

ICASA Information Memorandum for Radio Frequency Spectrum Prospective License to Provide Mobile Broadband Wireless Access Services for Urban and Rural Areas Using the Complimentary Bands, 700 MHz, 800 MHz and 2.6 GHz

Ericsson Submission



1 Introduction

1.1 Ericsson submission

The Independent Communications Authority of South Africa (ICASA or the Authority) has invited written comments on the Information Memorandum for Radio Frequency Spectrum Prospective License to Provide Mobile Broadband Wireless Access Services for Urban and Rural Areas Using the Complimentary Bands 700 MHz, 800 MHz and 2.6 GHz (Notice No 914 of 2015, Government Gazette No 39203 of 11 September 2015), hereinafter referred to as the “Information Memorandum.”

Ericsson has studied the Information Memorandum and welcomes this opportunity to respond to it publicly as part of the notice and comment process. We are pleased to contribute to this very important discussion and would like to commend the Authority for taking this step that seeks to provide regulatory certainty and finally license these essential frequency bands.

1.2 About Ericsson

Ericsson is a world-leading provider of telecommunications equipment and services to mobile and fixed network operators. Over 1,000 networks in more than 180 countries use our network equipment, and more than 40 percent of the world's mobile traffic passes through Ericsson networks.

We are one of the few companies worldwide that can offer end-to-end solutions for all major mobile communication standards. Our networks, telecom services and multimedia solutions make it easier for people, across the world, to communicate.

And as communication changes the way we live and work, Ericsson is playing a key role in this evolution. Using innovation to empower people, business and society, we are working towards the Networked Society, in which everything that can benefit from a connection will have one.



2 Mobile Broadband Trends

Ericsson predicts that global mobile subscriptions will reach 9.2 billion by 2020 and mobile broadband subscriptions will reach 7.7 billion at the same time, accounting for a large share of all broadband subscriptions in many markets.¹

Our research shows that data traffic grew around 12 percent quarter-on-quarter between Q4-2014 and Q1-2015, as it can be seen in the figure below. Furthermore, a 55 percent year-on-year, between Q1-2014 and Q1-2015 was realized.

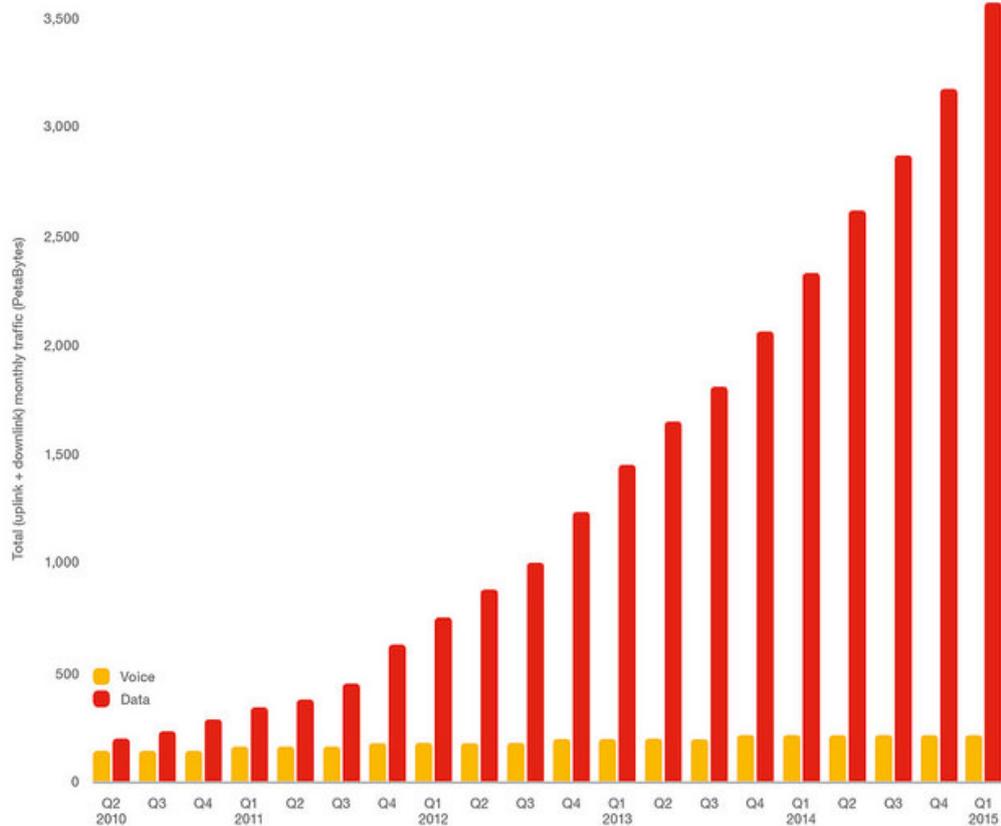


Figure 1: Mobile data traffic growth, 2010 - 2015

Meanwhile, it is worth noting that in most markets in the developing world, including South Africa, mobile broadband remains the primary means with which people connect to the internet.

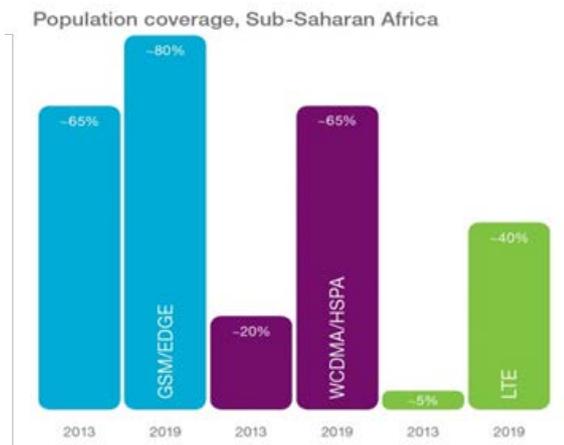
¹ Ericsson Mobility Report, June 2015
<http://www.ericsson.com/res/docs/2015/ericsson-mobility-report-june-2015.pdf>



Mobile broadband users expect a high quality user experience and continual service improvement. Evolving the capabilities of the mobile networks and increasing the available spectrum are the key enablers to ensuring a good user experience. These networks are providing increasingly higher speeds and better spectral efficiency.

In order to meet the growing demand for mobile broadband data, the industry is seeking new opportunities to obtain additional spectrum and solutions that better optimize spectrum utilization. Improvements to both downlink and uplink speeds and new ways to deliver content are being implemented on the network infrastructure side.

As more and more base stations are deployed, the population coverage of the world's mobile networks constantly increases. At the end of 2013, WCDMA/HSPA covered approximately 60 percent of the world's population² and 20 percent of the Sub-Saharan Africa population and is forecasted to reach 65% in 2019.³ LTE will reach an estimated 40 percent coverage of the Sub-Saharan population by 2019.



WCDMA/HSPA and LTE subscriptions in the region will continue to grow due to the increasing coverage and the growing need for speed and high throughput applications. Meanwhile, new spectrum is becoming available it provides the much needed resources.

Figure 2: Population coverage, Sub-Saharan Africa

Getting access to more spectrum is one aspect – but equally important is the ability to use the existing (and new spectrum) efficiently. Regulatory certainty around the existing spectrum is quite critical in ensuring continued network investments in new and advanced technologies.

² Ericsson Mobility Report, November 2014

<http://www.ericsson.com/res/docs/2014/ericsson-mobility-report-november-2014.pdf>

³ Ericsson Mobility Report, June 2014: Sub-Saharan Africa Appendix

<http://www.ericsson.com/res/docs/2014/emr-june2014-regional-appendices-ssa.pdf>

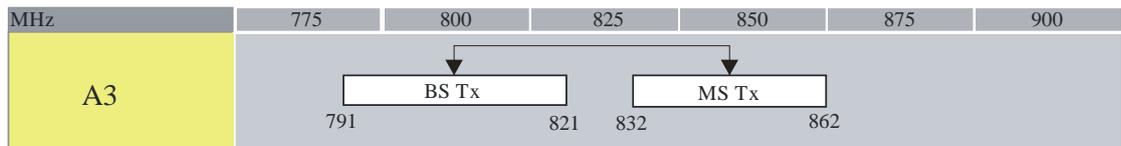


3 Ericsson comments

3.1 The Available Spectrum for Assignment

The Legal Framework Section of the Information Memorandum refers to, among others, the National Radio Frequency Plan (NRFP) of 2013 and the Radio Frequency Spectrum Assignment Plans (RFSAP) for International Mobile Telecommunications (IMT) of 2015 as some of the guiding documents.

The NRFP of 2013 read together with the RFSAP of 2015 outlines a harmonized channel plan for the 800 MHz band (832 – 862 / 791 -821 MHz). This channel plan is also harmonized with the ITU frequency arrangement A3 for the implementation of IMT⁴ and the European Union Member (EU) States harmonized technical and regulatory conditions for the use of the band 790 – 862 MHz.⁵



M.1036-03-A3

Figure 3: 800 MHz Frequency arrangements A3 recommended by ITU-R

Furthermore, the importance of a harmonized channel arrangement that is regionally aligned, particularly for the bands 700, 800 and 2600 MHz, is alluded to in Section 4.6 of the Information Memorandum. The benefits of harmonized assignments or spectrum licensing by the Authority cannot be overemphasized. Ericsson humbly submits that the channel plan proposed in Section 5.1.2 of the Information Memorandum is not fully harmonized with the global and regional plans and thus the Authority should reconsider this plan.

⁴ Recommendation ITU-R M.1036-4

Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications (IMT) in the bands identified for IMT in the Radio Regulations (RR)

⁵ ECC/DEC/(09)03

ECC Decision of 30 October 2009 on harmonized conditions for mobile/fixed communications networks (MFCN) operating in the band 790 - 862 MHz



Furthermore, it is worth mentioning that, as per the 3GPP LTE standard, a carrier can have a bandwidth of 1.4, 3, 5, 10, 15 or 20 MHz. Ericsson recommends assignments in blocks of paired 5 MHz blocks for 700 MHz and 800 MHz spectrum licensing, and minimum assignments of 2 x 10 MHz per licensee. This is in line with global trends and harmonized assignment, and that will also increase the data capacity of the networks.

790-791	791-796	796-801	801-806	806-811	811-816	816-821	821-832	832-837	837-842	842-847	847-852	852-857	857-862
Guard band	Downlink						Duplex gap	Uplink					
1 MHz	30 MHz (6 blocks of 5 MHz)						11 MHz	30 MHz (6 blocks of 5 MHz)					

Figure 4: CEPT 800 MHz Harmonized frequency arrangement

3.2 Proposed Spectrum Lots

Mobile Broadband network operators require a balanced portfolio of spectrum that enables them to provide sufficient coverage and adequate capacity. The multi-band support in the terminal devices offers operators flexibility in network deployment and spectrum utilization. For users, this translates into good service continuity when moving between urban, sub-urban and rural areas. At the same time, depending on the operator market strategy, customer base – existing and targeted, current spectrum portfolio, future plans, and other relevant factors, the spectrum demands and ambitions for different entities would differ from one operator to the other, there is no “one size fits all.”

The Information Memorandum proposes different spectrum categories and or lots with different combinations of the bands in question. The pre-packaged spectrum lots might not necessarily meet the needs or the strategies of the different operators. The objective of the proposed spectrum lots is not clear as the Information Memorandum does not pronounce on such and as a results Ericsson requests the Authority to clarify on the reasons behind this model.

Furthermore, we humbly submit that the Authority should look at other alternatives and more efficient ways of managing spectrum packages that will allow the industry to select and bid for different bands as per the needs. From [Table 1](#) below it can be established that different operators have access to or lack access to different bands, at the same time some similarities exists around certain bands such as 1800 MHz and 2100 MHz.



Table 1: South African mobile operators' frequency spectrum ranges

Operator	850 MHz (A1)	900 MHz	1800 MHz	2100 MHz	2300 MHz	2600 MHz
Cell C		2 x 11 MHz	2 x 12 MHz	2 x 15 MHz 1 x 5 MHz		
MTN		2 x 11 MHz	2 x 12 MHz	2 x 15 MHz 1 x 5 MHz		
Neotel	2 x 4.5 MHz		2 x 12 MHz			
Telkom			2 x 12 MHz	2 x 15 MHz	1 x 60 MHz	
Vodacom		2 x 11 MHz	2 x 12 MHz	2 x 15 MHz 1 x 5 MHz		
WBS			2 x 12 MHz			1 x 15 MHz

Source: ICASA

It can also be established that some operators might be more inclined to acquire higher frequency spectrum and forego the lower frequency bands, and vice versa. The spectrum requirements of the new entrants, should there be any, would also be informed by various issues including the ones we have alluded to in this submission. The Appendix at the end of this submission also shows a number of spectrum auctions that have been conducted around the world of late. In the cases where these auctions were licensing multiple bands, none of them imposed spectrum packages.

3.3 Germany multiple bands auction of 2010

As the Discussion Document refers to the German spectrum auction of May 2010 by BNetz, reflections on this are thus in order. This auction assigned 60 MHz in the 800 MHz band and raised proceeds of EUR 3.57 billion, or EUR 60 million per megahertz, specifically for this band. The total revenue from this auction amounted to EUR 4.4 billion and the 800 MHz spectrum represented one sixth of the total spectrum offered, however, this band attracted more than 80 percent of the bids. This demonstrates the value the industry attached to the 800 MHz spectrum compared to other bands.

It must be noted that the German auction included multiple bands, namely 800 MHz, 1800 MHz, 2100 MHz and 2600 MHz and there was no lots or packages pre-designed by the regulator. The different operators bid for different spectrum bands as per their needs, current and future plans, budget, etc. Regarding the 800 MHz band, the first 2 x 5 MHz block was sold as a “concrete” block and the rest were abstract blocks.



Furthermore, the auction rules imposed a limit of 2 x 20 MHz spectrum holding below 1 GHz, thus some entities could bid for 2 x 10 MHz, 2 x 15 MHz or even 2 x 20 MHz of the 800 MHz, depending on their existing spectrum portfolio and their future plans and budget.

4 Conclusion

Several countries around the world, including South Africa, are currently experiencing severe economic difficulties. At the same time broadband is world-renowned as an enabler for economic growth, the benefits thereof can be direct, indirect and or induced. The licensing of these spectrum bands that are highly sought after is key to the long-term economic growth, not only of the mobile broadband market, but the national economy in general.

Harmonization of this spectrum will not only increase the available spectrum and the efficient utilization thereof, but will also proliferate the economies of scale and allow South Africa to reap the benefits of wider ecosystems. In furthering the interests of regulatory certainty, it will be crucial for the Authority to outline the obligations that will come with this spectrum that is to be licensed as these cannot be implemented retrospectively. This will also allow the operators to include these in the business plans and cater accordingly for that from the beginning.

In conclusion, the objectives of this process should be broadly aligned with the South African National Broadband Policy: SA Connect. Providing broadband for all is not only paramount to the economic development but will also assist other sectors or industries with the underlying infrastructure that will help them to thrive and extend their reach. The delivery of social services such as health and education will be greatly enhanced with broadband, and mobile broadband will play big role in that regard. It is therefore quite urgent for the licensing of this spectrum to be dealt with speedily and decisively.

For more information on this submission, please contact Thabiso Thukani at Email: thabiso.thukani@ericsson.com or Tel: +27 11 844 2000.



Appendix

Country	Spectrum bands	Auction Method	Date of auction
Czech Republic	800, 1800 & 2600 MHz	SMRA	November 2013
Denmark	800 MHz	CCA	July 2012
Finland	800 MHz	SMRA	October 2013
France	800 MHz	CCA	December 2011
Germany	800, 1800, 2100 & 2600 MHz	CCA	May 2010
Germany	700, 900, 1500 & 1800 MHz	SMRA	June 2015
Ireland	800, 900 & 1800 MHz	CCA	November 2012
Italy	800, 1800 & 2600 MHz	SMRA	March 2012
Latvia	800 MHz	SMRA	October 2013
Netherlands	800, 900 & 1800 MHz	CCA	December 2012
Norway	800, 900 & 1800 MHz	CCA	December 2013
Portugal	800, 1800 & 2600 MHz	SMRA	March 2012
Slovenia	800, 900, 1800, 2100 & 2600 MHz	CCA	April 2014
Spain	800, 900 & 2600 MHz	SMRA	September 2011
Sweden	800 MHz	SMRA	March 2011
Switzerland	800, 900, 1800, 2100 & 2600 MHz	CCA	February 2012
UK	800 & 2600 MHz	CCA	February 2013

SMRA – Simultaneous Multi-Round Auction

CCA – Combinational Clock Auction

Source: Ericsson Intelligence