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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

January 21 1993

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

Re: ET Docket No. 92-9, RM-7981 and RM-8004;
Further Notice of Proposed Rule Making;
Redevelopment of Spectrum to Encourage
Innovation in the Use of New Telecommunications
Technologies.

Dear Ms. Searcy,

The Reply Comments submitted jointly by Western Multiplex Corporation, Burlington Northern Railroad, and Colorado Interstate Gas Company to the referenced rule making are enclosed.

In addition to the original, nine copies of the Reply Comments are included to allow distribution to each of the Commissioners.

Sincerely,

Graham Barnes
Sales and Marketing Manager

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies	)	ET Docket No. 92-9
	)	RM-7981
	)	RM-8004

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

To: The Commission

JOINT REPLY COMMENTS OF WESTERN MULTIPLEX CORPORATION, BURLINGTON NORTHERN RAILROAD, AND COLORADO INTERSTATE GAS COMPANY

Pursuant to Section 1.415 of the FCC Rules, Western Multiplex Corporation (WMC), Burlington Northern Railroad (BNRR), and Colorado Interstate Gas Company (CIG), together the "Joint Reply Commenters", hereby submit their Joint Reply Comments in response to the following :

(a) the Comments filed by Alcatel Network Systems, Inc. (ANS)

(b) the Joint Comments filed by Harris Corporation - Farinon Division (Harris), Digital Microwave Corporation (DMC) and Telesciences, Inc.

(c) the Comments filed by the Telecommunications Industry Association (TIA)

(d) the Comments filed by the Association of American Railroads (AAR)

(e) the Comments filed by Comsearch

in relation to the above-captioned Further Notice of Proposed Rule Making, 7 FCC Rcd 6100 (1992) ("FNPRM").

1. INTRODUCTION

The Joint Reply Commenters comprise one analog microwave radio manufacturer and two major users of private analog microwave communications. As a group, we have invested considerable resources in 2 GHz analog microwave communications systems and are extremely concerned about the success of spectrum re-organization.

We welcome the proposal of specific rules (FNPRM) to control the operation of fixed microwave operation in the bands above 3 GHz which are critical to many services.

However, we wish to alert the Commission to the specific considerations proposed in some of the Comments which completely ignore the requirements of private analog microwave systems and do not serve the public interest.

In our Reply Comments, we are presenting our views of support, specific considerations for Analog Microwave Users and our recommendations.

2. THE JOINT REPLY COMMENTERS SUPPORT THE FOLLOWING :

2.1 FNPRM

2.1.1 In the FNPRM, the Joint Reply Commenters support the re-channelization plan based upon bandwidths of 400 kHz, 800 kHz, 1.6 MHz, 5 MHz and 10 MHz although we note that 400 kHz channels are not required to accomodate displaced 2 GHz fixed microwave services. We also note that the center frequencies shown in the channel plans may be inappropriately precise for the narrower channels (for example, to 100 Hz for 400 kHz channels) because transmitter frequency tolerances

are several orders of magnitude larger (±0.02% at 6 GHz is ±1.2 MHz!)

2.1.2 We also support the FNPRM in general, except the following :

(a) foregoing re-allocation of 3.6 -3.7 GHz and 4 GHz bands

(b) permitting separate co-ordination proceedures and technical standards for Part 21 and Part 94 users in the same frequency bands.

2.2 ANS Petition and Subsequent Comments

2.2.1 The Joint Reply Commenters agree with the original petition by ANS.

2.2.2 We also agree with ANS Comments on pursuing the re-allocation of the Government band 3.6-3.7 GHz.

2.2.3 We agree with ANS Comments on transition : spectrum efficiency standards should be frozen for 2 years and system expansions permitted without waivers.

2.2.4 We agree with the suggested corrections to the Section 94.73 Power Limitations and to the Frequency Corrections in the ANS Comments.

2.3 Joint Comments of Harris, DMC and Telesciences

2.3.1 The Joint Reply Commenters support the Joint Comments in regard to applying stringent channel loading requirements for wideband channels (15 MHz or greater) and suggest that wideband channels would only be allocated to users having an initial loading exceeding 780 channels.

2.3.2 We also support the Joint Comments in regard to co-

ordination proceedures and technical standards for Part 21 and Part 94 users. The proceedures and standards should be the same for each type of user in any frequency band. Part 21 users should not be allowed access to bands being shared with Part 94 under different proceedures and standards. The interference standards for Part 94 users should also apply to Part 21 users in the same bands.

2.3.3 We do not agree or disagree with the phased approach to digital spectrum efficiency because the efficiency standards proposed are not very stringent. As a result, most current products now meet the proposed standards.

2.3.4 We agree with the use of automatic transmitter power control (ATPC) for digital radios. However, ATPC cannot be successfully used for analog microwave radios. Therefore, any new rule language should not require the use of ATPC because this would eliminate the choice of analog and mandate the use of digital microwave radios.

2.3.5 We definitely agree with the Comments on speeding up the negotiations with the NTIA on access to the 1.7-1.85 and 3.6-3.7 GHz Government bands for improving the cost-effectiveness of low density microwave systems.

2.4 Comments of the TIA

It is evident that the TIA Comments virtually identical, word for word, to those of the Joint Comments of Harris, DMC and Telesciences. As a result our support for the TIA Comments is as indicated in Section 2.3 above.

2.5 Comments of AAR

We fully agree with and support the Comments of the AAR.

2.6 Comments of Comsearch

2.6.1 We agree with the Comments on the 4 GHz band. This band is not practical for re-allocation because of the frequency co-ordination difficulties, without some provision for the exclusive use of all or part of the band for fixed microwave links.

2.6.2 We understand the Comments on the 6 GHz band and do not disagree.

2.6.3 We understand the Comments on the 11 GHz band and do not disagree.

2.6.4 The Comments on the Grandfathering of existing systems are relevant and should be considered in more detail.

2.6.5 We agree with the Comments requiring the use of a prior co-ordination process for PCN users.

2.6.6 On the Comments regarding Growth Frequencies, we agree that reservation of spectrum for future capacity requirements should be limited and justification of capacity requirements included in all applications.

2.6.7 We agree with the Comments suggesting that antenna standards should be the same for Part 21 and Part 94 but we do not agree that all antennas should meet standards requiring the use of shrouded high performance antennas because this would reduce cost-effectiveness and limit flexibility.

2.6.8 We agree with the use of automatic transmitter

power control (ATPC) for digital radios. However, ATPC cannot be successfully used for analog microwave radios. Therefore, any new rule language should not require the use of ATPC because this would eliminate the choice of analog and mandate the use of digital microwave radios.

3. CONSIDERATION FOR ANALOG MICROWAVE USERS

3.1 Existing Part 94 users at 2 GHz, who are likely to be displaced by the spectrum re-development and to be moved to bands above 3 GHz, have predominantly selected analog microwave systems. This is evident both from the UTC Member Survey (Utilities reported that 100% of all links operating in the 2.1-2.2 GHz band are analog and 90% of all links at 1.85-1.99 GHz are analog) and by examining FCC license filings (in 1991 over 50% of the combined 2 GHz and 6 GHz applications were for analog systems).

3.2 To permit the introduction of new technologies, existing users may at some time be required to re-locate 2 GHz links to another frequency band. However, for many users, the re-location would only be necessary on one or two hops - not the entire microwave system. If the existing system is analog, it should not be mandatory for users to replace their entire system to convert from analog to digital in order to accomodate the partial re-location.

3.3 There is a significant extra cost involved in changing from analog to digital microwave. The forced re-location proposals will only recompense existing users for the cost of an equivalent system. Recompense arrangements will not cover

expensive upgrades from analog to digital or complete conversions.

3.4 Existing analog channel capacities should be available in the new frequency allocations above 3 GHz to enable the migration of one or two hops of an existing 2 GHz analog microwave system to accomodate the new technologies.

3.5 It would be most effective and conserve spectrum if re-located users can retain existing sites and avoid the use of additional repeaters. This will require the availability of comparable system gain performance in the new frequency bands. To achieve comparable system gains, analog users will need either the same or greater bandwidth for each channel capacity, which will result in the same or greater FM deviation.

3.6 At present, no analog microwave equipment is available which provides suitable narrowband operation (24-96 CH) in any frequency bands other than 2 GHz and 2.5 GHz. Current narrowband analog users will not be able to re-locate unless this equipment is made available. Manufacturers will have no incentive to provide cost-effective narrowband analog radios in the new frequency band allocations unless suitable channel bandwidths are provided.

3.7 The joint comments from Harris, DMC and Telesciences make no reference to the requirements of the analog microwave user. The re-channelization plan that is proposed in their comments focuses solely on optimizing the re-allocations for digital microwave radios.

4. RECOMMENDATIONS OF THE JOINT REPLY COMMENTERS

4.1 We recommend that the Commission adopts the frequency re-channelization plan in the FNPRM, as modified in the ANS Comments.

4.2 We recommend that the Commission does not adopt the frequency re-channelization plan proposed by the Joint Comments of Harris, DMC and Farinon and echoed by the TIA, unless specific language is added to permit the use of 800 kHz analog radio emission in 1.25 MHz channels and 1.6 MHz analog radio emission in 2.5 MHz channels. (Under this alternative, the number of available channels for frequency co-ordination would drop substantially.)

4.3 We disagree that there will be sufficient spectrum for fixed microwave services, therefore, we recommend that the Commission should aggressively pursue the availability of additional spectrum to accomodate displaced 2 GHz users and provide some of the spectrum anticipated for further expansion of existing networks.

5. CONCLUSIONS

We urge the Commission to consider the needs of fixed **analog** microwave users, who comprise the majority of the Part 94 users at 2 GHz.

We also urge the Commission to avoid a re-channelization plan aimed solely at optimizing digital microwave performance. In conclusion, we would like to note that this was recently carried out without success in the 2.5 GHz temporary fixed Part 94 band and should not be repeated.

Respectfully Submitted,

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