is less than 10% are of the total amount of spectrum and there is no significant deployment in the allocated unpaired spectrum. Therefore, for this important band, significantly more amount spectrum should be allocated as paired spectrum than unpaired spectrum. This will ensure the value of spectrum is preserved based on market demand. At the same time, as most of mobile broadband technologies will have both FDD and TDD components, having both paired and unpaired spectrum allows most technologies to be deployed in the band, based on market demand.

Future services will require higher data rates and lower latency than those available today. The ability of wireless technology to provide high data rates wirelessly largely depends on the amount of spectrum that can be harnessed for use as a contiguous unit.

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<sup>2</sup> <http://www.ofcom.org.uk/consult/condocs/2ghzawards/masonresearch.pdf> - Page 7

When it is feasible, allocating spectrum in wider bandwidths of up to 20 MHz (or 20+20 MHz for paired spectrum) will offer distinct performance advantages and are more efficient because they enable operators to provide more bandwidth to more users thereby allowing consumers to take full advantage of the benefits of advanced, content-rich technologies.

*Regulatory certainty:* A clearly specified the amount of paired and unpaired spectrum would help the spectrum holder to have a knowledge of when and how the licences could be put in service and therefore, a clear understanding of the spectrum value based on their business plan.