Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the matter of

Proceeding To Address Satellite Network Unwanted Emissions	**)** **)** **)** **)**	**RM-9740**

COMMENTS OF HUGHES SPACE AND COMMUNICATIONS

Hughes Space and Communications ("HSC") respectfully submits these comments in response to the Commission's Public Notice of its intent to consider modification of its rules regarding unwanted emissions of satellite networks. HSC was a party to the industry letter on this matter, and believes it appropriate for the Commission, upon due consideration of related proceedings in the ITU-R and the views of the satellite industry, to revise its rules to reflect advances in technology. HSC is the world's largest manufacturer of commercial communications satellites. In addition, other companies in the Hughes family bring to bear the perspective of space service operators and terminal manufacturing.

As the Commission noted, work on this subject has been going on for several years in the ITU-R, and it will likely continue for some time. HSC believes that the U.S. should continue to develop its position on unwanted emissions as part of the on-going U.S. preparatory work for the relevant ITU-R study groups (WP 4A, WP 8D, and JWP 10-11S).

Procedural Considerations

HSC believes that the most expeditious way to proceed would be to continue work in the U.S. under the auspices of the preparatory process for the relevant ITU-R study groups. This would maintain the focus on developing a U.S. position in the ITU-R. The Commission could then commence an NPRM after the 2000 ITU-R Radiocommunication Assembly, taking into account any approved recommendations as well as comments from the U.S. satellite industry. Further, it should be recognized that, during the intervening time, there may be U.S. positions in the ITU-R that differ in some respects from the Commission's existing rules on this subject.

Specific Technical and Regulatory Questions

The following are our preliminary comments on the questions posed in the public notice.

1. Should the generic out-of-band (OOB) mask be in dBc, dBs, or PFD units or some combination?

The choice of the most appropriate units for the OOB mask requires further study. Units of dBc or dBs have the advantage of being referenced to the performance of the transmitter, and would be the most convenient from a manufacturing and verification perspective. PFDs are unsuitable for an OOB mask, but development of a mask should take into account assessment of PFD levels that afford adequate protection of other systems and services, and should strike a sound balance with regard to practical implementation of space systems.

There is also the question of how to deal with spurious-like emissions (narrow spectra) in the OOB region (vs. continuous spectra). A dual-mask approach, which would separately limit these distinct emissions, should be considered.

2. Should the emissions of a multi-carrier system with a wideband frequency allocation be treated differently than those of a system with a single broadband carrier?

If the multi-carrier emission is bounded by the single broadband case, and there is no appreciable difference, then the answer should be "no". In any case, the rules should be explicit on how to treat multi-carrier emissions, and should not preclude space systems from flexible operation.

3. Should the mask be defined as a function of authorized bandwidth (FCC approach) or necessary bandwidth (ITU approach)?

The term "authorized bandwidth" is not clearly defined in the FCC rules. It may be interpreted to be equivalent to "assigned frequency band" as defined in the RR, which is in turn related to "necessary bandwidth". It may seem advantageous to base the mask on authorized bandwidth (or assigned frequency band), but since there are ambiguities in the definition of necessary bandwidth, this approach may not address the real issue. There should be further study on the technical and regulatory implications of proposed approaches.

4. Should a generic mask be used for all space services allocations unless otherwise specified?

Traditionally, the FCC has endorsed the concept of a generic mask that would address the commonly encountered situations, with more demanding specifications only where required. However, given the diversity between various space applications and services, as well as between earth and space stations, a single generic mask may be overly constraining.

5. Should the FCC Rules incorporate out-of-band values agreed in Recommendations of the ITU-R?

The U.S. should not commit *a-priori* to adopt whatever values are decided by the ITU-R. Whenever the U.S. process is able to conclude on appropriate values for the FCC rules, they should be the basis for U.S. positions in the next ITU-R cycle, with an eye to harmonizing the ITU-R recommendations.

Conclusions

HSC considers this a very important issue, because the current FCC rules are not suitable for the widely-variant space applications of today and the near future. Obviously, new rules will have a significant impact on all space systems, so a careful exploration of the details and consequences of new rules is required.

Procedurally, any FCC rulemaking on this subject should be linked with domestic preparations of related U.S. positions in the ITU. We are committed to working closely with the Commission and in the U.S. ITU preparatory process to achieve the best outcome regarding revision of provisions regarding unwanted emissions.

Respectfully submitted,

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