

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Amendment of Parts 2 and 25 of the) ET Docket No. 98-206
Commission’s Rules to Permit Operation of)
NGSO FSS Systems Co-Frequency with)
GSO and Terrestrial Systems in the)
Ku-Band Frequency Range)

PETITION FOR RECONSIDERATION

PanAmSat Corporation (“PanAmSat”), by its attorneys, hereby petitions for reconsideration of the First Report and Order (“R&O”) in the above-captioned proceeding.

INTRODUCTION AND SUMMARY

In the R&O, the Commission determined that it would permit non-geostationary satellite orbit (“NGSO”) fixed-satellite service (“FSS”) providers to share frequencies in the Ku-band with geostationary satellite orbit (“GSO”) FSS systems.¹ In order to promote and facilitate band sharing by GSO and NGSO systems, the Commission adopted a number of technical and operational limits relating to NGSO use of the band. PanAmSat seeks reconsideration of several elements of the R&O.

First, although the Commission required NGSO FSS licensees to demonstrate that their systems can meet certain “operational” and “additional operational” limits

¹ Prior to the R&O, GSO FSS systems were exclusive primary in the Ku-band. GSO satellite operators and end users have invested vast sums in these systems, and billions of users in the United States and around the world rely upon the communications services they support.

prior to being placed into service,² it held that these showings need not be made until 90 days prior to the initiation of service. The operational and additional operational limits are central to protecting GSO FSS systems from harmful interference. Without these limits • or if these limits are not subject to meaningful, effective enforcement • existing GSO systems, and the billions of customers who rely on the services they provide, will be put at risk.

As a practical matter, the rule adopted in the R&O, which allows NGSO licensees to bring their systems to within 90 days of becoming operational before they are required to demonstrate compliance with the applicable limits, will significantly undermine the Commission's enforcement authority. The Commission should, therefore, require applicants to demonstrate prior to licensing that they satisfy the additional operational limits, and should require each NGSO licensee to show compliance with the operational limits at the earliest possible date. It is essential that interested parties have an opportunity to review and comment upon these showings.

Second, PanAmSat asks that the Commission clarify and refine certain other aspects of its pre-operational and post-operational compliance procedures. In particular, PanAmSat seeks clarification or adjustment of confidence levels for sidelobe patterns, worst case test points, maps illustrating the geographic distribution of maximum EPFD_{down} levels, single entry validation limits, and the mechanisms for enforcing operational limits.

Third, the Commission should reconsider its determination that it will not require NGSO FSS system operators to demonstrate compliance with aggregate EPFD_{down} limits. Individual limits were developed to promote regulatory

² The "operational limits" specify the maximum levels of interference (defined in terms of EPFD) that an NGSO system would be permitted to cause to any GSO FSS earth station, at any time. Specific limits vary depending on the size of the GSO FSS earth station and are never to be exceeded by an NGSO system. The "additional operational limits" represent the maximum statistical interference potential (defined in terms of EPFD) that an NGSO system would be permitted during its lifetime over 100 % of the earth surface, assuming normal conditions.

certainty and to allocate burdens among NGSO licensees. In the end, however, the ability of GSO systems to operate co-frequency with NGSO systems will depend on the *aggregate* interference caused by all NGSO systems, not those of any single licensee. It is crucial, therefore, that the Commission impose aggregate EPFD_{down} limits.

Finally, the Commission should reconsider its decision to allow NGSO earth stations to use the 10.7-11.7 GHz band both for domestic and international services, but to retain the footnote NG104 restriction limiting GSO FSS systems to international applications. The international-only requirement for GSO FSS is outmoded in an era in which GSO FSS systems increasingly are being called upon to share their spectrum with other services and even to relinquish spectrum that was allocated on a primary basis for GSO FSS purposes worldwide.

DISCUSSION

I. The Commission Should Require A Demonstration Of Compliance With The Operational and Additional Operational limits At An Earlier Stage.

Even if NGSO systems operate within prescribed limits, both individually and in the aggregate, GSO systems will receive interference from them. If NGSO systems violate applicable limits, the level of interference that GSO FSS systems receive will be amplified. It is imperative, therefore, that the Commission take all steps necessary to ensure vigorous enforcement of all NGSO interference limits.

In the R&O, the Commission recognized that NGSO FSS licensees should be required to demonstrate that their systems meet the operational and additional operational limits prior to becoming operational: (1) to ensure that the system will be built in accordance with the Commission's rules; (2) to provide incumbent operators with assurance that they will not receive unacceptable interference; (3) to enable the Commission to make appropriate representations to the ITU; and (4) to reduce the

likelihood that remedial measures will be required to bring an operational system into compliance.³

Nonetheless, in implementing the required compliance showing, the Commission determined that NGSO FSS licensees need only provide the relevant compliance data 90 days prior to the initiation of service. That is, licensees will not have to provide the FCC with data purporting to demonstrate their compliance with critical band sharing limits until they have invested what may amount to billions of dollars in a system that is about to become operational. Moreover, there is no discussion of remedial steps that may be available to the Commission at that late date in the process. In effect, the Commission has established rules that it will be nearly powerless to enforce with any precision.

The Commission should reconsider this aspect of the R&O. The 90 day compliance review period established by the Commission is far too abbreviated. By the time an NGSO licensee is 90 days from initiation of service, system construction is virtually complete, customers may have contracted for service, and the Commission's flexibility to require system modifications or adjustments may be far more limited than at an earlier stage in the development of the system. For technical, practical, and even political reasons, therefore, the Commission will be powerless to correct all but the most egregious cases of non-compliance.⁴

To remedy this defect, the Commission should require demonstration of compliance with the operational and additional operational limits as early as possible. NGSO systems should not be licensed until the applicant can demonstrate compliance with the additional operational limits. Similarly, demonstrated compliance with the operational limits should be required as early in the construction phase as possible. If

³ R&O ¶ 96.

⁴ Cf. *Intelsat LLC*, FCC 00-287, ¶¶ 56-77 (2000) (granting waivers of the Commission's technical rules, among other reasons, because satellites were substantially constructed and the cost of

additional operational limit calculations and compliance testing are required and completed early in the development of the system, the Commission will have greater flexibility to enforce its rules with the necessary rigor and precision.

In addition, interested parties should have an opportunity to review and comment upon data filed by an NGSO FSS proponent purporting demonstrate compliance with the operational and additional operational limits. Such review is particularly important given the relatively indeterminate state of compliance testing methodologies, and the historic resistance of some NGSO operators to public disclosure of their test protocols.

II. The Commission Should Clarify And Refine Its Pre-Operational And Post-Operational Compliance Procedures.

A. Pre-Operational Compliance Procedures

Commission enforcement of the operational and additional operational limits is the single most important assurance that GSO FSS system operators have that band sharing can be made to work between NGSO and GSO systems in the Ku-band. For that reason, PanAmSat previously has provided a detailed discussion of the form the showings to be made by NGSO FSS systems should take.⁵

For the most part, PanAmSat believes that the Commission has established adequate pre-operational compliance criteria.⁶ The rules should, however, make clear that the NGSO antenna patterns should have a 99% confidence bound on the sidelobe levels over the life of the satellite. In addition, the R&O does not define the three worst

redesigning, remanufacturing, and reassembling them would amount to tens of millions of dollars).

⁵ See Letter to Magalie R. Salas, ET Docket No. 98-206 (Dec. 1999).

⁶ The Commission notes that it may choose to revisit the requirement for a detailed demonstration of compliance with operational and additional operational limits prior to an NGSO FSS systems becoming operational. R&O ¶ 96. In fact, however, it is unlikely that NGSO industry would develop in such a way as to make these requirements unnecessary. Instead, as experience is gained through actual operation of these systems, it should be easier to develop the compliance software, thereby easing the burden on the operators.

case test points within the United States and within each continent. In order to ensure that worst case test points are in fact chosen, potentially affected GSO FSS operators should be able to submit a number of test points located anywhere, within or outside of the U.S., for analysis.

Moreover, as suggested previously by PanAmSat, each NGSO applicant should be required to provide a demonstration consisting of a set of maps illustrating the geographic distribution of the maximum EPFD_{down} levels within the United States. Any given location on a map will show the maximum EPFD_{down} level that can occur at that location. Such presentations would allow GSO FSS operators to determine where their links will require additional protection margin. These maps should represent interference levels into GSO FSS earth stations serving specific target GSO FSS satellites, spaced in 2° increments across the visible GSO arc. The maps should show output maximum EPFD_{down} levels with a minimum resolution of 1° longitude by 1° latitude and should envelop all EPFD_{down} levels within that area. Each map should demonstrate that the EPFD_{down} levels are all below the 100% operational limit values.

With these modifications to the technical criteria, the substantive showing requirement described in the R&O would provide the Commission and GSO operators with sufficient data to evaluate properly whether NGSO systems are complying with the interference limits.

Although PanAmSat is in general agreement with the Commission's decision regarding domestic implementation of single-entry validation EPFD_{down} limits, the Commission has left open the possibility of licensing NGSO FSS systems before the ITU-BR has made its own determination of compliance with the validation limits. This could occur if, for example, an NGSO system passes its own version of validation software, but fails the ITU version. Such an approach would open the process up to abuse, mistake, and evasion. As PanAmSat has suggested in previous comments, NGSO FSS systems should not be licensed to begin operations within the United States,

or between the United States and any foreign point, until the ITU confirms and publishes that the applicant has met the validation mask requirement and the licensee has forwarded that determination to the Commission.

B. Post-Operational Compliance Procedures

In its comments, PanAmSat advocated the adoption of clear, rapid-response remedial procedures in the event an NGSO system is found to be the source of harmful interference. The Commission, however, declined to adopt such procedures, believing that the current rules provide an adequate remedy.⁷

In fact, although the current rules establish performance limits for NGSO systems, and the penalties that they will incur should the limits be exceeded, they provide no guidance concerning what constitutes the basis for a complaint and what actions must be followed in order to obtain relief. Given the nature of the interference environment, the fact that interference from an NGSO system can be of a statistical nature, and because the process of identifying and verifying sources of interference can be difficult and time consuming, fair and equitable remedial procedures are critically important.

Accordingly, the Commission should reconsider the issue of adopting post-operational enforcement procedures. Although there are numerous factors involved and there may be a wide variety of opinions regarding the appropriate level of Commission intervention when interference is found, the benefits of having an established remedial process far outweigh the costs of implementing such a process. To ease the drain on administrative resources, one possibility would be for the Commission to appoint a special task force comprised of representatives of interested parties to study the problem and propose solutions. In any event, without well-defined enforcement procedures, confusion may reign at times when certainty is most critical.

⁷ R&O ¶ 101.

III. The Commission Should Require Demonstrated Compliance With Aggregate EPFD_{down} limits.

The Commission recognizes in the R&O that it is the aggregate interference from all NGSO systems, and not the interference from any single NGSO system, that is most important to limit.⁸ Nonetheless, because of perceived difficulties relating to the measurement of aggregates and the treatment of foreign-licensed systems, the Commission declined to require demonstration of NGSO FSS compliance with aggregate EPFD_{down} limits. The Commission should reconsider that decision.

To begin with, the “difficulties” foreseen by the Commission relating to the measurement of aggregate interference have been overstated. In fact, with the exception of measurements of foreign-licensed systems, there is no practical impediment to requiring measured compliance by U.S. licensed systems with aggregate interference limits. Using the procedure described in the Chairman’s Report to the September 2000 ITU Study Group 4A (Document 4A/Temp/44), aggregate limit compliance may be determined by any of three methods, each with certain features to recommend it.

In any event, whether or not it is in fact “difficult” to measure compliance with aggregate EPFD_{down} limits at this time, the Commission’s current rules fail to meet the needs of either NGSO or GSO FSS system operators. As the Commission itself acknowledges in the R&O, the aggregate limits are precisely the limits that matter most in determining whether NGSO and GSO system operators can share the Ku-band. Indeed, the Commission cautions NGSO operators that it may, in the future, require demonstrated compliance even though it has declined to impose that requirement at this time.⁹ Thus, while leaving GSO FSS operators effectively without protection against aggregate interference, the decision creates significant regulatory uncertainty

⁸ R&O ¶ 106-07.

⁹ R&O ¶ 107.

for NGSO FSS applicants, which may find systems that seem to make operational sense today subject to additional compliance testing tomorrow.

Accordingly, the Commission should reconsider its current rules and require, at least with respect to applicants for U.S. authorizations, demonstrated compliance with the aggregate interference limits.

IV. The Commission Should Reconsider Its Decision To Retain Footnote NG104.

In the R&O, the Commission removed the “international only” requirement for NGSO FSS systems operating in the 10.7-11.7 band.¹⁰ The Commission refused, however, to eliminate footnote NG104 in the table of frequency allocations, which limits GSO FSS systems operating in the 10.7-11.7 GHz band to international applications. This decision was inequitable and unwise, and it should be reconsidered.

The restriction in footnote NG104 is outmoded in an era in which GSO FSS systems are being called upon to share their spectrum with other services. Indeed, introducing ubiquitous NGSO terminals in the standard Ku-band will put further pressure on GSO FSS systems, adding to their need to access the “extended” Ku-band at 10.7-11.7 GHz. Because of this increased congestion in the standard Ku-band, and in light of burgeoning demand for GSO FSS services, the availability of the extended Ku-band for GSO FSS operations is fast becoming essential.

The Commission’s uneven treatment of NGSO and GSO FSS systems using the extended Ku-band cannot be justified. The only support offered in the R&O for the decision to retain NG104 is the Commission’s fear that “a large number of GSO earth stations ... would likely be deployed” in the band if the restriction were eliminated.¹¹ If that were to happen, the Commission posits, it would inhibit the growth of terrestrial FS systems that use the band.

¹⁰ R&O ¶ 71.

¹¹ R&O ¶ 71.

There is no reason, however, that the Commission could not address these concerns equally well, or perhaps more directly, with other types of restrictions on GSO FSS earth stations in the band. For example, there are many GSO FSS applications that, like NGSO FSS gateway operations, involve a limited number of earth stations that can be individually coordinated. Permitting GSO FSS systems to provide such services domestically in the 10.7-11.7 GHz band would protect FS growth while allowing GSO system operators flexibility comparable to what the Commission now has afforded NGSO system operators.

CONCLUSION

For the reasons set forth herein, the Commission should reconsider the R&O and modify its decision as outlined above.

Respectfully submitted,

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