

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
)	
Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems)	ET Docket No.00-258
)	
Amendment of Section 2.106 of the Commission’s Rules to Allocate Spectrum at 2 GHz for Use By the Mobile-Satellite Service)	ET Docket No. 95-18
)	
The Establishment of Policies and Service Rules For the Mobile-Satellite Service in the 2 GHz Band)	IB Docket No. 99-81
)	
Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service)	RM-9498
)	
Petition for Rule Making of UTStarcom, Inc., Concerning the Unlicensed Personal Communications Service)	RM-10024
)	

COMMENTS OF ERICSSON

Ericsson Inc (“Ericsson”) hereby submits comments in response to the Federal Communications Commission’s (“Commission”) Further Notice of Proposed Rulemaking (“FNPRM”), released August 20, 2001, to examine further the possibility of introducing new advanced wireless services in spectrum currently allocated for other purposes. The Commission proposes allocations in this FNPRM that are critical to meet carriers’ short to mid-term needs for additional spectrum and for remedying spectrum fragmentation issues. The Commission identifies spectrum bands that are extremely well

suited for advanced mobile wireless services and that form a comprehensive spectrum management plan that is in the public interest.

In particular, the following actions are seen by Ericsson as the most urgent and important to the development and deployment of advanced mobile wireless technologies:

- Reallocate the 2150-2160 MHz band currently assigned to MDS;
- Reallocate the 2165-2170 MHz band currently allocated but not licensed to MSS; and
- Create a new spectrum pairing of the 1710-1770 MHz and 2110-2170 MHz bands.

The Commission's proposed actions are key to paving the way for innovative, affordable, competitive, and widely available advanced mobile wireless services. Further, these reallocations represent reasonable steps that will lead to greater spectrum harmonization, lessen spectrum fragmentation, and establish research, development and manufacturing economies of scale.

Ericsson is encouraged by the Commission's tentative conclusions and proposals in this FNPRM which are similar to and consistent with many of the elements of the spectrum plan proposed by Ericsson in its initial comments filed in response to the Commission's New Advanced Wireless Services NPRM.¹ Ericsson's initial plan was essentially as follows:

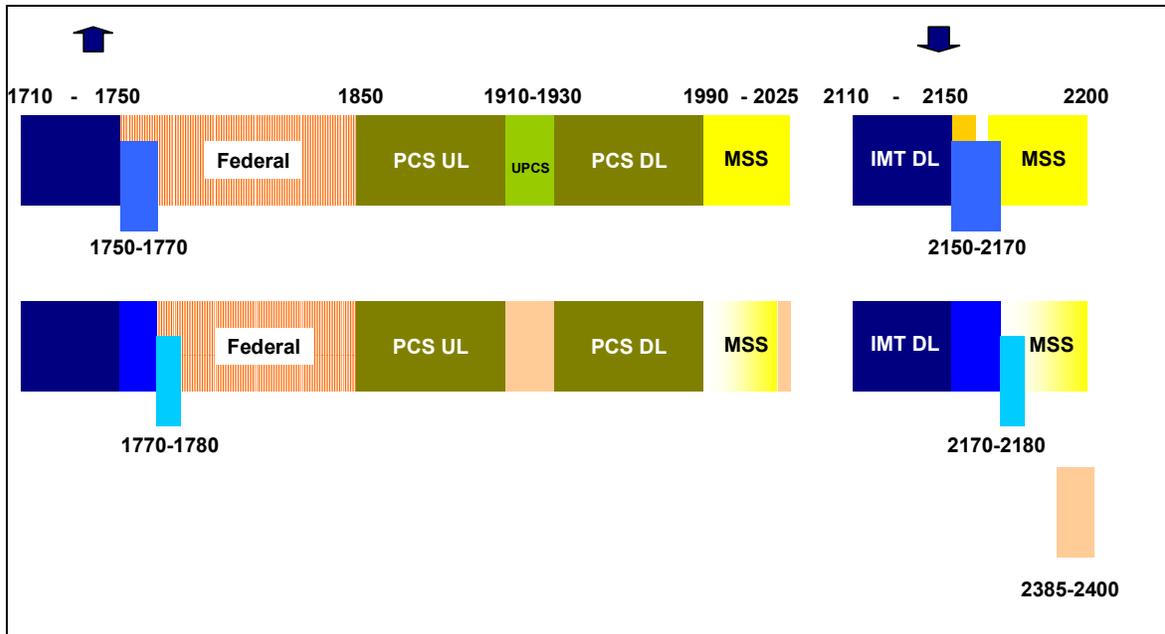
- Phase 1 (2003) - Allocate new spectrum for advanced services, including 3G, utilize the 1710-1770 MHz band as uplink and the 2110-2170 MHz band as downlink;
- Phase 2 (2005-2008) - Add capacity for incumbents and/or add new entrants, add asymmetric allocation if required by market, utilize the 1770-1850 MHz band (or

¹ Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, *Notice of Proposed Rule Making and Order*, 16 FCC Rcd 596 (2001) ("New Advanced Wireless Services NPRM").

parts thereof) as uplink and the 2500-2690 MHz band (or parts thereof) as downlink; and

- Phase 3 (2009) - Depending on market conditions, consider adding 3G mobile allocation in MSS bands, utilize the 1990-2025 MHz band as uplink and the 2170-2200 MHz band as downlink.

Therefore, Ericsson supports the Commission’s spectrum allocation plan announced in the FNPRM and asks the Commission to move ahead swiftly to meet the needs of industry and consumers. The following chart illustrates the spectrum bands discussed in these Comments and the staged availability proposed in later sections.



I. MARKET TRENDS DEMONSTRATE THAT THE NEED FOR ADDITIONAL SPECTRUM FOR ADVANCED MOBILE WIRELESS SERVICES IS CRITICAL

As the Commission notes in its FNPRM, the demand for mobile telephony and data applications has grown rapidly in recent years.² Industry measures and projections

² FNPRM, ¶ 4, citing Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993: Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, *Sixth Report*, FCC 01-192 (rel. July 17, 2001) at 507.

support the call for additional spectrum suitable for advanced mobile wireless technologies and indicate that the Commission must act soon.³ Market data shows that U.S. demand for wireless voice services is escalating. Carriers are experiencing an approximately 24% yearly growth in demand for such services and are struggling to satisfy their coverage and build out needs in the context of existing spectrum.⁴

A. Current Applications Are Saturating Existing Spectrum

The number of U.S. mobile wireless *users* is expected to grow from 109 million at the end of 2000 to 245 million at the end of 2006.⁵ Today's count is 123 million cellular subscribers.⁶ Voice traffic *volume* is also expected to grow from 288 billion minutes annually in the year 2000 to 2155 billion annually by the year 2006.⁷ In order to accommodate this increase in wireless voice communications capability alone, most carriers will require more spectrum than they currently hold despite expected improvements in spectrum efficiency from technology developments.⁸ This is especially relevant with increasing requirements on wireless service quality.

Similar industry measures indicate that there will be a strong demand for advanced mobile wireless services, particularly data applications. Estimates of market growth suggest that the number of U.S. mobile wireless *data users* is expected to increase

³ ITU-R studies supporting *Final Acts of World Radiocommunication Conference (Istanbul, WRC-2000)*, Resolution 223.

⁴ See Strategy Analytics, *US Cellular Market Forecast Update* (March 2001) at 6.

⁵ *Id.* at 16.

⁶ CTIA at www.wow-com.com.

⁷ See Strategy Analytics, *US Cellular Market Forecast Update* (March 2001) at 16.

⁸ For example, Verizon Wireless has stated that in New York, based on growth projections, it will run out of spectrum within 18 months. D. Strigl, CEO, at U.S. House Commerce Committee hearing on July 24, 2001.

to 193 million by the year 2010.⁹

B. Growth Of Initial Data Applications Provides Bridge To Advanced Services

The recent explosion in the use of Short Message Service (“SMS”) and iMode services in Europe and Japan, respectively, indicate significant consumer demand for wireless data services. The appeal of these text-based services is remarkable, particularly when the services are interoperable with other applications and interoperable between service providers. The number of SMS messages globally increased from 2 billion per month in December 1999 to 20 billion in December 2000.¹⁰ The number of transmitted messages is projected to further increase to 40 billion per month in December 2001 and to 80 billion a month in December 2003.¹¹ Carrier revenue from SMS is projected to reach \$4 billion per month by the end of 2001.¹²

SMS is seen as a “critical bridge technology to 3G.”¹³ While SMS applications do not require 3G systems, the popularity of SMS signals an important transition in consumer use of mobile services. Consumers using SMS are becoming comfortable with using their phone as a mobile “general purpose communications and information device.” SMS and iMode reveal that consumers find valuable wireless data services, which are not “browsing services,” and are willing to pay (separately from their voice subscriptions) for the utility of such services on a per message basis, particularly where the service saves

⁹ Strategy Analytics, 3G Market Update, Applications & Forecasts (September 1999) at figure 11.

¹⁰ The Economist, September 15, 2001, at pg. 55.

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

time and its expense substitutes for costs consumers expect to otherwise incur.¹⁴ Further, technically, SMS is only the first step to more advanced messaging services, such as Enhanced Messaging Service (“EMS”) and Multi-media Messaging Service (“MMS”) for which deployment is now starting.¹⁵ Unlike for SMS, greater data transmission capacity of advanced wireless technology will be essential for the successful implementation of EMS and MMS.

The SMS and iMode experience shows that there is quantifiable and vigorous consumer demand for the precursor services of more advanced mobile wireless services. This trend signals that consumers will use their mobile terminal to communicate with each other by means other than voice and to request valuable information on a fee per use basis. Prior to SMS and iMode, the foregoing concepts were not empirically proven but were fundamental to the projections of the demand for advanced mobile wireless services. Now, there is documented evidence that consumers want and will pay for advanced services.

In light of the projected demand for existing and emerging services, it is imperative that the Commission stays proactive in its approach to spectrum management and approves the plan it proposes expeditiously. Reallocations of spectrum now, to create spectrum allocations with common global characteristics which address the

¹⁴ For example, SMS and iMode can be used to send vacation “post cards” to friends and family. Delivery is nearly instantaneous and consumers save money because at 10 cents per message, they are substantially less expensive than a traditional post card and postage.

¹⁵ The growth and application of SMS is constrained. An SMS message is limited to generally less than 160 text characters. Its use of the control channel of the network limits the amount of messages that can be transported. MMS uses traffic data channels to transport messages.

increasing demand for wireless services, will ensure that the industry is able to keep pace with market needs. Moreover, the Commission's proposed spectrum management plan, as discussed in detail below, may successfully ensure that the U.S. realizes a fair and reasonable rate of return from its spectrum auctions.

II. BOTH THE 1910-1930 MHz AND 2385-2400 MHz BANDS CAN BE REALLOCATED FOR NEW ADVANCED WIRELESS USES

The Commission has identified 1910-1930 MHz and 2390-2400 MHz as bands that it could reallocate for advanced mobile wireless services.¹⁶ The bands 1910-1930 MHz and 2390-2400 MHz are currently used for Unlicensed PCS (UPCS) and, to a lesser extent, Amateur Services.¹⁷ Ericsson supports the reallocation of these bands for new advanced wireless services. Ericsson also supports, consistent with other industry participants' recommendations, the view that the limited current use of the 2385-2390 MHz band makes it an additional candidate for consideration in this proceeding.¹⁸

Both the 1910-1930 MHz and 2385-2400 MHz bands could be suitable for advanced mobile wireless services, primarily those services that can take advantage of unpaired spectrum technologies. Because the 1910-1930 MHz band is proximate to the PCS bands, it is imperative that any new services licensed in this band have sufficient safeguards to protect neighboring services and carriers. For example, firm out-of-band emission requirements, power limits, or other frequency safeguards should be put into place to ensure the immunity of adjacent spectrum users. Any regulatory or spectrum engineering burden must be placed on the new services resulting from such a

¹⁶ FNPRM, ¶¶ 11, 12.

¹⁷ FNPRM, ¶ 9.

¹⁸ See, e.g., Motorola's *ex-parte* filing of July 18, 2001 in this proceeding.

reallocation. The Commission should also reasonably compensate and, where needed, seek relocation of the current users of these bands so as to minimize the effects of the spectrum reallocation on their services.

Other possible uses of these bands include the relocation of federal users displaced from spectrum considered more suitable for advanced mobile wireless services or the relocation of the 2150-2160 MHz MDS channels as discussed in further detail below. Accordingly, Ericsson supports the Commission's proposal to reallocate the 1910-1930 MHz and 2385-2400 MHz bands.

III. THE 2150-2160 MHz BAND SHOULD BE REALLOCATED FOR NEW ADVANCED MOBILE WIRELESS SERVICES

The Commission seeks comment on the effects of the reallocation of the 2150-2160 MHz band, currently allocated for MDS, for advanced mobile wireless services.¹⁹ The Commission should proceed with this reallocation because, as the Commission notes, allocating contiguous spectrum creates significant spectrum efficiencies.²⁰ This is primarily achieved by avoiding the need for guard bands between different types of spectrum use. In addition, the reallocation of the 2150-2160 MHz band offers the only practical opportunity to create a significant common global downlink for advanced mobile wireless services. Such global harmonization will facilitate global service roaming and maximize manufacturing economies of scale in both infrastructure and consumer equipment. Therefore, the reallocation of other services from the 2110-2170 MHz band reflects sound spectrum management, which is in the public interest.

¹⁹ FNPRM, ¶¶ 38, 40, 41.

²⁰ FNPRM, ¶ 38.

First, by reallocating the 2150-2160 MHz band for advanced mobile wireless services (in combination with a reallocation of the 2165-2170 MHz band from MSS as discussed below), the Commission can create contiguous spectrum in the 2110-2170 MHz band. Allocating contiguous spectrum is critical to ensure that multiple carriers can exist and true competition is realized. If the Commission pairs the 1710-1770 MHz band with the 2110-2170 MHz band, as Ericsson endorses below, the Commission will provide an additional 2x60 MHz of contiguous paired spectrum for advanced mobile wireless services. Thus, reallocation of this spectrum is key to creating adequate blocks of spectrum in which any advanced technology can be successfully deployed.

Second, reallocating the 2110-2170 MHz band creates an advanced mobile wireless services downlink that is already allocated in major global markets.²¹ The value of this achievement is significant both to industry and consumers. A maximally harmonized U.S. spectrum allocation will save U.S. consumers up to one billion dollars annually compared to a non-harmonized spectrum allocation.²² Commonality will provide U.S. carriers an opportunity to take advantage of the economies of scale and advancements in infrastructure and terminal equipment already developed for other markets. Further, it will allow U.S. carriers to capitalize on 3G experiences abroad to bring advanced services to U.S. consumers more rapidly. Accordingly, for U.S.

²¹ This band is the IMT-2000 Core Band already allocated and licensed for 3G advanced mobile wireless services in, *e.g.*, Europe and Japan.

²² A non-harmonized spectrum allocation requires additional electronics components in terminals leading to increased cost, size, and power consumption. If spectrum is harmonized, these additional costs are avoided, leading to reduced product costs that can be passed on to consumers. Lack of harmonization also limits the range of equipment and feature choices offered to U.S. consumers.

equipment suppliers, and application and service developers it will bring stronger synergies between the domestic market and export markets.

This reallocation will also allow the Commission to take advantage of global spectrum harmonization opportunities for other bands. The 1710-1770 MHz band is already used as the uplink for commercial wireless services in a majority of countries, albeit currently for 2G services. While the 1710-1770 MHz uplink band will not be fully harmonized like the 2110-2170 MHz downlink band would be, it would still permit significant savings due to commonality in equipment design and components with current global 2G equipment. For example, since radio components for this band will already be available in “world terminals” to provide backward 2G compatibility, these can partly be reused for the advanced wireless uplink.

In addition, the large duplex separation from the downlink at the 2110-2170 MHz band means that the support of the 1710-1770 MHz band as the uplink can be achieved without a significant increase in equipment complexity. In many markets, the necessary equipment is already available to support the IMT-2000 Core Band uplink in the 1900 MHz band and this functionality can be expanded with little added complexity to cover the 1710-1770 MHz uplink band. Thus, the Commission’s proposal addresses some of the problems and expenses posed by lack of harmonization and provides an important opportunity to pick and choose from technologies and services already tested in other markets.

Further, as with MSS discussed below, the Commission should base the need for MDS spectrum allocations on actual market demand. In light of the recent addition of two-way digital service to MDS spectrum, the Commission should consider replacement

spectrum only if the MDS market development indicates a clear need for replacement of the channels in the 2150-2160 MHz band. Such replacement spectrum could be in the 2385-2400 MHz band, in abandoned MSS spectrum below 2025 MHz, or in the 700 MHz spectrum bands. At present, the public interest is best served by reallocating the 2150-2160 MHz band as the Commission proposes.

IV. SOME MSS SPECTRUM SHOULD BE REALLOCATED

The Commission proposes alternative use of parts of the 2 GHz MSS spectrum.²³ In connection with its reevaluation of MSS spectrum requirements, the Commission proposes to reallocate 10-14 MHz of MSS spectrum for advanced wireless services within the next year and to reallocate any abandoned spectrum.²⁴ Such a reallocation would significantly contribute to the creation of a large band of new spectrum that is suitable for paired use by advanced mobile wireless services.

First, reallocating the 2165-2170 MHz band for use in connection with the 2110-2165 MHz band is very important. This reallocation will facilitate competition because it will form a contiguous 60 MHz block of spectrum that can be paired with the 1710-1770 MHz band. A contiguous 60 MHz block of spectrum will permit multiple carriers to acquire enough spectrum to support advanced mobile wireless services. At the same time, current MSS licenses will not be affected by this reallocation since the total amount of spectrum assigned to these licenses is 56 MHz out of 70 MHz in the 2 GHz MSS band. Thus, the immediate availability of the 2165-2170 MHz band is key to competition and can be achieved without changes to current licenses.

²³ FNPRM, ¶ 24.

²⁴ FNPRM, ¶ 24.

Second, there are indications that significant portions of MSS spectrum might be abandoned before taken into use.²⁵ A failure to use spectrum or a failure to fulfill license milestones is an indication that the business plan underlying the license is not viable. If the market need for MSS proves to be less than originally projected, it makes little sense to preserve this spectrum for use by other carriers offering the same or similar services; instead, it should be made available for advanced mobile wireless services. Therefore, reassignment of this spectrum is logical and allows the Commission to react appropriately to market indicators by reallocating abandoned spectrum for services which are in higher demand or for which higher demand is projected, such as advanced mobile wireless services.

To plan for the reallocation of MSS spectrum for advanced wireless services most effectively, the Commission should take affirmative steps to enable MSS licensees to put their existing spectrum to its best use. The Commission readily understands that, if it reallocates any MSS spectrum, it may have to modify some of its service rules to accommodate reallocations.²⁶ The Commission proposes changes to both the location and size of a licensee's Selected Assignment.²⁷ Ericsson agrees that the Commission should modify licensees' individual Selected Assignments with respect to both increment size and location.

Ericsson recommends that the Commission adopt 3.5 MHz increments for Selected Assignments, which start from 2200 MHz and 2020 MHz and decline in

²⁵ FNPRM, ¶ 16, wherein the Commission recognizes that at least some spectrum may be abandoned. Market uptake of MSS to date supports this conclusion.

²⁶ FNPRM, ¶ 3.

²⁷ FNPRM, ¶ 30.

frequency. The Commission should expressly require licensees to select spectrum adjacent to one another to preserve contiguous spectrum in both the upper and lower bands. In addition, the Commission should limit Selected Assignments to the 1990-2020 MHz and the 2170-2200 MHz bands, to facilitate reallocation of the 2165-2170 MHz band.

The foregoing steps will allow the Commission to reallocate spectrum to advanced mobile wireless services now, without infringing on MSS licenses. In addition, the reallocation will allow for simplified future allocations, in the event that the need for MSS spectrum eventually proves to be less than currently envisioned by the licensees. Thus, the Commission's proposed reallocations are in the public interest and are consistent with the Commission's spectrum management policies and obligations.

V. THE SPECTRUM PAIRINGS PROPOSED ARE KEY TO THE DEVELOPMENT OF ADVANCED MOBILE WIRELESS SERVICES

In addition to sufficient reallocations of spectrum, appropriate spectrum pairings underlie the viability of advanced mobile wireless services. The Commission identified new spectrum pairing options in its FNPRM. These pairings are essential to create significant new spectrum blocks that can support multiple carriers offering advanced mobile wireless services and thereby preserve vigorous competition in the market.²⁸ As a whole, these pairing options are consistent with the spectrum management plan Ericsson has recommended. Ericsson, therefore, supports the Commission's new pairing options with minor refinements.

The advantages of the proposed new pairings will be more readily realized if the

²⁸ FNPRM, ¶ 42.

Commission makes at least some of the paired spectrum available in the near term. To balance the needs of carriers for rapid development of the advanced services market with the challenge of clearing parts of proposed paired bands, the Commission could make the spectrum available in stages. Ericsson proposes a three-stage pairing process.

As a first stage, the 1710-1750 MHz band paired with the 2110-2150 MHz band should be fully cleared and made available for advanced mobile wireless services.²⁹ This pairing is a logical first step because it minimizes the requirement for relocation of incumbent users. A key step in this first-stage pairing is that the Commission, in cooperation with NTIA, plans for the complete clearing of the 1710-1750 MHz band for the new licensees.

As a second stage, the Commission should pair the 1750-1770 MHz and 2150-2170 MHz bands. It is reasonable to expect a slight delay in the availability of these bands from the first stage since their reallocation will affect Federal users as well as MDS licensees. As a final stage, contingent on the development of the MSS market, the Commission should pair the 1770-1780 MHz band with the 2170-2180 MHz band.

Regardless of its actual timeline for the pairings, the Commission should plan all three stages of the process at the outset. With its pairing scheme defined, the Commission can take the later steps into consideration in its service and auction rules to make long-term spectrum aggregation by carriers possible. To ensure that it clears these

²⁹ The 1710-1755 MHz band has been identified for commercial use by the year 2004 to satisfy the requirements of ORBA-93 and, therefore, might be the first band that can be cleared for advanced mobile wireless use. The protected federal systems in the band should, however, be relocated to provide unencumbered spectrum for commercial licensees. Similarly, the 2110-2150 MHz band was identified by the Commission in 1992 for reallocation to new technologies and could be made available for advanced mobile wireless services in the same time frame as the 1710-1750 MHz band.

bands fully and that it can accomplish the planned pairings in a timely manner, the Commission should propose compensation of incumbent users for relocation and other costs from auction revenues.

All advanced wireless service spectrum allocation options open to the Commission will require technical development of equipment before carriers can deploy services. An early decision is therefore necessary to facilitate introducing services in new spectrum in the 2004-2005 time frame. Further, when the Commission's order on new advanced wireless spectrum allocations is issued, it is important that this decision be formally communicated to regional and international standards organizations to allow their processes to take it into account as soon as possible.

VI. CONCLUSION

Based on the foregoing, Ericsson supports the Commission's identification of additional spectrum and spectrum pairings suitable for advanced mobile wireless technologies. The Commission should act expeditiously and decisively to ensure that it meets U.S. carriers' needs for additional spectrum for present as well as future services. In this way, the Commission will facilitate the development and implementation of services valuable to consumers and the economy, and will ensure that the U.S. stays at the forefront of advanced telecommunications. The spectrum options and pairings set forth by the Commission are also important to address spectrum supply and harmonization concerns, to establish research, development and manufacturing economies of scale, and to remedy spectrum fragmentation problems. For these reasons, Ericsson urges the Commission to take the steps outlined in its FNPRM, as discussed in

detail above, to implement a forward-looking spectrum management plan that balances the needs of current spectrum users and U.S. consumers.

Respectfully submitted on this 19th day of October, 2001.

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