Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Proceeding to Address	)	RM-9740
Satellite Network Unwanted Emissions	)	
	)	

To: The International Bureau

REPLY COMMENTS OF
FINAL ANALYSIS COMMUNICATION SERVICES, INC.

Final Analysis Communication Services, Inc. ("Final Analysis"), by its counsel, hereby submits these Reply Comments to the above-captioned proceeding on the issue of unwanted emissions from satellite networks.[1]

At the outset, Final Analysis is struck by the divergence of opinion among commenters with regard to the technical approaches and measures that may be considered by the Commission in evaluating proposals to revise provisions in Part 25 of its Rules regarding the criteria for unwanted emissions. The sharp diversity of opinion among commenters shows that more information must be gathered and further study is required before specific revisions to the current unwanted emissions criteria can be proposed.

By contrast, the comments reflect the consensus view that the Commission should convene an informal industry working group to provide guidance in this complex task. Final Analysis supports this view. In addition, Final Analysis agrees with Globalstar and numerous other commenters that any FCC action should be deferred until after the conclusion of the ITU-R consideration of this issue.

[1] Public Notice DA 99-2601, released November 19, 1999.

DISCUSSION

The first priority of an informal industry working group should be to develop a clear delineation of the goals to be served by a revision of the out-of-band ("OOB") limits. It is necessary to establish agreement on the goals at the outset in order to prevent the process from becoming too unfocused and diffused in an effort to serve the particular interests of different services. In general, Final Analysis believes that the primary objective of this proceeding should be to provide OOB criteria based on good spectrum management techniques which do not unduly constrain the system designers in different services, and which provide reasonable protection to actual and potential band users. A concomitant goal should be to avoid inhibiting the flexibility of system designers, wherever possible, which in turn will allow for modern and imaginative radio design techniques to evolve for the solution of OOB requirements.

These goals should not be commingled with the critical, but separate, need to protect the space science services when the space science services are located out-of-band. Radioastronomy ("RAS") and other sensitive space services have a separate venue, the ITU-R Recommendations, in which to identify specific protection requirements. While Final Analysis acknowledges that adequate protection to the space science services is essential, establishment of protection requirements for those and other services should remain a separate process. However, in the event that the OOB revision process results in the adoption of a band-specific approach, then certain cautionary provisions may be need to be adopted to account for the separate protection requirements for adjacent space science services.

With regard to the specific questions set forth in the Public Notice, Final Analysis provides its reply comments as follows.

Units of Measure. Each proposal advanced by commenters offers advantages and disadvantages that are to a large measure dependent on the technology employed, notwithstanding whether the service is narrow-band, broadband or multi-band. There is no obvious best measurement, and accordingly, upon further consideration Final Analysis's position is that more than one measure for OOB emissions may be necessary.

Final Analysis supports those commenters who propose adoption of a measurement system that is easily verifiable prior to launch or deployment. However, if specific protection for particular users is a goal, a power flux density ("PFD") limit at the affected receiver is the only relevant criterion. Other criteria may still result in an unacceptable level of interference to those users since they do not establish an absolute value to be met on the ground (or a certain distance away from the transmitting band). Therefore, a case can be made for measuring satellite transmissions by two methods: one that measures OOB emissions at the transmitter, and a second that measures PFD at the affected receiver. Thus, a mask approach and a PFD approach could evolve for satellite systems in each band. The mask approach might be dependent upon either a narrow-band or broadband measure. Each system might then be required to meet either a dBc or dBs measure for OOB, and a PFD limit. However, Final Analysis believes that the issue of resolving the differences between the best unit of measure for broadband versus narrow-band systems must be deferred until after the ITU-R process is concluded.

Generic Mask (multi-carrier wideband vs. single carrier broadband). Final Analysis favors a single generic mask approach, and suggests that the type of system (narrow-band, broadband or multi-carrier) employed is immaterial if the goal is the general protection of other users in the band. A broadband user may believe that broadband technology merits special consideration in the situation where there are no other affected users in the band. However,

virtually no band remains static for long, and Final Analysis believes that every user should have the obligation to meet a common OOB standard, notwithstanding the technology employed. Although this effectively would require a single mask, it also allows the operator to employ the optimum technology available to meet operational objectives, while still protecting other band users.

Additionally, one can envision a situation in which a new user or system proposes to use the band with a technology that may not meet the OOB interference limits, but in which the new user can demonstrate alternative methods of protection for affected users. In this situation, and perhaps for certain other desired exceptions, it may be appropriate to allow coordination of a system's OOB levels with the other users in the band (and out-of-band users, if necessary) on the basis of PFD at the affected antenna. In any such "coordination", the operator also should be required to obtain Commission approval to avoid prohibiting future band use by conforming systems.

Authorized or necessary bandwidth. Final Analysis continues to favor the use of "authorized bandwidth" to determine OOB criteria because this simplifies verification of compliance with the OOB limits. Authorized bandwidth is readily determined from public documents and provides the variable necessary for other users to calculate a system's compliance with the limits. Conversely, "necessary bandwidth" is more opaque, with values not readily available from public sources. Final Analysis notes that the comments correctly point out that the terms "authorized" and "necessary" bandwidth are not clearly defined, and agrees that clarification would be helpful.

Band-Specific OOB Limits. There are many criteria by which to identify "band-specific" approaches to OOB limits. A few of these are:

(1) bands without terrestrial (or other type) service allocations;

(2) major band designators, *i.e.*, VHF, UHF, L, C, Ku, and Ka (these designators generally describe the types of satellite systems in general use);

(3) specific numerical (MHz, GHz) boundaries which account for the variety of allocations and differing system technologies; and

(4) bands affected by the presence of other space science services.

At this time, Final Analysis takes no position regarding a band-specific approach except to support any designation by which the specific band can be identified most closely with the other predominant band users, both satellite and terrestrial. For example, some bands are specifically allocated to mobile service links because the absence of terrestrial systems permits a PFD level at the ground that can support ubiquitous mobile terminals. In this case, satellite OOB limits for the protection of other satellite system users of the band would be of primary concern, and might differ significantly from OOB criteria in other bands.

Aggregate Limits. Several comments addressed the need to provide aggregate OOB limits for satellite systems. Final Analysis believes that this is an important issue, and supports such aggregate limits where applicable. This approach has become accepted in the last few years in the ITU. Current papers in the ITU-R by the radioastronomy service have developed approaches for determining methods to account for interference from multiple satellites, and ITU-R WP 4A has done so as well. These approaches can be used for developing a similar method to account for multiple satellite OOB emissions.

FCC use of ITU-R Criteria. Final Analysis believes that the Commission should wait until the end of the ITU-R process before adopting an approach to develop revised OOB limits.

It is likely that there will be elements of the ITU-R approach that will not be appropriate for a domestic proceeding, despite the general preference for a consistent worldwide approach.

CONCLUSION

Although Final Analysis agrees that an examination of the appropriate measures of satellite out-of band emissions is timely, it urges the Commission to convene an informal industry working group to study the issues and provide the Commission with specific recommendations that can be used as the basis for proposed rules in a formal rulemaking proceeding.

Respectfully submitted,

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January 20, 1999

CERTIFICATE OF SERVICE

I, Beatriz Viera, hereby certify that a true and correct copy of the foregoing **Reply Comments of Final Analysis Communication Services, Inc.** was delivered by first class mail unless otherwise indicated this 20th day of January 2000, to the individuals on the following list:

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