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Federal Communications Commission

WASHINGTON, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of

Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations	)	IB Docket No. 97-95 RM-8811

To: The Commission:

REPLY COMMENTS OF LOCKHEED MARTIN CORPORATION

Lockheed Martin Corporation ("Lockheed Martin") hereby submits its reply to the comments filed in response to the above-captioned Notice of Proposed Rulemaking ("NPRM").

I. INTRODUCTION

The comments filed in response to the Commission's NPRM reflect general agreement among a wide variety of terrestrial and satellite interests on three significant issues:

- Spectrum efficiency and commercial imperatives underscore the need for harmonized international spectrum allocations;
- Domestic allocations should be reasonably consistent with the existing international table of frequency allocations; and
- The Commission's underlay proposal needs significant clarification.

Beyond this general agreement, it is clear that the Commission does not possess all of the information that is necessary to resolve these and other complex issues in the instant

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rulemaking. In particular, a record adequate to inform the important policy decisions before the Commission must include more information about demand for satellite spectrum above 36 GHz and the supply and location of spectrum that may be available for global allocation. Because certain events in the second half of 1997 will almost certainly result in more precise quantification of this demand (either through initiation of a satellite processing round or through other developments) and clarification of the international allocation environment (at the 1997 World Radiocommunications Conference (WRC 97)), there is no reason to conclude this proceeding -- or other proceedings involving sub-bands within the 36-51 GHz band -- with such key information lacking.

In deciding how to strike an appropriate balance in the allocation of terrestrial and satellite spectrum, the Commission should weigh the substantial public interest benefits promised by the variety of satellite technologies capable of being deployed in the bands allocated for satellite use. Satellite technology offers unique features and benefits as compared even to state-of-the-art terrestrial services, including instantaneous global or regional coverage and portable infrastructure that provides full system functionality in rural and remote areas at the same cost of serving population centers.

Moreover, as discussed *infra*, the failure of U.S. initiatives regarding this band at the 1997 Conference Preparatory Meeting (CPM-97) indicate that the Commission needs to remain flexible, both with respect to timing and substance, in developing (or seeking to develop) potential compromises or consensus band plans.

In general, Lockheed Martin believes that the Commission should reject comments that urge (i) resolution of this domestic proceeding prior to examining the international allocations attained at WRC-97; (ii) "premature" segmentation of the band between terrestrial and satellite interests; and (iii) "premature" designations of NGSO or GSO exclusive spectrum.

II. THE FCC SHOULD NOT MAKE DOMESTIC ALLOCATIONS BASED ON ASSUMPTIONS OF NEW INTERNATIONAL ALLOCATIONS; THE FCC SHOULD WORK WITHIN THE INTERNATIONAL ALLOCATIONS PROCESS

The majority of the comments support Lockheed Martin's position on the timing of the decisions to be made in this proceeding. Regardless of where the Commission decides to strike the balance between terrestrial and satellite allocations, it is premature to proceed with any further allocation or designation of domestic spectrum in the 36-51 GHz band.[1] The reason is clear: The identity and the amount of harmonized international spectrum – which is essential for satellite services and useful for terrestrial services – is currently unknown. The ultimate success of domestic allocation decisions will be either enhanced or impaired by international allocations, and therefore should logically be informed by spectrum decisions at WRC-97.

The difficulties encountered by the U.S. at CPM-97 should serve to underscore the risks that premature domestic action poses to the future of the U.S. satellite industry. The viability of the Commission's current proposal in this proceeding hinges on the acceptance of U.S. proposals at WRC-97. The difficulty lies in convincing other ITU member administrations to make new or additional global allocations for satellite services -- allocations that would be necessary solely to replace the scarce existing global satellite allocations being unilaterally foreclosed to the satellite industry by this domestic proceeding. Despite the best efforts of the U.S. government delegation in the various CPM-97 sessions with foreign delegates, the U.S. was not able to garner any real support for its position that additional allocations may be necessary at WRC-97. Instead, the US faced concerted opposition, particularly within Europe, to the U.S. position that new allocations for satellite services may be necessary as a result of accommodating high density fixed services in the above 30 GHz bands.

Moreover, it appears that some specifics of the instant NPRM may be contrary to the direction taken by the CPM-97. For example, the NPRM proposal for the 41.5-42.5 GHz band,

[1] However, as discussed *infra*, the Commission might consider the option of acting on the 38.6-39.5 sub band, which is part of a separate proceeding.

which implicates the international BSS allocation, is highly unlikely to receive support in any quarter. While the FCC can always change allocations domestically, it cannot render an international primary allocation secondary. For example, a foreign BSS system that interferes with a terrestrial system accorded primary status pursuant to the U.S. domestic allocation table retains its interference priority, absent a change to the international allocation tables. Therefore, a U.S. band plan that does not conform substantially to international priorities does not work for anyone.

Other events at CPM-97strongly suggest that the U.S. must recognize the inherent interaction between domestic Commission action and the international spectrum allocation process. It would be unfortunate for the FCC to be perceived as proceeding unilaterally domestically on the assumption that U.S. domestic spectrum decisions should drive the international process. In the 2 GHz context, the U.S. has yet to succeed at the ITU in "adjusting" the harmonized MSS allocations that it unilaterally altered through a domestic proceeding. Lockheed Martin believes that the Commission's efforts prior to WRC-97 should be focused on developing a tentative domestic band plan that reasonably accommodates the various domestic interests, in a way that does as little harm as possible to scarce existing global allocations, and that stands a reasonable chance of being supported in the international arena.

It would be counterproductive to pursue a band plan that compromises or threatens the future of an important element of the overall U.S. economy – the U.S. satellite industry – just to accelerate terrestrial licensing by a few months. As stated above, the far better course is for the Commission and the interested parties to pursue a modified proposal that acknowledges the views of the international community and seeks to accommodate the stated priorities of the NPRM. Again, as any modified band plan's domestic success will hinge on achievements at WRC-97, the CPM-97has demonstrated to those who participated the necessity of a certain logical procedural order to the achievement of any minimally effective U.S. spectrum management goal.

For these reasons, it was and is decidedly premature for the Commission to proceed with allocations or designations of particular sub-bands contained within the 36-51 GHz band.[2] In fact, the nature of this pending rulemaking -- including the broad questions as to the appropriate overall framework for this band -- suggests that action in the pending sub-band proceedings would be severely prejudicial to this proceeding. For example, although the Commission has yet to release the order it adopted on May 2 , 1997, designating the 47.2-48.2 GHz sub-band for commercial wireless services, including stratospheric repeater use, the Commission has nonetheless significantly altered the balance of *this* rulemaking: by beginning to proceed in such a piecemeal fashion, the Commission has already inhibited its ability to develop a cohesive and synergistic policy encompassing the entire 36-51 GHz band. In fact, the Commission's action in that sub-band one business day prior to the date for filing comments in this broader proceeding would seem to suggest that the breadth of this rulemaking is now considerably narrower than the NPRM indicates. However, it remains Lockheed Martin's view that, while it is certainly true that the 47.2-48.2 sub-band is subject to a separate, but related pending rulemaking, the nature of the piecemeal debate on that and other sub-bands has been drastically altered by the issuance of an NPRM designed to present a comprehensive approach to allocations and designations throughout the entire 36-51 GHz band.

Moreover, the Commission needs more and better information regarding the demand for satellite spectrum above 36 GHz before it makes allocation decisions. The building blocks – and the structural limitations – of future satellite and wireless terrestrial services should not be defined mainly by the first license applications to make their way to the FCC, and even less so by the earliest deployments. A "first to market" mentality inevitably favors terrestrial services over satellite services, since the latter cannot be deployed either as rapidly or in the same incremental way that terrestrial services can. The promise of unprecedented new, universal communications

[2] Nonetheless, as we stated in our comments, we recognize that from a domestic and international point of view the actual usage and current licensing of the 38.6-39.5 GHz band suggests that Commission action on this sub-band would not be inconsistent with the overall need to proceed with a more deliberate speed and international perspective.

flexibility from new generations of satellite systems is based on great, but attainable, technical advances, including substantially higher power, greater spectrum efficiency, and complex on-board processing. Such systems cannot be built, designed and launched overnight.

Moreover, in contrast with licensing of terrestrial systems, satellite interests operate within a different application processing framework. Typically, a single satellite application for a band has triggered the opening of an FCC processing round, leading to the filing of competing applications within a specified cut-off date. This regulatory approach has worked well over the years, particularly in light of the competitive details revealed in the breadth of information required in a space station application. However, prior to the filing of applications in response to a cutoff notice, there is little formal indication to the FCC of the actual demand for satellite spectrum as a result of extensive ongoing research and development efforts being undertaken by future satellite system proponents.

Thus, conclusion of this proceeding prior to the initiation of a processing round for satellite applications in the 36-51 GHz band may very well lead to faulty allocation decisions based on an incomplete assessment of the real needs of the satellite industry. If the Commission cannot initiate a satellite processing round before allocating spectrum in this band, it should find another method for assessment of demand for satellite spectrum. One possible way for the Commission to satisfy its obligation to ascertain the satellite industry's reasonable needs is for the International Bureau staff, in conjunction with the satellite community, to craft a streamlined approach by which expressions of interest in using particular bands for satellite systems could be submitted to assist in evaluating the future growth needs of the satellite industry.

An allocation policy that rewards the earliest to deploy inevitably favors terrestrial over satellite services, and does not serve the public interest in achieving new, advanced services capable of reaching consumers in all geographic areas, including remote and underserved locations. Because even a few terrestrial systems can severely impair the technical usefulness of spectrum for satellite systems (which necessarily entail longer development and deployment

pipelines), the Commission should be extremely careful to allocate to satellite use on a primary basis spectrum sufficient to accommodate reasonable projections of future demand for satellite systems. Moreover, as discussed *supra*, the Commission's allocation decisions should be cognizant of, and informed by, international allocations and usage. Significant worldwide (or even U.S. or regional) terrestrial deployment in a given band might effectively preclude viable global ubiquitous satellite services in that band altogether. Allocating satellite spectrum domestically that is severely impaired or non-conforming internationally would result in an illusory balance of terrestrial and satellite allocations at best.

III. THE FCC SHOULD REJECT CALLS FOR BAND SEGMENTATION

It is premature to determine that band segmentation is the best course for the Commission to take in this proceeding. Quite apart from the issue of the appropriate balance of allocations for the terrestrial and satellite services, TIA and other terrestrial interests contend that the Commission should segment the band, ignoring the possibility of future sharing between terrestrial and satellite systems. While the issue of sharing is complex, the more reasonable question is not whether sharing is feasible, but to what degree, and what burdens may be appropriate. Moreover, the technical analysis submitted by ARTC is necessarily limited to the existing M-Star proposal, and does not contemplate other designs that may be more conducive to sharing. Thus, there appears to be insufficient information before the Commission in terms of the types of satellite systems and services to be deployed to conclude that all terrestrial and satellite interests are foreclosed from sharing some sub-bands.

In addition, unlike the satellite interests, the terrestrial interests have not explained the technical need to operate in some of the bands they propose, let alone the need for the specified amount of spectrum. To achieve more harmonized allocations, commercial wireless services should be licensed domestically in bands already used prevalently in other regions. The burden on terrestrial services of operating in bands where terrestrial services are already widely deployed internationally is little or none. By contrast, those bands are already extremely impaired for

satellite use for ubiquitous services. It is manifestly inefficient and contrary to the public interest to allow additional domestic terrestrial deployment in bands that are otherwise most technically supportive of satellite usage. Fixed services ideally should be allocated in the bands above 50 GHz where atmospheric attenuation renders that spectrum technically infeasible for usage by satellite systems with current technology.

Nonetheless, proposals that implicate changes in the FSS/BSS international allocations simply are not realistic in light of the recently concluded CPM. TIA's proposal to restrict satellite downlink spectrum to the 40.5-42.5 GHz downlink band, by virtue of adding the FSS allocation in that band, falls into that category. The band plan that is ultimately adopted will have to strike a more appropriate balance. The elimination of FSS and other satellite services from more than 75% of the downlink bands allocated across all 3 ITU regions simply is not reasonable given the general comments endorsing conformity and harmonization principles.

Moreover, the advanced terrestrial utilization of the 37.5-39.5 GHz band in Europe (as evidenced also by CPM-97and the reaction of CEPT in particular), forecloses any notion of including this band in any worldwide global FSS allocation that would be used for ubiquitous earth station service. These conditions lead to the inevitable conclusion that FSS must be granted primary status in the 39.5-40.5 GHz band with a view to making this a global FSS band for ubiquitous service. There simply is no other realistic way to achieve harmonized international allocation. Thus, Lockheed Martin believes that the Commission should not proceed with licensing terrestrial services in the 39.5-40.5 GHz band.

The Commission should also allocate a matching uplink band for FSS (a generic FSS allocation) from 48.2-49.2 GHz. Lockheed Martin's proposed changes conform to the European utilization, and contemplate changing the U.S. band plan to adapt to an international reality. This would be a very important gesture to make for WRC-97 and may even help to realize other U.S. objectives as well.

Finally, there has been much discussion and informal work among satellite and terrestrial interests in pursuit of common solutions to the domestic and international allocation issues in the bands from 36-51 GHz. Although no consensus has yet been reached on these difficult issues, TIA has acknowledged its support of a common solution by proposing an alternative in its comments. Although Lockheed Martin believes a different iteration of the band plan will best serve the needs of the various interests, it looks forward to continuing to work with TIA, other terrestrial interests, and satellite interests to further develop an acceptable alternative.

IV. THE FCC SHOULD NOT PREMATURELY PRECLUDE SHARING BETWEEN NGSO/GSO BY SEGMENTING SATELLITE SERVICE BANDS

For the same reasons that the Commission should avoid premature segmentation of the band between terrestrial and satellite systems, it should not prejudge what satellite technology may be deployed above 36 GHz by prematurely designating spectrum as NGSO or GSO. Like inflexible service segmentation, such system designations presuppose that sharing is not feasible and therefore encourage inefficient spectrum utilization. If future developments (or the lack of progress) make it appropriate to designate certain portions of the primary satellite spectrum as NGSO or GSO those designations can be made later. At present, the dearth of information about the supply of harmonized international spectrum for satellite services, the lack of information about the types of satellite systems that are being planned for the bands above 36 GHz, and the pending studies on NGSO/GSO sharing mean that any decision made today would conform only to speculative deployment scenarios for satellite systems.

Finally, if the Commission is not able to open a cutoff window before assessing the demand for satellite spectrum in the above 36 GHz bands to support the continued growth of the U.S. satellite industry, Lockheed Martin believes it would be appropriate for the Commission to solicit formal expressions of interest in particular frequencies from individual companies in order to have some basis for its determination of a fair balancing of terrestrial and satellite needs.

Respectfully submitted,
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June 5, 1997

CERTIFICATE OF SERVICE

I, Cynthia S. Shaw, do hereby certify that on this 5th day of June, 1997, I caused copies of the foregoing "Reply Comments of Lockheed Martin Corporation" to be served via first-class mail, postage prepaid (except where indicated as via hand-delivery), to the following:

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