BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of	)	
	)	
Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Service	)	PR Docket No. 89-552 RM-8506
	)	
Implementation of Sections 3(n) and 332 of the Communications Act	)	GN Docket No. 93-252
	)	
Regulatory Treatment of Mobile Services	)	
	)	
Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, 220-222 MHZ	)	PP Docket No. 93-253

To: The Commission

REPLY COMMENTS OF METRICOM, INC.

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SUMMARY

In its Comments, Metricom supported the Commission's aim of affording licensees greater regulatory flexibility to compete with wireless service providers in other bands, and also supported the those specific proposals essential to achieving this goal. Such proposals include expanding permissible uses in the band to include fixed and paging services, permitting licensees the ability to aggregate contiguous channels to create wider bandwidth, and allowing the competitive bidding process and the marketplace, rather than an arbitrary rule, to determine spectral efficiency standards.

Unfortunately, certain entities are more concerned with preserving the status quo than with encouraging the efficient development of the band, and have asked the Commission to reject virtually its entire plan for the band and, instead, maintain the stringent regulatory scheme which is in place today. Metricom, in this Reply, further supports the Commission's attempts to eliminate unnecessary regulatory burdens and offers technical as well as equitable arguments to rebut those commenters who insist on no change in the present regulatory structure.

Metricom urges the Commission to adopt its proposals to permit 220 MHz service licensees to offer fixed and paging services in the band, and to aggregate contiguous channels. SEA's and ProNet's arguments against these proposals are either technically incorrect or irrelevant. Metricom also urges the Commission to allow technology and the marketplace to determine spectral efficiency

standards. To do otherwise would severely limit the types of services that can be offered in the band, discourage new technology, and thus void the intended benefits of the Commission's other proposals.

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To: The Commission

REPLY COMMENTS OF METRICOM, INC.

Metricom, Inc. ("Metricom"), by its attorneys, hereby submits these Reply Comments in response to Comments filed in the Third Notice of Proposed Rulemaking in the above-captioned proceeding (the "Third Notice").[1] Metricom believes that the rules proposed for the 220 MHz band in the Third Notice will eliminate several unnecessary regulatory burdens on 220 MHz licensees and will, therefore, encourage the development and deployment of a wide array of new and efficient technologies and services in the band. Unfortunately, certain commenters dispute this view, and would have the Commission maintain substantial barriers to innovative services

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[1] Third Notice of Proposed Rulemaking in PR Dkt. No. 89-552, GN Dkt. No. 93-252 & PP Dkt. No. 93-253, FCC 95-312 (rel. Aug. 28, 1995).

and competition in the marketplace in order to preserve the *status quo*. The Commission should not deviate from its proposals in this manner.

I. ALLOWING FIXED AND PAGING SERVICES IN THE BAND IS ESSENTIAL FOR IMPLEMENTATION OF THE COMMISSION'S PROPOSALS.

1. As indicated in its Comments, Metricom supports the Commission's proposal to authorize both fixed and paging services in the 220 MHz band on a primary basis. No commenter opposed opening the 220 MHz band to fixed services on a primary basis. Accordingly, the Commission should allow fixed services as proposed in the Third Notice.[2/]

2. Only one party, SEA, Inc. ("SEA"), a manufacturer of narrowband wireless equipment, opposed allowing paging services in the band, arguing (i) there is no shortage of other paging spectrum; (ii) the measurable efficiency of paging systems is not comparable to half-duplex mobile operation; and (iii) the 220 MHz service, as a paired frequency service, is not appropriate for one-way paging.[3/] SEA also urges the Commission, in the event that it allows paging in the band, to subject mobile transmit frequencies to a limitation of 50 watts ERP, and to prohibit licensees from constructing base station transmitters above a height of seven meters HAAT for transmitters using mobile frequencies. However, for the reasons set forth below, SEA's arguments are flawed and should be rejected.

[2/] Third Notice at ¶ 77.

[3/] Comments of SEA at p. 18.

3. SEA argues in its Comments that paging should not be allowed in the 220 MHz band because there is "no shortage of other spectrum for paging."[4] First, whether or not there is adequate spectrum for paging is irrelevant to the issue of whether paging should be permitted in the 220 MHz band. The real issue is whether licensees should be allowed to provide services that consumers desire. The marketplace should determine whether paging services should be included in the array of 220 MHz services, not some arbitrary rule. Furthermore, if adequate spectrum exists for paging, and ample paging services are being offered to the public, then there would not be a market for paging services in the 220 MHz band, and licensees would have little, if any, incentive to offer such services.

4. The spectrum where the most significant growth for paging operations has occurred is the 900 MHz band. Paging at 220 MHz, however, offers potential technical improvements over existing paging allocations because the proposed 220 MHz rules do not limit the technical parameters for the implementation of paging. New digital and modulation techniques could be used to implement innovative and more efficient services because new technical standards would encourage the development of a new generation of paging equipment and services. This is especially true because the costs associated with radio frequency ("RF") technology, particularly in the area of power amplifiers for paging transmitters, are significantly lower for 220 MHz than for 900 MHz.

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[4] Id.

5. SEA also argues in its Comments that "the measurable efficiency of paging systems is not comparable to half-duplex mobile operation."[5] Though SEA does not explain this assertion, Metricom interprets it to mean that paging is much more spectrally efficient than half-duplex mobile operation. Paging is an extremely efficient form of communications because the parties involved do not have to rely on real time operations. Paging transmissions are very short, and the on-the-air time used, as compared to that used for voice operations, is significantly less. In addition, as compared to voice transmissions, paging requires less bandwidth because very little data needs to be sent over the air during an RF transmission. Accordingly, paging is much more spectrally efficient than voice operations because it has a lower duty cycle and uses less bandwidth.

6. Metricom strongly disagrees with SEA's argument that "the 220 MHz service, as a paired frequency service, is not appropriate for one-way paging."[6] There is simply no reason why the channel pairing scheme is not appropriate for paging. The Commission has indicated in its Third Notice that it wishes to eliminate the technical constraints in the current 220 MHz rules to provide for new technologies and opportunities for the band.[7] There is no technical reason why both frequencies within a channel pair must be used together.

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[5] Id.

[6] Id.

[7] Third Notice at ¶ 2.

7. By eliminating the traditional land mobile voice mindset in the proposed rules, the Commission has recognized that new uses and technologies need not follow old conventions. Paging operations could certainly use all frequencies within an allocation independent of the paired relationship of the channel assignments. The 1 MHz separation of the channel pairs is not a technical problem for 220 MHz transmitter or receiver design. In fact, the intent of the proposed rules is to visualize the allocation as simply open spectrum for new markets. Five, 5 kHz channel pairs can be viewed as 50 kHz of spectrum independent of where the channels are located. The same is true for the proposal to allow channel aggregation. Taking the traditional narrow view of what a channel is reduces the potential products and services that could be offered in the 220 MHz spectrum.

8. This is not to say that the Commission should not keep the channel pairs as proposed. Such a proposal will allow the use of the spectrum for two-way voice communications if that is a service which a licensee desires to offer. Accordingly, the Commission's proposal allows the spectrum to be utilized for whatever services the licensee wishes to provide -- an outcome that will serve the public interest by making new and innovative services, as well as established services, available.

9. Finally, SEA argues that, should the Commission permit paging services in the band, it should limit mobile transmit frequencies to 50 watts ERP, and base station transmitters should not be allowed to exceed seven meters above HAAT in the event

paging is allowed.[8] Metricom believes that, at the least, there should be no limit on "mobile" power or base station antenna height for a nationwide 220 MHz allocation. This is based on the fact that there is no potential for co-channel interference in neighboring areas where a nationwide system is involved -- the only co-channel interference that could be caused would be intrasystem interference.

10. The Commission should also reject ProNet's proposal to allow only Phase II licensees to provide paging services in the band.[9] ProNet argues that the Commission should forbid Phase I licensees from providing paging services because allowing Phase I licensees to provide such services would bestow an unfair advantage, or a windfall, to Phase I licensees and work to the detriment of Phase II licensees and providers of paging services operating in other bands.

11. First, there is no unique windfall that will accrue to Phase I licensees. As ProNet concedes, licensees in other bands provide a host of paging services on *free spectrum*. Therefore, Phase I licensees would receive no more of a windfall than such licensees who provide paging in other bands. And while the 220 MHz spectrum may be especially hospitable to paging services for certain reasons, other paging bands also offer particular advantages. Three examples are readily apparent. First, while 220 MHz has better propagation characteristics that 900 MHz, the

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[8] Comments of SEA at p. 18.

[9] Comments of ProNet at 2-5.

authorized ERP for 900 MHz paging is much greater than that allowed for 220 MHz. This tends to compensate for better propagation characteristics at 220 MHz. Second, antennas at 900 MHz are, for a given size, much more efficient so reception with 900 MHz paging equipment is likely better than the reception with 220 MHz paging receivers. Third, because of the proliferation of 900 MHz paging services, there is a great deal more equipment available, at more reasonable prices, for 900 MHz services then there is for prospective 220 MHz services.

12. Moreover, assuming for the sake of argument that ProNet is correct in its initial assumption that the Commission's proposed action would bestow a "windfall" on Phase I licensees, it is no more of a windfall than the licensee received when it was awarded the spectrum through lottery. The Commission's goal in this proceeding is to create a band plan which will ensure the provision of a wide array of wireless services to American consumers.[10/] The Commission determined, and Metricom believes rightly so, that allowing all 220 MHz licensees to provide paging services would greatly benefit consumers by providing more spectrum for an increasingly popular consumer service.[11/] Therefore, it would be self-defeating for the Commission to forever prohibit Phase I licensees from utilizing spectrum in the manner the Commission views as most efficient. This public interest consideration must take precedence over ProNet's concerns.

[10/] Third Notice at ¶ 2.

[11/] Third Notice at ¶ 87.

II. PERMITTING 220 MHz LICENSEES TO AGGREGATE CONTIGUOUS CHANNELS IS ESSENTIAL TO ENSURE THAT SUCH LICENSEES CAN EFFECTIVELY COMPETE AND OFFER NEW AND INNOVATIVE SERVICES.

13. Metricom supports the Commission's proposal to allow 220 MHz licensees to aggregate channels and agrees that the present restriction unnecessarily limits the amount and types of services that can be offered in the band.[12] However, one commenter, SEA, urges the Commission to reject the aggregation proposal and maintain the *status quo*.[13] SEA argues that the Commission should not permit licensees to aggregate channels because it would contradict the Commission's prior plan for the band, and because wider bandwidth channels are available elsewhere. These arguments, however, ignore the development of additional spectrally efficient technologies which permit licensees far greater latitude in providing services.

14. The Commission decided to promote the development of narrowband technologies to provide for a higher overall spectrum efficiency.[14] As the Commission noted in the Third Notice, however, there are many ways to provide for higher spectral efficiencies.[15] For example, if 25 kHz of spectrum were used (instead of five separate frequencies at 5 kHz each) for a digital

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[12] Third Notice at ¶¶ 81-82.

[13] Comments of SEA at 5-15.

[14] Report and Order in PR Dkt. 89-552, 6 FCC Rcd. 2356, ¶ 125 (rel. April 17, 1991).

[15] Third Notice at ¶ 81.

TDMA system, more than five users potentially could use the 25 kHz allocation. Also, because the Commission is proposing to eliminate constraints on fixed and paging uses, there could be systems designed, based on digital modulation schemes, whereby paging, voice and fixed data operations could all be using the same spectrum allocation and delivering a much higher overall spectral efficiency than under the old "fixed mode" of operation. Moreover, the development of narrow-band voice-only systems has not been significant. The market has not responded to this limited use of the spectrum.

15. Furthermore, the Third Notice does not prohibit the development and use of narrowband systems. The Commission's proposals would allow narrowband technologies to proliferate just like any other technology. If the narrowband technologies have value, they will survive in the marketplace. Allowing the marketplace to determine the best methods of system design is the most effective manner in which to allow the most efficient technologies to win. The public interest is best served when the public itself has the opportunity to determine which products and services are most desirable in the marketplace.

16. SEA's argument that companies which seek bandwidth wider than 5 kHz "can obtain such channels elsewhere"[16/] displays the short-sighted, technologically-limiting approach which the Commission is attempting to avoid in this proceeding. Bandwidths greater than 5 kHz are ideal for operation in the 220 MHz band

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[16/] Comments of SEA at p. 13.

because: (i) the relatively limited build-out of the 220 MHz spectrum will allow for the development of new technologies without the burden of having to be compatible with existing equipment in the band (i.e., there is no significant requirement for "backwards compatibility); and, (ii) 220 MHz development costs are significantly lower than development costs in higher frequency bands (typically, the higher the frequency, the greater the development cost).

17. Finally, the Commission has determined, and several parties agree, that permitting licensees to aggregate channels is an essential predicate to developing competitive wireless services in the 220 MHz band.[17] Licensees in the 220 MHz band will face fierce and unrelenting competition in the provision voice, data and paging services from cellular carriers, SMR carriers and providers of PCS and fixed services. No party disputes that for 220 MHz licensees to survive in this marketplace, they must be provided with sufficient regulatory flexibility, including the flexibility to aggregate channels, to effectively compete.[18]

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[17] See, e.g., Comments of PageNet at pp. 11-12, Comments of Suncom Mobile & Data at p. 4.

[18] Metricom argued in its Comments that consistent with the proposal to allow the aggregation of channels, and the relaxation of the emission mask requirements for "inside" channels, there should be no requirement for a frequency stability requirement for inside channels. So long as there is a block mask specification, the "inside" spectral space should not have frequency stability requirements.

III. THE MARKETPLACE, NOT THE COMMISSION, SHOULD ENSURE THAT LICENSEES UTILIZE THEIR SPECTRUM IN A TECHNOLOGICALLY EFFICIENT MANNER.

18. Several parties urge the Commission to require licensees who aggregate channels to maintain a spectral efficiency at least equal to that obtained through 5 kHz channelization, ostensibly in order to encourage efficient spectrum use and to promote the deployment of narrowband technologies.[19] This request should be rejected in favor of permitting the market and the competitive bidding process to determine spectral efficiency.[20]

19. The Commission should not hold the further development of the 220 MHz band hostage to the development of 5 kHz narrowband technology. Such technology is not prohibited under the proposal Metricom and others endorse, and if such technology has value in the marketplace, it will survive and prosper.

20. Moreover, if the Commission strictly regulates spectral efficiency standards in the manner proposed by certain parties,[21] it will severely limit the number of services that could be offered in the 220 MHz band. This will unquestionably reduce the ability of 220 MHz licensees to compete in the wireless marketplace and narrow the service choices available to consumers -- precisely the

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[19] Comments of SEA at p. 17, Comments of Securicor Radiocoms at p. 15. These two entities even propose their own stringent spectral efficiency standards for licensees that aggregate channels.

[20] Comments of Pagenet at pp. 13-15, Comments of Comtech at pp. 9-10.

[21] Comments of SEA at p. 17, Comments of Securicor Radiocoms at p. 15.

opposite of the result the Commission seeks to implement in this proceeding. The thrust of this proceeding is to allow market forces and the competitive bidding process to ensure that a wide array of services develop in the band. Without question, 220 MHz licensees will expend significant resources to acquire spectrum, build-out systems, and operate competitive systems. The Commission can be confident that such forces will ensure that licensees use their spectrum efficiently.

IV. CONCLUSION

Metricom continues to support the proposals contained in the Commission's Third Notice, and urges the Commission to expeditiously adopt new rules for the 220-222 MHz band in accordance with those proposals and the Comments and Reply Comments filed by Metricom in this proceeding.

Respectfully submitted,

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Dated: October 12, 1995

CERTIFICATE OF SERVICE

I, Wendy A. Yascur, a secretary at the law offices of Ginsburg, Feldman & Bress, Chtd., hereby certify that copies of the foregoing Reply Comments of Metricom, Inc. were served on this 12th day of October, 1995, by first class mail, postage prepaid, upon the following:

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