

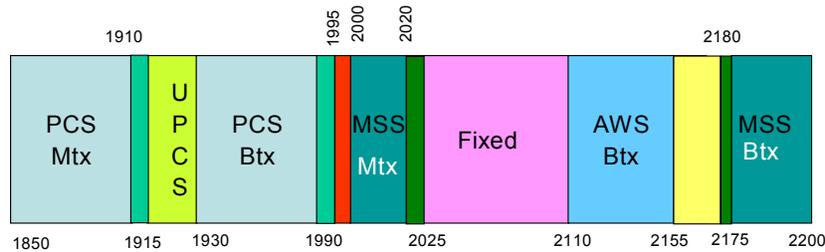
Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 2 of the Commissioner's Rules	)	
to Allocate Spectrum Below 3 GHz for Mobile	)	
and Fixed Services to Support the Introduction of	)	ET Docket No. 00-258
New Advanced Wireless Services, including Third	)	
Generation Wireless Systems	)	
	)	
The establishment of Policies and Service Rules	)	IB Docket No. 99-81
for the Mobile-Satellite Service in the 2GHz Band	)	
	)	
Amendments of the U.S. Table of Frequency	)	
Allocations to Designate the 2500-2520/2670-	)	RM-9911
2690 MHz Frequency Bands for the Mobile-	)	
Satellite Service	)	
	)	
Petition for Rule Making of the Wireless	)	
Information Networks Forum Concerning the	)	RM-9498
Unlicensed Personal Communications Service	)	
	)	
Petition for Rule Making of UTStarcom, Inc.,	)	
Concerning the Unlicensed Personal	)	RM-10024
Communications Service	)	

**COMMENTS OF ERICSSON INC**

Ericsson Inc ("Ericsson") hereby submits comments in response to the Federal Communications Commission's ("Commission") Third Notice of Proposed Rulemaking in the above-captioned matters, released February 10, 2003. In the Third Notice of Proposed Rulemaking, the Commission seeks comments regarding: 1) the UPCS band at 1910-1930 MHz; 2) the MDS spectrum at 2155-2160/62 MHz; 3) the Emerging Technology spectrum at 2160-2165 MHz; and 4) the bands reallocated from MSS. Specifically, the Commission seeks comment with respect to using these bands for paired or unpaired Advanced Wireless Services ("AWS") operations or as relocation spectrum

for existing services.<sup>1</sup> Ericsson supports the allocation of spectrum consistent with the following figure (where Mtx equates to Mobile transmit and Btx translates to Basestation transmit):



As set forth in greater detail in these comments and illustrated in the figure above, Ericsson recommends that the Commission:

- Create a G band adjacent to the PCS band and extend isochronous UPCS from 1920-1930 MHz to 1915-1930 MHz;
- Establish a paired 5 MHz channel, namely 2020-2025 MHz paired with 2175-2180 MHz, either to be auctioned or used as relocation spectrum;
- Designate a 5 MHz guardband between the newly created G band and MSS/ATC spectrum; and
- Extend the AWS band to 2175 MHz as outlined in the Ericsson Global Roaming Plan<sup>2</sup> previously described to the Commission.

The foregoing will enable the Commission to provide for the efficient use of spectrum.

In addition, such steps will ensure that the Commission promulgates a spectrum management strategy that maximizes its opportunity to ensure harmonized use of

<sup>1</sup> Above-captioned matters, *Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order*, released February 10, 2003, at ¶ 38.

<sup>2</sup> See 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, *Comments of Ericsson*, filed February 22, 2001.

spectrum, facilitate roaming, reduce equipment complexity, and achieve economies of scale.

## **I. ANALYSIS**

### **A. 1910-1930 MHz and 1990-2000 MHz Bands.**

By modifying the allocation of spectrum located at 1910-1930 MHz and 1990-2000 MHz, the Commission can maximize the value of this spectrum to achieve greater spectrum efficiency. For this reason, Ericsson supports the creation of a paired band using 1910-1915 MHz and 1990-1995 MHz ('G' band). Ericsson also supports the extension of the UPCS isochronous service from 1920-1930 MHz to 1915-1930 MHz. These two important changes will ensure higher value use of the spectrum and are in the public interest.

#### **1. Create a G Band by Pairing 1910-1915 Mhz with 1990-1995 Mhz.**

The band 1910-1920 MHz is presently allocated to UPCS asynchronous (best effort) data services. However, this band has not developed as originally envisaged by the Commission. Therefore, it represents spectrum that could be used in a more efficient manner. Specifically, the bandwidth allocated to UPCS asynchronous data services is too small, especially when compared to the 2.4 MHz ISM band where such unlicensed best effort data services are implemented today. Accordingly, Ericsson recommends that the Commission establish a G band adjacent to the PCS band by pairing 1910-1915 MHz with 1990-1995 MHz.

In order to assure utilization of 1990-1995 MHz to the fullest extent possible, the Commission must establish a 5 MHz guardband at 1995-2000 MHz. This step will mitigate interference that is introduced by placing the G band Basestation transmitter at

1990-1995 MHz, adjacent to the ATC Basestation receiver at 2000-2020 MHz. Additional precautions may be necessary.

In addition, the Commission should extend to the G band the PCS technical rules that have been successful in the PCS market today. As the experience with PCS service illustrates, such rules are sufficiently flexible to encourage industry investment, promote competition, and foster technological innovations. Their application in the G band is likely to produce similar, successful results in the development of advanced wireless services. Moreover, this action will ensure early deployment of AWS equipment.

The Part 24 PCS rules also set forth emissions limits that should be made applicable to the G band. As defined in § 24.238, the out-of-band limits are  $43+10 \log(P)$ , measured in a 1 MHz bandwidth, where (P) is the transmitter output power in Watts. These limits are appropriate for the G band and have the advantage of establishing common out-of-band emissions limits, which facilitate the availability of equipment and speed the deployment of services.

Alternative emissions limits are not advisable for the G band. Lower emissions limits could significantly increase problems related to poor service area coverage. Similarly, emissions limits that are too restrictive can also create problems. For instance, the Commission should not consider utilizing the emission requirements of Part 27 as these rules partially comply with the emissions requirements for fixed equipment under ITU Category B, resulting in emission limits far more stringent than those currently adopted for either W-CDMA or CDMA2000 which meet Part 24 requirements. Use of Part 27 limits would hinder the deployment of W-CDMA- or CDMA2000-based equipment in the G band, and unnecessarily limit the use of the spectrum. For these

reasons, the Commission should utilize the emission requirements of Part 24 for the G band.

**2. Extend Isochronous UPCS Service to 1915-1930 Mhz.**

At the same time that it creates a G band, the Commission should also expand the spectrum dedicated to UPCS isochronous uses. Specifically, Ericsson recommends that isochronous use be extended to 1915 MHz. First, the band 1915-1920 MHz, although currently allocated for asynchronous UPCS, is not used for asynchronous services. Second, permitting isochronous use of 1915 MHz is consistent with the current use of the spectrum; manufacturers have already been granted temporary authorization to deploy isochronous UPCS devices into the asynchronous 1910-1920 MHz band. Expansion of isochronous service to 1915 MHz is necessary to address the growing market and is technically achievable. Therefore, expansion is in the public interest.

**a. Interference is not a significant impediment.**

The reallocation of the 1910-1920 MHz would allow the Commission to maintain a minimum 15 MHz duplex gap between the uplink and downlink bands for PCS service. Potential interference between PCS and isochronous UPCS devices at the new border is not an issue. While PCS handsets could come very close in proximity to UPCS equipment indoors, harmful interference between the two is not likely. Since PCS devices use the 1850-1915 MHz band for an uplink, the UPCS system will not interfere with PCS devices.

Additionally, isochronous devices have the capability to mitigate any interference. If an isochronous UPCS device experiences any interference from a PCS handset then it will, by virtue of the isochronous instant Dynamic Channel Channel Selection

functionality, be able to escape to frequencies further from the 1915 MHz border, as necessary. Therefore, interference concerns are minimal to non-existent if isochronous use is expanded to 1915 MHz .

**b. Technical rules should be modified in part.**

The technical rules for this band are, for the most part, suitable for isochronous UPCS service. The isochronous UPCS band is the *only* unlicensed band in the US (and Canada) that provides protected spectrum for real-time services like speech, through basic isochronous etiquette rules. Expansion of the isochronous UPCS band is important in order to maintain this unique spectrum for valuable services. The basic rules for this spectrum enable coexistence of real-time services. Accordingly, they must not be changed.

However, some secondary rules should be modified in order to increase the usefulness of the spectrum. The changes Ericsson proposes will not result in inferior or compromised protection for the real-time services. For example, the 1.25 MHz channelization set forth in §15.323 (a) and (d) is unnecessary and should be altered. This channelization should be exchanged with an upper maximum bandwidth of 2 MHz, or other appropriate bandwidth, to provide for more flexible carrier positions and higher data rates. Ericsson's proposed changes to the 1.25 MHz channelization section and other specific sections of the rules are set forth in detail in Appendix A and are incorporated herein by reference.

**B. 2020-2025 MHz and 2155-2180 MHz Bands.**

Ericsson recommends that the Commission take three actions with respect to 2020-2025 MHz and 2155-2180 MHz. First, Ericsson supports the creation of a paired

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<sup>3</sup> Cite

band using 2020-2025 MHz and 2175-2180 MHz. Second, Ericsson advocates the extension of AWS service from 2110-2155 MHz to 2110-2175 MHz. Third, Ericsson recommends that the Commission designate MSS/ATC in 2000-2020 MHz as the Mobile transmitter band and 2180-2200 MHz as the Basestation transmitter band. Through these actions, the Commission will create bands that are compatible with adjacent services and provide valuable contiguous spectrum; thereby minimizing the need for guardbands and increasing spectrum efficiency.

In connection with the foregoing proposed allocations, Ericsson recommends that the Commission extend AWS from 2110-2155 MHz to 2110-2175 MHz to support additional capacity in the downlink direction. The process of making the additional AWS spectrum in the 2155-2175 MHz available for 3G use must be completed expeditiously. Ericsson recommends that the Commission proceed to allocate the spectrum identified, promulgate service rules, and establish an auction date and auction procedures, which coincide with AWS spectrum in the 1710-1755 MHz and 2110-2155 MHz. The Commission should also continue to consider allocation of 1755-1770 MHz for AWS. The Commission must accomplish the foregoing allocations in a timely manner to ensure that there is sufficient regulatory certainty for industry to invest in and deploy 3G systems.

For these allocations, consistent with Ericsson's proposed treatment of the 1910-1930 and 1990-2000 MHz bands discussed above, Ericsson supports the application of Part 24 rules. Specifically, the Commission should extend to this band the PCS technical rules that have been successful in the PCS market today. This approach will ensure compatibility with existing specifications and ensure early deployment of equipment. In

addition, application of these rules is likely to encourage investment and promote competition in AWS to the same extent as they did for PCS.

To ensure that contiguous spectrum is available for AWS and to allow for more capacity in the downlink direction, it is necessary to relocate MDS from 2150-2160/2162 MHz and provide relocation spectrum that is comparable. In light of the number of demands on the G band including Nextel, MDS, and auction requests, it is appropriate to identify an additional suitable band. Ericsson recommends that the Commission pair 2020-2025 MHz as the uplink with the band 2175-2180 MHz as the downlink. The uplink portion of this band is adjacent to the MSS/ATC allocation and its downlink is adjacent to both the MSS/ATC allocation and AWS, which corresponds to the international allocation for the terrestrial component of advanced services in 2110-2170 MHz. This spectrum arrangement will aid in the deployment of new equipment and services in this band. Additionally, since the uplink and downlink are compatible with adjacent services, no guardbands are needed, thereby promoting spectrum efficiency and the public interest. As with the other spectrum discussed in these comments, Ericsson supports the application of Part 24 PCS technical rules in this band to ensure early deployment of equipment and compatibility with adjacent services.

## **II. CONCLUSION**

For the reasons set forth above, Ericsson recommends that the Commission create a G band adjacent to the PCS band, extend isochronous UPCS from 1920-1930 MHz to 1915-1930 MHz, and establish a paired 5 MHz channel – 2020-2025 MHz paired with 2175-2180 MHz. In addition, Ericsson urges the Commission to designate a 5 MHz guardband between the newly identified G band and MSS/ATC spectrum and extend the AWS band to 2175 MHz as outlined in Ericsson’s Global Roaming Plan. The revisions to the Commission’s current allocations and rules discussed above are in the public interest. Such action will not only lead to more efficient use of spectrum but also ensure that the Commission optimizes its ability to harmonize spectrum usage, facilitate roaming, reduce the complexity of equipment, and maximize the potential for economies of scale.

DATED this 14<sup>th</sup> day of April, 2003.

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## Ericsson Inc Appendix A

### Ericsson's proposed changes to FCC Part 15 Subpart D (UPCS rules) Sections 15.323 (a), (c)(11) and (d).

Ericsson's proposed language is underlined and in bolded print; proposed deletions are italicized and in brackets.

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Section 15.323 Specific requirements for isochronous devices operating in the [1920] **1915**-1930 MHz sub-band.

(a) Operation shall be contained within **the 1915 – 1930 MHz band. The emission bandwidth shall be less than 50 kHz and maximum 2 MHz. Power levels shall be as specified in Section 15.319(c)** [*one of eight 1.25 MHz channels starting with 1920-1921.25 MHz and ending with 1928.75-1930 MHz. Further sub-division of a 1.25 MHz channel is permitted with a reduced power level, as specified in Section 15.319(c), but in no event shall the emission bandwidth be less than 50 kHz.*]

(c) Isochronous devices must incorporate a mechanism for monitoring the time and spectrum windows that its transmission is intended to occupy. The following criteria must be met:

(5) If access to spectrum is not available as determined by the above, and a minimum of 40 duplex system access channels are defined for the system, the time and spectrum windows with the lowest power level below a monitoring threshold of 50 dB above the thermal noise power determined for the emission bandwidth may be accessed. A device utilizing the provisions of this paragraph must have monitored all access channels defined for its system within the last 10 seconds and must verify, within the 20 milliseconds (40 milliseconds for devices designed to use a 20 millisecond frame period) immediately preceding actual channel access that the detected power of the selected time and spectrum windows is no higher than the previously detected value. The power measurement resolution for this comparison must be accurate to within 6 dB. No device or group of cooperating devices located within 1 meter of each other shall **during any frame period** occupy more than [*three 1.25*] **6 MHz of aggregated bandwidth or, alternatively, more than 30% of the time and spectrum windows defined by the system.** [*channels during any frame period*] Devices in an operational state that are utilizing the provision of this section are not required to use the search provisions of (b) above.

(11) An initiating device that is prevented from monitoring during its intended transmit window due to monitoring system blocking from the transmissions of a co-located (within one meter) transmitter of the same system, may monitor the portions of the time and spectrum windows in which they intend to receive over a period of at least 10 milliseconds. The monitored time and spectrum window must total at least 50

percent of the 10 millisecond frame interval and the monitored spectrum must be within [the] 1.25 MHz of **the center** frequency **of** channel(s) already occupied by that device or co-located co-operating devices. If the access criteria is met for the intended receive time and spectrum window under the above conditions, then transmission in the intended transmit window by the initiating device may commence.

(d) Emissions **outside the sub-band** shall be attenuated below a reference power of 112 milliwatts as follows: 30 dB between the [channel] **sub-band** edges and 1.25 MHz above or below the [channel] **sub-band**; 50 dB between 1.25 and 2.5 MHz above or below the [channel] **sub-band**; and 60 dB at 2.5 MHz or greater above or below the [channel] **sub-band**. [Systems that further sub-divide a 1.25 MHz channel into X sub-channels] **Emissions inside the sub-band** must comply with the following emission mask: In the bands between 1B and 2B measured from the center of the emission bandwidth the total power emitted by the device shall be at least 30 dB below the transmit power permitted for that device; in the bands between 2B and 3B measured from the center of the emission bandwidth the total power emitted by an intentional radiator shall be at least 50 dB below the transmit power permitted for that radiator; in the bands between 3B and the [1.25 MHz channel] **sub-band** edge the total power emitted by an intentional radiator in the measurement bandwidth shall be at least 60 dB below the transmit power permitted for that radiator. "B" is defined as the emission bandwidth of the device in hertz. Compliance with the emission limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.