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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W. Room 222
Washington, DC 20554

RE: RM-8653 and RM-8648

Dear Mr. Caton:

Transmitted herewith for filing with the Commission on behalf of Loral/QUALCOMM Partnership, L.P., are an original and four copies of its "Reply Comments" in the above-referenced rulemakings.

Should there be any questions regarding this matter, please communicate with this office.

Respectfully submitted,

William D. Wallace

Enclosure

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Before The
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Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matters of	)	
	)	
Allocation of Spectrum in the 5 GHz Ban to Establish a Wireless Component of the National Information Infrastructure	)	RM-8653
	)	
Petition for Rulemaking to Allocate the 5.1-5.35 GHz Band and Adopt Service Rules for a Share Unlicensed Personal Radio Network	)	RM-8648

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REPLY COMMENTS OF
LORAL/QUALCOMM PARTNERSHIP, L.P.

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July 25, 1995

SUMMARY

The allocation proposals in the petitions for rulemaking filed by the Wireless Information Networks Forum (WINForum) and Apple Computer, Inc. (Apple) should be dismissed because they conflict with U.S. policies for use of the 5 GHz band. Dismissal of the petitions is also warranted because the proponents have failed to demonstrate the potential to share the band with existing and proposed services and the need for an allocation in the amount of 250-300 MHz.

First, an allocation for a new, unlicensed service in the 5000-5250 MHz band is inconsistent with the United States' proposal for adoption at the 1995 World Radiocommunication Conference of an international allocation for non-geostationary Mobile-Satellite Service feeder links in this band. Although Apple and WINForum recognize the existing allocation in the band for aeronautical radionavigation systems and the proposed allocation for MSS feeder links, both have failed to demonstrate the ability of their new services to share with ARNS and MSS. Accordingly, these proposals should not be considered because they may interfere with the United States' efforts to have adopted internationally the compromise developed in the United States to promote efficient operation of commercial MSS systems while also safeguarding MLS.

Moreover, the commenting parties have pointed out that WINForum and Apple have not provided creditable analyses of the ability of the proposed unlicensed service to share with the existing ARNS allocation in the band or MSS

feeder links. Providing protection for the interests and investments of incumbent users is a critical issue in any allocation proceeding. Without some indication of the feasibility of the proposed allocation, it would be futile to issue a notice of proposed rulemaking for the new services.

The initial comments also suggest that Apple and WINForum have failed to establish a need for an allocation of 250-300 MHz of spectrum for their NII Band and SUPERNet services sufficient to support further consideration of the petitions at this time. This gap in the record is significant because a need for less bandwidth may permit consideration of other frequency segments with fewer sharing concerns. Also, there is spectrum allocated for unlicensed services which has not yet been used, suggesting that such a large allocation is premature.

The comments also point out that some of the proposed uses of the allocation can be readily provided in existing allocations. If these duplicative uses were precluded from the band, significantly less bandwidth may be necessary for the proposed allocation. Additional research on the need for the allocation should be undertaken before further consideration is given to the petitions.

Given the conflict with U.S. policies and the incomplete nature of the proposals, Loral/QUALCOMM Partnership recommends that both petitions be dismissed without further action at this time.

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To: The Commission

REPLY COMMENTS OF
LORAL/QUALCOMM PARTNERSHIP, L.P.

Pursuant to Section 1.405(b) of the Commission's Rules, Loral/QUALCOMM Partnership, L.P. (LQP), hereby submits its Reply Comments with regard to the above-referenced petitions for rulemaking.

As LQP pointed out in its Opposition,[1] the proposals set forth in the petitions for rulemaking filed by the Wireless Information Networks Forum (WINForum) and Apple Computer, Inc. (Apple) conflict with U.S. policy because they propose an allocation for an unlicensed service in segments of the 5 GHz band for which the United States has now recommended an international

[1] LQP Opposition, at 6-9.

allocation for non-geostationary Mobile-Satellite Service feeder links.[2] Moreover, the proponents of the allocation for unlicensed services have not provided creditable analyses of the ability of such services to share with existing aeronautical radionavigation services in the bands or MSS feeder links, nor have they demonstrated a need for an allocation of 250-300 MHz. These issues must be addressed with more substantial research before the proposals are considered in a notice of proposed rulemaking. Given the conflict with U.S. policies and the incomplete nature of the proposals, LQP recommends that both petitions be dismissed without further action at this time.

I. THE PETITIONS SHOULD BE DISMISSED NOW THAT THE U.S. HAS ADOPTED A POSITION RECOMMENDING AN INTERNATIONAL ALLOCATION FOR NGSO MSS FEEDER LINKS IN THE 5 GHZ BANDS.

On July 11, 1995, the United States adopted its proposals for WRC-95 which include an international allocation of 160 MHz for non-geostationary MSS feeder links at 5090-5250 MHz.[3] In these proposals, the United States recognized that allocations for NGSO MSS feeder links are necessary "to support immediate and actual needs of the mobile-satellite service."[4] The specific proposals were

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[2] See United States Proposals for the 1995 World Radiocommunication Conference, at "Proposals for Agenda Items 2.1c and 3d" (July 1995) ("U.S. WRC-95 Proposals").

[3] Id.

[4] Id. at 164.

based on the analyses which had been developed during the 1995 Conference Preparatory Meeting (CPM-95).

As the Commission is well aware, the U.S. proposals for MSS feeder links in the 5 GHz band represent a compromise among government and non-government interests which required several years of negotiation to achieve. The principal interested parties in these negotiations -- the National Telecommunications and Information Administration, the Commission, the Federal Aviation Administration and MSS system operators, including LQP -- were able to develop a plan to share the 5000-5250 MHz bands in order to promote efficient operation of commercial MSS systems while safeguarding MLS. The plan for use of the 5000-5250 MHz band in the U.S. WRC-95 Report attests to the detailed analyses developed in CPM-95 and other fora as well as to the substantial amount of time and resources which were needed to reach this band-sharing proposal.

Given the failure of Apple and WINForum to demonstrate the potential for protecting users of the 5 GHz band,[5] consideration of an allocation for unlicensed service at this time could disrupt the compromise which the U.S. has achieved to further its objective at WRC-95 of facilitating the deployment of NGSO MSS systems. Moreover, pursuit of a domestic allocation for unlicensed services in the 5 GHz band may lessen the force of the U.S. proposal at WRC-95.[6] Such a course

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[5] See infra § II.

[6] See LQP Opposition, at 6-9; Am. Radio Relay League Comments, at 8-9.

might cause other countries to pursue at WRC-95 an allocation for unlicensed services at 5 GHz, which may not be able to share with MSS feeder links.[7]

The Commission has recognized that one of the primary goals of the United States for WRC-95 is to facilitate the introduction of global MSS systems.[8] In order to achieve this objective, the U.S. must present a clear position at the Conference on the future uses of the 5 GHz band. The proposals of WINForum and Apple are inconsistent with the U.S. position, and WINForum and Apple have not demonstrated how the unlicensed services could fit into the recommended U.S. policies on use of the 5000-5250 MHz band. Accordingly, LQP strongly recommends that the petitions for rulemaking of both WINForum and Apple be dismissed, or, at least deferred until the petitioners have brought forward additional sharing studies and these studies have been evaluated in the appropriate fora.

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[7] At a time when the U.S. is attempting to convince the European Community to adopt an allocation for MSS feeder links in the 5 GHz band, the U.S. should not also pursue an allocation in the same bands for a service similar to the European HIPERLAN system.

[8] See Report re Preparation for International Telecommunication Union World Radiocommunication Conferences, FCC 95-256, at 3 (released June 15, 1995) ("FCC WRC Report"). The Commission noted that consideration of a proposed allocation for a high-speed wireless data service in the 5 GHz band "would complicate the issue of sharing 5 GHz spectrum" between ARNS and NGSO MSS feeder links. Id. at 35.

II. BOTH PETITIONS SHOULD BE DISMISSED FOR FAILING TO DEMONSTRATE HOW INCUMBENTS WOULD BE PROTECTED.

A critical factor in any allocation proceeding is consideration of protection for the interests and investments of incumbent users in the band at issue.[9] The commenting parties have pointed out that Apple and WINForum have failed to demonstrate how their proposed SUPERNet and NII Band services could provide protection for incumbents in the 5 GHz band, including Microwave Landing Systems and MSS feeder links.[10] Without some indication of the feasibility of the proposed allocation, it would be futile to issue a notice of proposed rulemaking for the new services.

A. Sharing with MLS and MSS. As LQP pointed out in its Opposition, Apple and WINForum propose to share segments of the 5000-5250 MHz band with both MLS and MSS feeder links, but neither has presented a viable analysis that such sharing is possible. This gap in the petitions was noted by several parties, including the FAA and Constellation Communications, Inc. The FAA has

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[9] See Personal Communications Services Second Report and Order, 8 FCC Rcd 7700, 7757-73 (1993) ("A principal concern in the authorization of PCS in the 2 GHz band is that existing fixed microwave operations be protected"); Report and Order in ET Docket No. 92-28, 9 FCC Rcd 536, 540-41 (1994) ("Big LEO Allocation Order") (adopting power limits and coordination requirements to ensure compatibility between LEO MSS systems and RDSS and other services); cf. Report and Order in CC Docket No. 92-166, 9 FCC Rcd 5936, 5975-97 (1994) ("Big LEO Rules Order") (adopting rules for Big LEO systems to achieve in-band coordination with radio-astronomy and aeronautical radionavigation systems).

[10] See AT&T Comments, at 7-8; Am. Radio Relay League Comments, at 8-10; Fixed Point-to-Point Communications Section (TIA) Comments, at 4; Digital Microwave Corp. Comments, at 3; Harris Corp. Comments, at 4.

proposed implementation of MLS systems. Constellation, like LQP, has applied to use the 5 GHz bands for feeder links for its proposed low-earth orbit MSS system.[11]

According to the FAA,[12] MLS systems in the 5000-5250 MHz band are not being phased out, which was an assumption underlying both Apple's and WINForum's petitions.[13] Indeed, contrary to the assumptions of Apple and WINForum, the FAA states that unlicensed services should not operate in the 5 GHz band except upon a noninterference basis, and that neither petition has demonstrated that sharing under such conditions is feasible with the FAA's proposed aeronautical radionavigation systems. With respect to WINForum's SUPERNet service, the FAA stated that the potential for interference into ARNS was unacceptable and recommended no action until sufficient sharing studies had been completed:

> [T]he airport environment may be just the place where [SUPERNet] devices could proliferate, causing interference to sensitive navigation systems on the aircraft moving about on the ground or on final approach. The potential for interference with critical aeronautical safety of life navigation systems must be avoided. Placing this system in a band used for aeronautical radionavigation is therefore not acceptable.
>
> *****
>
> While we oppose the use of the 5000-5150 MHz band for SUPERNet, we would also oppose the use of the band 5150-5250 MHz until sharing studies have been completed which show that there is a potential for sharing this band with high systems such as the airport

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[11] See Constellation Comments, at 2.

[12] FAA Comments, at 1.

[13] See Apple Petition, at 30; WINForum Petition, at 15.

> surface detection equipment and the terminal Doppler weather radar (TDWR), both of which are part of the weather navigation safety program of the FAA. Such sharing studies must use worst case scenarios and show that in no way can the ARNS be interfered with.[14]

Similarly, the FAA opposed Apple's NII Band proposal, based on the potential for interference into ARNS and the need for more complete sharing studies:

> Sharing of the band 5150-5250 MHz between the proposed NII Band wireless LAN and the aeronautical systems, e.g., airport surface detection equipment and TDWR, is not recommended unless a sharing study proves that the NII Band system(s) can share the band and not cause interference to ARNS under any conditions.[15]

Consistent with the FAA's comments in this proceeding, the Commission has already recognized that any proposal for an allocation in the 5 GHz band for a high-speed wireless data system would be required to demonstrate the ability to share with ARNS systems in the band.[16]

With respect to MSS feeder links, the comments of Constellation and LQP point out that the analysis advanced by WINForum and Apple to demonstrate sharing between SUPERNet/NII Band and MSS feeder links is not based on appropriate data, and, therefore, does not demonstrate the feasibility of sharing with MSS systems.[17] As Constellation noted: "The only interference calculation provided is based on the use of Hiperlan parameters. However, that calculation includes assumptions on a number of significant interference parameters, such as

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[14] FAA Comments, at 1, 3.

[15] Id., at 3.

[16] See FCC WRC Report, at ¶ 97 n.162.

[17] See LQP Opposition, at 9-10; Constellation Comments, at 2-4.

user activity factors, ratio of indoor/outdoor users, and building attenuation, which have not been shown to be representative of the unlicensed wireless data transmission networks envisioned by the petitioners."[18]

Contrary to the analysis used by Apple and WINForum -- there likely would be unacceptable interference into MSS feeder links in the 5 GHz band from operation of the proposed unlicensed devices as LQP demonstrated in its Opposition.[19] Such interference would seriously impair the ability of MSS licensees to provide new and enhanced wireless services in domestic and international markets and to make available the recognized public interest benefits of these systems.[20]

B. Feasibility of Sharing. Not only have Apple and WINForum failed to demonstrate how sharing with MLS and MSS can be achieved, there is a strong likelihood that sharing protocols would be impossible or at best infeasible. The initial comments indicate that deregulating the 5 GHz band would make it impractical to developing sharing protocols with incumbent services because of the unpredictability of location and use and unaccountability of unlicensed devices for purposes of coordination. As the American Radio Relay League (ARRL) noted:

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[18] Constellation Comments, at 2-3 (footnote omitted).

[19] See LQP Comments, at 9-10; see also Constellation Comments, at 3-4. Apple's petition was also criticized by amateur service operators for failing to demonstrate the potential for sharing with amateur services in the 5725-5875 MHz band. See ARRL Comments, at 10-13.

[20] See Big LEO Rules Order, 9 FCC Rcd at 5940-41.

> The [Apple] petition is rife with glowing predictions of universal access by the public for whatever communications services are desired, but it contains no real information about the possibility of coordination of use between and among unlicensed users in the bands, or coordination between and among inter-service users. . . . One can only conclude from the proposed absence of any operational rules and the lack of any technical compatibility showing that there is in fact no possibility of coordination, and that the opportunities for compatible sharing are little more than hopeful, but baseless predictions.[21]

Apple and WINForum have not provided evidence that their proposed unlicensed services could share with existing and proposed users in the 5 GHz band. In similar circumstances -- allocating spectrum for unlicensed PCS -- the Commission recognized that sharing between a licensed service and nomadic, unlicensed devices would be difficult.[22] This conclusion also appears applicable here. Accordingly, the proposals for a high speed wireless data service in the 5 GHz band should be dismissed and not considered further unless and until they are revised to include appropriate sharing studies.

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[21] ARRL Comments, at 2-3.

[22] PCS Second Report, 8 FCC Rcd at 7738-39.

III. THE INITIAL COMMENTS REFLECT THAT THE PETITIONERS HAVE NOT DEMONSTRATED A NEED FOR AN ALLOCATION OF 250-300 MHZ.

The initial comments suggest that Apple and WINForum have failed to establish a need for an allocation of 250-300 MHz of spectrum for their NII Band and SUPERNet services sufficient to support further consideration of the petitions at this time. This gap in the record is significant for several reasons.

First, the bandwidth needed has an impact as to what frequencies should be allocated for the service. A need for less bandwidth may permit consideration of other frequency segments with fewer sharing issues. Second, Apple and WINForum have suggested an allocation which would permit a wide variety of services, some duplicative of existing services. If some of the proposed uses of the allocation can be readily provided in existing allocations, then less bandwidth may be needed for the new service.

A. Need for 250-300 MHz. Any allocation for a new service necessarily limits the availability of spectrum for other services. Accordingly, in allocating scarce spectrum resources, the Commission must determine that there is an unmet need for spectrum for the service. For example, in allocating a total of 160 MHz of spectrum for new licensed and unlicensed Personal Communications Services (PCS), the Commission found that licensees would need sufficient spectrum to provide a variety of services and to resolve difficulties with incumbent users in the assigned spectrum. Therefore, it agreed with commenting parties that "a substantial allocation is needed to allow sharing with incumbent fixed

microwave operations where necessary, and for providing PCS operators the capacity to offer a family of PCS services."[23]

Similarly, in allocating spectrum for non-geostationary satellite systems, the Commission found that the record demonstrated a demand for the new and enhanced MSS services proposed by the Big LEO applicants. Therefore, it allocated 33 MHz for NGSO MSS user links, including 16.5 MHz in both the space-to-earth and earth-to space directions, which was consistent with the allocation for MSS at the 1992 World Administrative Radio Conference.[24]

In this proceeding, WINForum states that the spectrum allocation is based on the need for universal access to electronic media stored on the internet on a simple, convenient and low-cost basis.[25] Apple claims that 250-300 MHz is required to support high bandwidth personal connections to the Internet and other information resources and "to meet the aggregate demand for unlicensed services in high-density areas."[26]

But, neither petitioner has explained how to calculate the claimed demand for bandwidth. And, while many parties support an allocation for unlicensed

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[23] PCS Second Report, 8 FCC Rcd at 7714 (footnote omitted).

[24] Big LEO Allocation Order, 9 FCC Rcd at 539.

[25] WINForum Comments, at 2.

[26] Apple Comments, at 20.

services,[27] most provide only general predictions of its usefulness.[28] No party has submitted a study indicating that 250-300 MHz of bandwidth is necessary for the proposed services.[29]

Moreover, Apple and WINForum have not demonstrated why existing allocations for unlicensed and licensed services are insufficient for at least some, if not all, of the services to be provided by the new allocation. Just two years ago, the Commission determined that 40 MHz of spectrum in the PCS block would "provide sufficient spectrum to meet the needs of a wide range of unlicensed PCS operations, including both voice and data uses."[30] Although this spectrum allocation in the PCS block was reduced to 20 MHz,[31] the Commission subsequently allocated another 10 MHz to unlicensed PCS at 2390-2400 MHz.[32]

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[27] See, e.g., Andrew Corp. Comments, at 3-5; Compaq Computer Comments, at 3; Information Tech. Indus. Council Comments, at 4-6; Metricom Comments, at 2; Microsoft Corp. Comments, at 4-5; Motorola Comments, at 2-4; Nortel Comments, at 3-5.

[28] Cf., e.g., Andrew Corp. Comments, at 7 (benefits of Apple duplex transmission proposal are "too speculative" to warrant a shared allocation in 5800 MHz band).

[29] In its petition, WINForum provided an analysis of why 250-300 MHz would be needed for a certain form of voice/video/data connection. WINForum Petition, at App. A. However, there is no explanation of why this one format should serve as a model on which to base the allocation, and WINForum states that "an accurate scenario of use is difficult to predict." Id.

[30] PCS Second Report, 8 FCC Rcd at 7738.

[31] See Memorandum Opinion and Order, 9 FCC Rcd 4957, 4990-91 (1994).

[32] See Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, 10 FCC Rcd 4769, 4779-83 (1995).

In adopting these allocations, the Commission recognized that the spectrum could be used for "high and low speed data links between computing devices, cordless telephones and wireless PBXs"[33] and would "offer a portable 'on-ramp' to the information highway that will be accessible to everyone."[34] These allocations can be used now to provide services similar to those for which Apple and WINForum seek a new allocation. Moreover, comments in this proceeding indicate that similar services may also be deliverable on a Part 15, noninterference basis.[35] In short, why an allocation of 250-300 MHz is needed has not been adequately explained.[36]

B. Use of 5 GHz Band. Several commenters pointed out that the proposals would create an unlicensed network which would duplicate many services provided more efficiently by licensed systems. For example, the ARRL noted with regard to Apple's proposed Part 16 service:

> The concept of "community networks" and local area networks as Apple proposes appears better facilitated by the use of existing services such as private, fixed point-to-point microwave facilities now licensed by the Commission under Part 94; by frequencies above 40

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[33] PCS Second Report, 8 FCC Rcd at 7734.

[34] Allocation of Spectrum Below 5 GHz, 10 FCC Rcd at 4779.

[35] See Metricom Comments, at 3-6.

[36] WINForum states that "present allocations are insufficient to support the intense demands of multimedia technology." WINForum Comments, at 3 n.4. It claims that it did not consider all the proposed SUPERNet services in its spectrum estimates for unlicensed PCS. See WINForum Petition, at App. A; cf. PCS Second Report, 8 FCC Rcd at 7735 (Commission noted that WINForum recommended a total allocation of 45 MHz for unlicensed, wireless PBX, data and cordless telephones).

GHz; by licensed and unlicensed PCS facilities for which the Commission has just allocated a substantial amount of spectrum at and near 2 GHz; and by existing wireline facilities.[37]

The Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association criticized the petitions for proposing inefficient use of scarce spectrum resources for point-to-point hops, and recommended that such services be excluded from any allocation if adopted:

> Low frequency microwave spectrum is a precious national resource. Applicable FS rules . . . significantly limit the use of this spectrum for relatively short point-to-point paths. These rules cause short point-to-point paths to use high frequency spectrum. The Commission has provided bands and manufacturers have provided equipment specifically for this application.
>
> Given the considerable need of mobile users for low frequency spectrum, the creation of a new low frequency allocation for short-distance, fixed point-to-point service would be totally inappropriate and unnecessary Indeed, there is more than adequate spectrum allocated for FS in the 18, 23, 28 and 38 GHz bands to satisfy such mobile user needs. Thus, the proposed unlicensed point-to-point application specifically must be excluded from the new mobile service contemplated in the Petitions.[38]

These comments suggest that the uses of the proposed NII Band/SUPERNet service should be more carefully planned. It may be possible to reduce the size of the allocation by not duplicating existing services. Further studies are required to

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[37] ARRL Comments, at 3.

[38] Fixed Point-to-Point Communications Section (TIA) Comments, at 3; see also LQP Opposition, at 13 (discussing the allocations above 40 GHz which the Commission has cited as appropriate for development of short-range wireless radio systems with high data rate capabilities).

determine whether the services proposed are duplicative of existing, licensed services and whether an allocation of 300 MHz is needed for the proposals.

In short, the record lacks the affirmative indication that the allocations of 250-300 MHz sought by Apple and WINForum for the proposed services are in the public interest.[39] Low frequency spectrum is a very scarce resource. Proposals with "only generalized calculations" are "tenuous at best."[40] Before the Commission considers allocation of such a substantial amount of spectrum for an untried service, which has available unused allocations, the proponents should be required to provide significant additional support for the spectrum sought in addition to updated and accurate sharing studies.

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[39] The Commission recently rejected a similar proposal from AT&T as a recommended position for WRC-95. See FCC WRC Report, at ¶ 97.

[40] FAA Comments, at 2.

IV. CONCLUSION

For the reasons set forth above and in its Opposition, LQP recommends that the Commission dismiss the petitions of Apple and WINForum.

Respectfully submitted,

LORAL/QUALCOMM PARTNERSHIP, L.P.

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July 25, 1995

CERTIFICATE OF SERVICE

I, William D. Wallace, hereby certify that on this 25th day of July, 1995, copies of the foregoing "Reply Comments of Loral/QUALCOMM Partnership, L.P." were delivered via hand-delivery (indicated by an *) or mailed, postage prepaid, to the following:

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