

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

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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

COMMENTS OF GE AMERICAN COMMUNICATIONS, INC.

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SUMMARY

The band plan proposed in the Notice for spectrum in the 36-51 GHz range does not meet the requirements of the satellite industry. The 36-51 GHz bands represent a critical source of spectrum for expansion of satellite services, because frequencies immediately above that range are not usable for satellite operations. Satellite services require access to at least four gigahertz each of uplink and downlink spectrum in these frequencies, as suggested by the established table of allocations, but the proposal would confine them to only half that amount.

Furthermore, there are fundamental problems with the limited spectrum designated for satellites under the plan. First, the Commission proposes “underlays” that would allow wireless operations throughout the satellite bands, without explaining how satellite services’ access to the spectrum would be protected from these wireless operations. Second, the Commission is conducting multiple proceedings affecting the 36-51 GHz bands simultaneously. Such a piecemeal approach to spectrum planning is inconsistent with efficient planning and reliable designations of spectrum, both of which are fundamental to the satellite industry.

Most troubling is that the proposal presumes that it will be compatible with the global allocations developed in WRC-97. Because satellite services depend on uniform global allocations, a domestic designation that is out of step with the rest of the world’s allocations for satellites is useless. Yet, the current proposal both assumes that WRC will change its allocations table and fails to protect current global allocations. Because of these flaws in the current proposal, the Commission

should not designate spectrum in the 36-51 GHz band so critical for satellites until the results of WRC-97 are known.

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY.....	i
INTRODUCTION.....	1
I. THE BAND PLAN PROPOSED IN THE <i>NOTICE</i> DOES NOT PROVIDE SUFFICIENT SPECTRUM FOR SATELLITE SERVICES.....	3
A. The Commission Must Preserve Significant Bandwidth in the 36 to 51 GHz Range for Satellite Services.....	4
B. The Proposed “Underlay” Designation Endangers the Usefulness of the Limited Spectrum Designated to Satellite Services.....	5
C. The Commission’s Piecemeal Approach to the 36-51 GHz Band Is Inappropriate.	9
II. THE <i>NOTICE</i> FAILS TO RECOGNIZE THE CRITICAL NEED FOR GLOBAL SATELLITE ALLOCATIONS.....	10
A. The <i>Notice</i> Assumes Changes in the International Allocations for FSS Will Be Made at WRC-97.....	11
B. The Commission Must Also Protect Existing International Allocations for FSS.	12
III. THE COMMISSION SHOULD DEFER FURTHER ACTION IN THIS PROCEEDING PENDING THE OUTCOME OF WRC-97.....	13
CONCLUSION.....	13

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40.5 GHz for Government Operations)

TO: The Commission

COMMENTS OF GE AMERICAN COMMUNICATIONS, INC.

GE American Communications, Inc. ("GE Americom") hereby
comments on the *Notice of Proposed Rulemaking* in the above-captioned matter,
FCC 95-85 (released March 24, 1997) ("*Notice*").

INTRODUCTION

As a long-standing provider of advanced satellite services,
GE Americom has a direct, fundamental interest in the instant proceeding. Current
fixed satellite services ("FSS") spectrum in the C and Ku-bands is nearing capacity.
Existing spacecraft are largely filled, and the orbital arc is highly congested.
Licenses for geostationary FSS operations in the Ka-band have not yet been issued,

but GE Americom expects robust demand for Ka-band services both domestically and abroad. Satellite operators therefore may not be able to meet future customer service requirements unless additional spectrum is made available. Assigning spectrum for satellite operations in the frequencies between 36 GHz and 51.4 GHz ("36-51 GHz band") will permit satellite service providers to develop and offer advanced telecommunications and video services. ^{1/}

GE Americom realizes that the Commission has attempted to develop a frequency allocation plan that accommodates high-density fixed services and high-density services operating from alternative platforms in the 36-51 GHz band. However, the band plan proposed in the *Notice* does not adequately provide for the spectrum requirements of satellite services. The Commission must ensure that there is adequate spectrum within this band to permit expansion of existing satellite services and the introduction of new services. As important, this spectrum must align with that allocated internationally, as global frequencies are critical to the satellite industry. In light of satellite services' need for international allocations, the Commission should not prematurely establish a plan for domestic allocation prior to the outcome of WRC-97.

^{1/} Cf. *Third Notice of Proposed Rulemaking and Supplemental Tentative Decision, In the Matter of Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services and Suite 12 Group Petition for Pioneer's Preference*, 11 FCC Rcd 53, 60 (1995).

I. THE BAND PLAN PROPOSED IN THE NOTICE DOES NOT PROVIDE SUFFICIENT SPECTRUM FOR SATELLITE SERVICES.

The allocation of the 36-51 GHz band is critical to the prospects of all satellite services. In the spectrum bands immediately above 51 GHz, transmission to or from satellites becomes unfeasible due to the severe attenuation losses the atmosphere causes to earth-space signals. Yet, the current proposal for domestic assignments expressly grants all satellite services current access to only four gigahertz of spectrum, even though the established domestic allocations table had indicated that FSS would have access to no less than 6.9 GHz, that MSS would have access to no less than 3.5 GHz, and BSS would have had access to at least 2.0 GHz. 2/ The current proposal also eliminates all exclusively satellite spectrum in the crucial 36-51 GHz band. The draft plan's designation of only a sliver of unprotected spectrum to potential satellite services is inadequate to meet the immediate and long-term requirements of the satellite industry.

2/ Compare Notice at ¶ 14 (expressly designating only 4 GHz to any satellite service in the 36-51 GHz band, and not addressing other areas of spectrum in this band that could be exclusively used for satellite services) with 47 C.F.R. § 2.106. In contrast to the marked cutbacks suffered by satellite services, terrestrial services largely maintain their access to spectrum under the proposed plan. Under the established table, fixed terrestrial services had access to only 10.7 GHz, with a substantial portion of that subject to potential use by other services. Under the current draft proposal, fixed services has immediate access to no less than 8.6 GHz, of which more than half is spectrum dedicated solely to wireless services. See *id.*

A. The Commission Must Preserve Significant Bandwidth in the 36 to 51 GHz Range for Satellite Services.

The satellite industry, which encompasses the different services provided by fixed satellites, broadcast satellites (“BSS”), and mobile satellites (“MSS”), uniformly demands long-term planning. The satellite industry needs longer lead times to prepare and provide services than are required for terrestrial offerings. Because of these longer lead times, satellite operators must be able to rely on spectrum availability when investing the significant sums necessary to develop novel satellite service possibilities.

The currently proposed band plan would make it impossible for operators to be confident that newly developed satellite services will have sufficient spectrum left to use. Unlike wireless services, which may require, at most, two frequencies (one each for the forward and return legs), two-way satellite communications requires no fewer than four: an uplink and a downlink frequency for the forward leg and separate uplink and downlink frequencies for the return. Yet, the draft proposal takes away most of the spectrum currently allocated to satellite services between 36 and 51.4 GHz and grants a huge increase in available spectrum to terrestrial services. The end result is to leave FSS with only four assigned gigahertz, or only two gigahertz each for potential uplink and downlink frequencies. *See Notice at ¶ 14.*

This limited assignment of spectrum ignores the fundamental importance of these bands to the future of the satellite industry. As noted, satellite systems cannot operate in the series of frequencies immediately above 51 GHz

because their signals would suffer severe degradation from atmospheric effects (an obstacle which is far less troublesome to terrestrial systems). Thus, if the allocated spectrum for satellite services in the 36-51 GHz band is insufficient to meet expansion requirements of the industry, satellite providers cannot look to adjacent higher bands for relief. Assignments between 36 and 51 GHz must be adequate to sustain any and all prospective satellite services until competitive commercial systems that use much higher (above 70 GHz) frequencies are devised.

A band plan that forces all satellite services to squeeze their future into only four gigahertz of spectrum is clearly inconsistent with the public interest. The Commission must plan now for the growth of the satellite services business, recognizing that implementation of new offerings (that will require new frequencies) will demand significant commitments of time and resources by prospective providers. To encourage such investments, the allocation process must assure operators that usable spectrum will be available for new satellite services. The Commission should assign no less than four gigahertz of contiguous bandwidth to both uplink and downlink frequencies (a total of eight gigahertz) for satellite services in order to provide for the needs of the satellite industry now and in the immediate future.

**B. The Proposed "Underlay" Designation
Endangers the Usefulness of the Limited
Spectrum Designated to Satellite Services.**

Even if it made more spectrum available for satellite services, the currently proposed band plan would still fail to promote the certainty necessary for

the successful planning of long-term satellite systems. In this proceeding, the Commission proposes to depart from its past practice of designating potential uses of shared spectrum as primary or secondary, and instead invents the category of “underlay” services. The proposal does not define the legal significance of this designation, but implies that its meaning will differ from that of a secondary license, which carries no right to be protected from a primary user of that spectrum. *See Notice* at ¶ 24 & n. 28 (citing 47 C.F.R. 2.105(c)(3)). In the draft plan, all four gigahertz of spectrum that would be assigned to satellite services are identified as being shared with an underlay for wireless services. *See Notice* at App. C (“Band Plan”).

Compelling satellite services to share their already limited spectrum with wireless services flatly contradicts the Commission’s own reasoning. In the *Notice*, the Commission explicitly recognizes that “it is not likely that satellite and terrestrial systems will be able to share the same spectrum without significant technical constraints on the operations of one or the other.” *Notice* at ¶ 12. The allocations proposed for wireless services are entirely consistent with this “no-sharing” principle: no segment of the 4.6 GHz of spectrum to be dedicated to wireless services is designated for any sort of satellite “underlay.” *See Notice* at App. C (“Band Plan”). The rule against sharing, however, was ignored with regard to the assignment of spectrum to satellite services.

No explanation is given for this logical and substantive discrepancy. Furthermore, the undefined significance of an underlay complicates the long-term

planning and investment fundamental to any successful satellite service. A satellite operator or investor simply cannot assume that an underlay operation would not somehow limit the use of spectrum for satellite services.

The Commission's hints regarding the legal status of an underlay operation only exacerbate this uncertainty. The *Notice* suggests that an underlay is different from a secondary service, but it does not establish how interference issues created by the underlay would be resolved. ^{3/} GE Americom assumes that the Commission would never permit a wireless service with an underlay license to take precedence over satellite services in that area of spectrum, even if the underlay license predates a proposed satellite service. Because of the shorter deployment schedule of terrestrial systems, such an approach would effectively eliminate any new satellite systems in the 36-51 GHz band. The Commission's vagueness about the underlay concept, however, is at best a recipe for confusion about the status of underlay licensees.

The Commission's indication that it may auction underlay spectrum only worsens the uncertainty that the prospect of underlays will cause to any future plans of satellite services, as auctioning, by its nature, implies that underlay licensees will enjoy greater protections than secondary services. Any such increased protection for underlays would necessarily mean less freedom for satellite services in their few designated regions of spectrum.

^{3/} It is also unclear whether the international community would be receptive to the creation of an "underlay" spectrum designation. The *Notice* does not address that issue at all.

Even if the Commission limits the grant of wireless services underlay licenses to areas of the spectrum for which no satellite, deployed or proposed, exists, the novelty of the “underlay” concept and the nature of wireless services both pose significant dangers. First, unlike the primary-secondary hierarchy that has been previously used in identifying potential uses for spectrum, the “underlay” concept has not yet been tried in practice. A proposed satellite system may prudently conclude that it does not wish to make its considerable up-front investment the test case for a new branch of allocation jurisprudence.

Second, terrestrial systems, as noted, can be implemented much more quickly than slower-developing satellite systems. If the Commission permits wireless services underlay licensees to begin operations in spectrum designated for satellite use, a satellite operator is likely to be less willing to invest the resources necessary to challenge the established terrestrial interests. The latter result would effectively leave satellite services with no allocation in the 36-51 GHz band.

The scheme of underlays throughout satellite-designated spectrum in the proposed band plan only aggravates the problems created by the insufficient amount of satellite-designated spectrum in that plan. As a result, the concept should not be implemented at this time. Satellite services, of course, would be willing to cooperate in attempts to make the most efficient use of spectrum through the development of realistic sharing techniques, but the vague concept of underlay is too ambiguous to be accepted. Satellite services, like wireless services, should receive “clean” spectrum that would facilitate appropriate and efficient use of satellite services’ scarce assignment of spectrum.

C. The Commission's Piecemeal Approach to the 36-51 GHz Band Is Inappropriate.

The Commission currently has at least three ongoing rulemaking proceedings relating to the designation of frequencies in 36 to 51.4 GHz bands. ^{4/} This piecemeal approach invites needless ambiguity and breeds inefficiency. In this very *Notice*, for example, the Commission was forced to revise a position it established in the 39 GHz proceeding, placing FSS in the 37.5 to 38.5 GHz band that the 39 GHz proceeding had designated for microwave uses. *See id.* at n.18. Such a fragmented approach to this critical range of spectrum erodes the ability of prospective providers and their investors to depend on the Commission's proposals. It may also make it more difficult for the Commission to defend principles that should be clear in any proceeding designating this spectrum: that the satellite industry requires significant spectrum in the 36-51 GHz band and that satellite spectrum should conform to current global allocations.

In light of the risks inherent in competing contemporaneous proceedings, we recommend that the Commission explicitly state what it suggested in the *Notice*: that this proceeding will not be superseded or otherwise controlled by either the 39 GHz or Millimeter Wave proceedings. ^{5/} Although those rulemakings

^{4/} See *Notice* at nn. 13-17 (citing current proceedings for terrestrial uses above 40 GHz ("Millimeter Wave proceeding") and for the 37.0 to 40 GHz bands ("39 GHz proceeding")).

^{5/} The Commission did state that this proceeding was intended to alert interested parties to the Commission's proposed designations for all of the frequencies between 36 and 51.4 GHz. *See Notice* at ¶ 13. In addition, the *Notice* explicitly overruled the 39 GHz proceeding with regard to spectrum between 37.5 and 38.5 GHz. *See id.* at n.18. Appropriately, then, this proceeding should be able

may continue simultaneously with this proceeding, this proceeding should establish the Commission's comprehensive and final band plan for the 36-51 GHz band.

II. THE NOTICE FAILS TO RECOGNIZE THE CRITICAL NEED FOR GLOBAL SATELLITE ALLOCATIONS.

Operating satellites exist in a vacuum, but the Commission's spectrum assignments for satellite services do not. An international allocation without a matching domestic assignment does not advance the ability of prospective satellite providers to serve the United States. Similarly, a domestic assignment that requires a change in an international allocation is relatively worthless unless that international allocation occurs. Although other services may enjoy certain lower operating costs as a result of consistent global spectrum allocations, 6/ consistent global allocations for satellites are *essential* to permit integrated satellite systems capable of providing worldwide communications capabilities. The current proposal, however, ignores this fundamental design principle of satellite services in at least two key respects.

to supersede any other designation established in the 39 GHz or Millimeter Wave proceedings as well. *Cf. Notice* at ¶ 16 (explaining that other proceedings involving this spectrum will proceed simultaneously with band plan proceeding in order to limit delay in licensing once assignments have been settled).

6/ *Cf. Notice* at ¶ 11 (noting that some "economies of scale" obtain from following international allocations domestically).

A. The *Notice* Assumes Changes in the International Allocations for FSS Will Be Made at WRC-97.

In the *Notice*, the Commission emphasizes the importance of making domestic allocations that conform with current international allocations. *See id.* However, as the Commission recognizes, the current agenda for WRC-97 does not contemplate any changes in international identification of frequencies in the 36-51 GHz band for fixed satellite services. *See id.* at ¶ 34. The only relevant WRC-97 agenda item (item 1.9.6) addresses a possible change in the frequency designations for high density fixed services.

Nonetheless, the proposed band plan demands that FSS accept domestic allocations that are at odds with established international designations. Notably, the proposal requires FSS to share spectrum with BSS (as well as a wireless services underlay) between 40.5 and 41.5 GHz, even though international allocations only permit BSS in this region. At this late date, it hardly can be said with any certainty that the WRC would be willing to contemplate changes in international designations for satellite services in 1997. By proffering an “alternative” of advocating a discussion of new FSS allocations at WRC-99, the Commission implicitly suggests that such a change in international allocations for FSS may not occur for at least two years, if it occurs at all.

The Commission cannot proceed with a band plan that requires satellite services to bear the risk if conforming international changes do not occur. Instead, the Commission must defer further action in this proceeding until WRC-97 has been completed.

B. The Commission Must Also Protect Existing International Allocations for FSS.

Not only does the Commission's band plan rely on changes in international allocations that have not yet been proposed and may never be adopted, but the draft plan suggests further burdening key segments of satellite-designated international spectrum in favor of other services. As noted, a new satellite service requires a uniform global allocation for its uplink frequency and a separate uniform global downlink frequency. Although FSS is currently primary or co-primary in no less than eight gigahertz in the 36 to 51.4 GHz range, conflicting national allocations have made it virtually impossible for a new satellite service to be confident that it can even obtain a uniform uplink frequency and a uniform downlink frequency throughout the globe.

The Commission must take steps now to preserve international allocations for satellite services. Specifically, any United States proposal concerning WRC-97 agenda item 1.9.6 must protect satellite allocations from incursions by incompatible high-density fixed services. We recognize that the question of how to respond to this agenda item is being considered in the WRC-97 preparation process by the Ad Hoc Millimeter Wave group of the Commission's WRC-97 Advisory Committee. *See Notice* at ¶ 7. GE Americom strongly believes that identification of spectrum for high density fixed services in bands allocated to satellite services should be limited.

III. THE COMMISSION SHOULD DEFER FURTHER ACTION IN THIS PROCEEDING PENDING THE OUTCOME OF WRC-97.

As discussed above, any domestic band plan is subject to being superseded by the actions of the international community in WRC-97. The band plan proposed in the Notice unfairly places the risk on satellite operators if necessary changes in international allocations are not adopted. The Commission should stay this proceeding until the end of that convention. This prudent pause would increase the likelihood that domestic communications systems may obtain the benefits of worldwide allocations described in the *Notice*. *See id.* at ¶ 11. It would also eliminate the risk that, because of conflicting global and national designations, satellites will be unable to use the domestic assignments granted in this proceeding to implement international services. Finally, a stay would be most efficient for the Commission, which would then not need another proceeding to adjust the domestic allocations table in light of the results of WRC-97. Because of these benefits, GE Americom urges the Commission to halt this proceeding until the completion of WRC-97.

CONCLUSION

The current band plan proposal neither offers sufficient nor sufficiently reliable spectrum for satellite services. Unlike wireless or other easily accessible (and thus adaptable) systems, allocations for satellite services must recognize the unique capabilities and characteristics of FSS systems and the global context in which these systems operate. The Commission should suspend this proceeding until the outcome of WRC-97 is known to ensure that U.S. spectrum assignments

are consistent with international allocations. The Commission must then fundamentally revise its proposed band plan to meet the unique spectrum needs of the satellite industry.

Respectfully submitted,

GE AMERICAN COMMUNICATIONS, INC.

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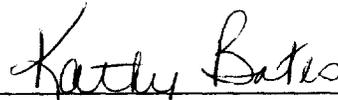
CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Comments of GE American Communications, Inc. were served by hand delivery this 5th day of May, 1997 to:

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