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June 5, 1992

Ms. Donna R. Searcy, Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

In re: ET Docket No. 92-9
Comments of The Ericsson Corporation

Dear Ms. Searcy:

Transmitted herewith on behalf of The Ericsson Corporation is an original and four copies of its comments with regard to the above-referenced matter.

Should there be any questions regarding this matter, kindly communicate directly with the undersigned.

Very truly yours,

David C. Jatlow
Counsel for The Ericsson Corporation

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

In the Matter of	)	
	)	
Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies	)	ET Docket. No. 92-9

Comments of The Ericsson Corporation

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Its Attorney

Summary

Ericsson supports the express goal of ET Docket 92-9 of allocating spectrum in the 1.85-2.20 GHz band for emerging technologies. Ericsson believes the bulk of the emerging technologies band should be allocated for PCS services to ensure that the U.S. mainatins its competitive edge with other countries which are already planning to implement PCS systems in this general area of spectrum.

In making a decision on which technologies and/or services should be eligible for spectrum in the emerging technologies band the FCC should first decide which technologies and/or services will best serve the public interest. After that determination the Commission should make sure that any technology and/or service in the emerging technology band is spectrum efficient. In this regard the FCC should adopt a spectrum efficiency standard measured in Erlangs/km^2/MHz to ensure that only the most spectrum efficient technologies and/or services are implemented.

Though Ericsson supports the emerging technologies band being located in the 1.85-2.20 GHz band, it believes the FCC should not discount authorizing certain emerging technologies such as its CT-3 in-building Business PCS system in bands below 1 GHz.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Redevelopment of Spectrum to	)	
Encourage Innovation in the	)	ET Docket No. 92-9
Use of New Telecommunications	)	
Technologies	)	
	)	

Comments of The Ericsson Corporation

The Ericsson Corporation (hereinafter "Ericsson") by its attorney hereby submits its comments in the Notice of Proposed Rule Making in ET Docket No. 92-9.[1] In support of its comments, Ericsson states as follows:

I. Above 1 GHz Issues

A. Spectrum Issues

Ericsson agrees with the underlying rationale for establishing a reserve band of spectrum for the development of new technologies. Indeed, as one of the world's leading manufacturers of telecommunications equipment, including cellular base station, switching and terminal equipment; equipment for private land mobile voice and data systems; and advanced digital cordless systems for private-access in-building use, it agrees that identification of a substantial amount of spectrum for

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[1] Notice of Proposed Rule Making In the Matter of Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, ET docket No. 92-9, ___ FCC Rcd ___ (Released February 7, 1992) (hereinafter referred to as the "Emerging Technologies" proceeding).

emerging technologies will provide an incentive for manufacturers to continue to develop new, innovative, spectrum efficient technologies which will serve the public interest.

Ericsson wholeheartedly agrees that the 1.85-2.20 GHz band is not only an appropriate location for a reserve band for emerging technology spectrum in general, it is specifically the most appropriate location for the bulk of PCS services which will be implemented in the U.S. in the future. Indeed, as the Commission notes, Europe and Japan have allocated spectrum for new, digital PCS systems in and around this band. Thus, action by the FCC in making this band available for emerging technologies and PCS will help to ensure that the U.S. is fully competitive with other nations in the rapidly growing PCS industry.

Based on the foregoing Ericsson is of the opinion that the Commission is taking the proper regulatory approach and using fully appropriate factors in evaluating the specific spectrum to be set aside for emerging technologies.

B. Use of the Emerging Technologies Band

The Commission notes it has received requests for more than 380 MHz of spectrum for a variety of services such as PCS, Data-PCS, generic mobile-satellite service, digital audio broadcast service and low-Earth orbit satellite systems.[2] Yet, after undergoing a thorough analysis of the spectrum which might be

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[2] Emerging Technologies NPRM, para 4.

available for these and other services, the FCC has determined that a reserve band of only 220 MHz is potentially available for such services. Due to the lack of spectrum available to meet projected demand for all deserving, new services, the Commission seeks comment on what criteria should be used to determine whether a new service or the expansion of an existing service merits allocation of scarce spectrum in the emerging technologies band.[3] At the heart of the Commission's query is how can it be assured that the spectrum allocated for emerging technologies is used as efficiently as possible.

Ericsson believes the Commission must undertake a two-step analysis to resolve this issue. In the first instance the Commission must balance the competing public interest factors and determine which technologies and/or services are most needed by the public and will produce the greatest benefit to society. In the second instance the FCC must evaluate the relative spectrum efficiency of any proposed new service to make sure that the valuable resource (spectrum) is used as efficiently as possible.

To help accomplish the latter task Ericsson proposes the FCC adopt a quantifiable standard for defining spectrum efficiency. The standard could be used to judge the relative efficiency of one technology or service to another thereby allowing the Commission to make reasoned judgments on what services and what technologies use spectrum most efficiently. Ericsson suggests the standard should be measured in terms of traffic capacity/area

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[3] Emerging Technologies NPRM, para. 28.

unit/spectrum unit or, in terms commonly understood by the telecommunications community, Erlangs/km^2/MHz.

One example of how such a scheme might operate is to focus on the debate likely to occur on the need for an allocation of spectrum for terrestrial-based PCS systems versus satellite-based PCS systems. Ericsson has done computations of spectrum efficiency for terrestrial-based systems using macrocells, microcells, picocells and satellite-based systems using satellite cells. Based on its computations the spectrum efficiency of all terrestrial-based systems is significantly greater than the spectrum efficiency of a satellite-based system. While terrestrial-based picocell systems offer the highest degree of spectrum efficiency, even a terrestrial-based macrocell system is more efficient by many orders of magnitude than a satellite-based system. Thus, on the basis of spectrum efficiency the FCC might make the decision to allocate the bulk of PCS spectrum for terrestrial-based systems and allocate a minimal amount of spectrum for satellite-based systems.

II. Below 1 GHz Issues

Notwithstanding its general support for the goals of the Emerging Technologies NPRM for a speedy allocation of spectrum for emerging technologies in the 1.85-2.20 GHz band, Ericsson also believes the FCC should not forsake consideration of specific bands below 1 GHz as a home for certain types of PCS services.

At paragraph 12 of the Emerging Technologies NPRM the

Commission discounted spectrum below 1 GHz as viable for the development of new technologies:

> It (the OET study on possible bands for new technologies[4]) next found that the spectrum below 1 GHz generally does not appear to offer any possibilities for spectrum availability. Most of this spectrum is used for broadcasting and land mobile services that would be very difficult to relocate. These services have very large numbers of users, particularly in the major urban areas, and there are not bands with similar technical characteristics to which the existing users could be relocated. The remaining frequencies below 1 GHz are narrow, scattered bands that would not provide sufficient spectrum.[5]

Though spectrum below 1 GHz may in fact be unsuitable for a large scale (i.e., 200+ MHz) allocation for the full panoply of PCS services for the reasons expressed by the Commission, Ericsson urges the FCC not to discount the below 1 GHz band in its entirety in making decisions on what spectrum may be allocated for PCS services. Indeed, there are a variety of "niche" public and private, voice and data PCS services that could be implemented in the band below 1 GHz.

For example, in comments Ericsson submitted to the FCC in the PCS Notice of Inquiry[6], Ericsson requested the FCC to make an allocation of spectrum for "Business PCS", i.e., a family of voice and data private-access, in-building cordless

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[4] "Creating New Technology Bands for Emerging Telecommunications Technology," FCC/OET TS92-1 (January, 1992).

[5] Emerging Technologies NPRM, para. 12.

[6] Notice of Inquiry, GEN Docket No. 90-314, 5 FCC Rcd 3995 (1989).

telecommunications services. Ericsson made the Commission aware of the fact that it had developed a spectrum efficient, digital technology known as CT-3[7] to specifically implement Business PCS services for this market segment which is currently not being provided with the high quality, high capacity cordless telecommunications it needs and deserves. Ericsson requested that the Commission allocate 50 MHz of spectrum for Business PCS in the 1.80-2.20 GHz band on an nonlicensed basis. It also urged the FCC to allocate the 940-948 MHz band for Business PCS services on a licensed basis.

Based on an exclusive allocation to Business PCS of the 1 MHz of vacant spectrum at 940-941 MHz and a shared co-primary or secondary allocation of the 941-948 MHz band for Business PCS, Ericsson is confident that it can bring the benefits of cordless telecommunications to the in-building business user immediately without some of the very thorny problems the FCC faces with relocation issues that exist in the bands proposed by the Emerging Technologies NPRM. Ericsson believes its spectrum efficient CT-3 technology as proposed for implementation in the 940-948 MHz band can meet the needs of the in-building business user in the near term until a larger block of spectrum can be

[7] The CT-3 technology platform is an access technology based on multicarrier, Time Division Multiple Access/Time Division Duplex with Dynamic Channel Allocation in a picocell environment.

allocated for a more robust Business PCS service[8] in the bands above 1 GHz. As a result, an affiliated company filed an application for a Pioneer's Preference for the 940-948 MHz band to implement CT-3 technology.[9]

Ericsson believes the long term solution for the various family of PCS services properly belongs in the 1.85-2.20 GHz band. However, until such time as the Commission deals with the difficult issues in making such an allocation or allocations, it urges the Commission not to forsake bands below 1 GHz for certain PCS services.

Respectfully submitted,

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[8] With a 50 MHz allocation of spectrum Business PCS will be able to handle virtually all voice and low speed data needs of the business user and will be able to provide a number of "enhanced" or higher speed data applications in the in-building business environment.

[9] See, Application for a Pioneer's Preference filed on May 4, 1992 by Ericsson Business Communications, Inc., File No. PP-53.