

BEFORE THE  
**Federal Communications Commission**  
WASHINGTON, D.C. 20554

In the Matter of )  
 )  
Request of EchoStar Satellite Corporation for ) RM-10767  
Amendment of the Commission's Rules to )  
Redesignate the 28.6-29.1 GHz (Earth-to-space) and )  
18.8-19.3 GHz (space-to-Earth) Bands to Allow )  
Geostationary Fixed-Satellite Service Operations )  
on a Co-Primary Basis )

To: The Commission

**COMMENTS OF NORTHROP GRUMMAN SPACE TECHNOLOGY AND MISSION  
SYSTEMS CORPORATION**

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## SUMMARY

Northrop Grumman Space Technology and Mission Systems Corporation (“Northrop Grumman”), by its attorneys, hereby opposes the petition of EchoStar Satellite Corporation (“EchoStar”) for the initiation of a rulemaking proceeding to revisit and reverse the Commission’s determinations that the 18.8-19.3 GHz and 28.6-29.1 GHz bands are to be available for primary use exclusively by non-geostationary orbit (“non-GSO”) systems operating in the fixed-satellite service (“FSS”). EchoStar has failed to provide a basis for the rulemaking proceeding it seeks, and its Petition should therefore be denied.

EchoStar’s oft-repeated and disparaging assertion that there is no prospect for deployment of non-GSO FSS systems “to serve the United States anytime soon,” is both incorrect and immaterial. It is incorrect because Northrop Grumman and others have been aggressively pursuing the establishment of a non-GSO FSS system in the 18.8-19.3 GHz and 28.6-29.1 GHz bands since December 1997 and, following the release of the Commission’s second-round 20/30 GHz band (“Ka-band”) non-GSO FSS service rules decision in July of this year, licensing actions finally appear imminent. It is immaterial because EchoStar fails to demonstrate or even claim that the GSO FSS industry needs more than the 1,000 MHz of primary Ka-band spectrum in each direction that the Commission currently provides for the use of geostationary-orbit (“GSO”) FSS networks, and because there is no shortage of orbital locations from which a putative GSO FSS operator can serve the continental United States.

In 1996, when the Ka-band band plan was first adopted, the Commission considered and rejected the same request EchoStar now makes for co-primary GSO FSS access to the 18.8-19.3 GHz and 28.6-29.1 GHz bands. The Commission’s conclusion that GSO FSS networks and

most types of non-GSO FSS systems are unable to operate on a co-primary, co-frequency basis remains unchanged.

EchoStar's ostensibly "limited" rule change would, if implemented, amount to a complete reversal of the Commission's Ka-band policy, and would effectively preclude most types of non-GSO FSS use of the Ka-band. Meaningful intersystem coordination between GSO FSS networks and non-GSO FSS systems is generally not achievable, and would require non-GSO FSS systems to add satellites at great cost or substantially restrict capacity in order to "fit in" with any prior-filed GSO networks. That is not what co-primary operation is supposed to be about.

Finally, EchoStar's reliance on the development of equivalent power flux-density ("EPFD") limits for non-GSO FSS systems in other parts of Ka-band and in other bands as a mechanism to implement the co-primary status it claims to seek is misleading and misplaced. These EPFD limits quantify the international obligation on non-GSO FSS systems not to cause unacceptable interference to GSO FSS networks, and are inapplicable in a co-primary environment. Furthermore, EPFD limits, even if they could be "burden-adjusted" for application in a co-primary environment, do not address the case of interference from GSO FSS networks to non-GSO FSS systems.

Although EchoStar's Petition for the commencement of a rulemaking proceeding to make an additional 2 x 500 MHz segment of Ka-band available for primary GSO FSS use must thus be rejected, Northrop Grumman indicates that it could support a properly-crafted regulation that allows GSO FSS operators to use the 18.8-19.3 GHz and 28.6-29.1 GHz bands on a truly secondary basis. Such GSO FSS use of the bands would be on the conditions that: (1) no harmful interference is caused to non-GSO FSS systems; (2) that non-GSO FSS systems have no

obligation to protect in any way GSO FSS use of the bands; and (3) that GSO FSS use of the bands would not impose any constraints or burdens on future non-GSO use of the bands. The Commission would also have to adopt requirements that enable it to confirm the satisfaction of these conditions. Such secondary authority would allow for the maximization of the efficient use of the orbital-spectrum resource, but not disturb the Commission policy determinations that led to the establishment of the 20/30 GHz band plan. Those determinations were sound when they were first made, and they remain sound today.

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Northrop Grumman Space Technology and Mission Systems Corporation ("Northrop Grumman"), by its attorneys and pursuant to Section 1.405 of the Commission's Rules, 47 C.F.R. § 1.405, hereby provides its comments in opposition to the above-captioned petition of EchoStar Satellite Corporation ("EchoStar") for the initiation of a new rulemaking proceeding. For the reasons provided below, Northrop Grumman calls upon the Commission to reject EchoStar's proposal to change the Commission's rules and policies by removing the preclusion against the use of the 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) bands by geostationary satellite orbit ("GSO") satellites in the fixed-satellite service ("FSS") on a primary or co-primary basis.<sup>1</sup> Under the Commission's rules and policies, primary-basis use of the frequency bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) is properly limited to non-geostationary satellite orbit ("non-GSO") FSS systems.

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<sup>1</sup> See Petition of EchoStar Satellite Corporation for Rule Making to Redesignate the Non-Geostationary Fixed-Satellite Service Bands to Allow Geostationary Fixed-Satellite Service Operations on a Co-Primary Basis (filed August 27, 2003) ("EchoStar Petition").

## **I. INTRODUCTION**

EchoStar's Petition is fundamentally flawed in multiple respects. EchoStar pursues the false premise that there is no prospect for deployment of non-GSO FSS systems "to serve the United States anytime soon;"<sup>2</sup> it fails to demonstrate or even claim that the GSO FSS industry needs more than 1,000 MHz of primary spectrum in each direction in the 20/30 GHz band ("Ka-band") frequency range; it displays a surprising lack of understanding as to the international regime that has been established in other portions of the 20/30 GHz bands for sharing in the FSS between GSO networks and non-GSO systems; its proposals are internally inconsistent and thus are insufficiently clear to serve as the basis for a rulemaking proceeding; and it obscures the fact that its Petition seeks to reverse outright a seminal decision the Commission made just seven years ago to develop a band-segmentation plan that can accommodate all of the terrestrial and satellite communication systems that operate or wish to operate in the 2.5 GHz of spectrum in each direction that is available for commercial FSS use at 20/30 GHz. The Commission made the correct policy decision seven years ago when it decided to provide an opportunity for non-GSO FSS networks to gain the toehold in the 20/30 GHz bands that they would require to establish successful business operations, and companies such as Northrop Grumman – notwithstanding the demise of Teledesic Corporation's ambitious non-GSO FSS system proposal – acted in reliance on this determination and have been endeavoring for all of this time to do just that. EchoStar provides no basis for revisiting the Ka-band band plan.

Although EchoStar's Petition must be denied or dismissed for any of the foregoing reasons, Northrop Grumman emphasizes that it would not oppose a Commission determination, in whatever forum is appropriate, that GSO FSS networks may use the 18.8-19.3 GHz and 28.6-

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<sup>2</sup> EchoStar Petition at 1.

29.1 GHz bands on a truly secondary basis to non-GSO FSS networks. In other words, GSO FSS use of the bands would be on the conditions that: (1) no harmful interference is caused to non-GSO FSS systems; (2) that non-GSO FSS systems have no obligation to protect in any way GSO FSS use of the bands; and (3) that GSO FSS use of the bands would not impose any constraints or burdens on future non-GSO use of the bands. There presently is 1000 MHz of 20/30 GHz-band FSS spectrum in each direction available for commercial GSO FSS use on a primary basis (at least with respect to non-GSO FSS systems), and no paucity of orbital locations from which that spectrum may be used to serve the United States. Addition of secondary authority to GSO FSS networks in the 18.8-19.3 GHz and 28.6-29.1 GHz band, subject to a demonstration that such operation is technical feasible, would allow for the maximization of the efficient use of the orbital-spectrum resource, but not disturb the Commission policy determinations that led to the establishment of the 20/30 GHz band plan. Those determinations were sound when first made, and remain sound today.

## II. DISCUSSION

### A. **EchoStar Is Wrong About The State Of Non-GSO FSS System Development, And Ignores The Fact That There Is No Shortage Of Ka-Band Spectrum Or Orbital Locations Available Today In The United States And Elsewhere For Ka-Band GSO FSS Networks.**

Throughout its Petition, EchoStar makes one assertion the linchpin of its argument:

According to EchoStar, “it is unlikely that an NGSO FSS system will be deployed to serve the United States anytime soon.”<sup>3</sup> Over and over, EchoStar plays variations on that theme,<sup>4</sup> ultimately leading to its argument that the Commission has the responsibility to take steps to

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<sup>3</sup> *Id.* at 1.

<sup>4</sup> *See, e.g., id.* at 10 (“it is unclear whether the three remaining applicants will actually be able to go through with the implementation of their planned systems”).

improve the prospects of prompt use of the spectrum as part of its acknowledged duty to promote the efficient use of this scarce public resource.<sup>5</sup>

The mere assertion of such a specious and disparaging claim robs EchoStar's Petition of any credibility. The claim is palpably false. What EchoStar's claim is not, however, is lacking in self interest or related in any meaningful way to the Commission's policy of promoting the efficient use of the radiofrequency spectrum. EchoStar has filed a series of applications concurrently with its Petition in which it seeks to gain co-primary access to the non-GSO spectrum at Ka-band – a fact that curiously goes unmentioned in EchoStar's Petition.<sup>6</sup> While having non-GSOs “out of the way” would expedite the argument EchoStar wants to advance, and ostensibly pave the way for EchoStar's expansion plans to proceed, there is a substantial policy and practicality gap between EchoStar's imagined non-GSO-free world on the one hand, and the reality established over the past decade by the Commission, U.S. delegations to the ITU, and multiple companies pursuing Ka-band non-GSO FSS business models on the other.

**1. EchoStar's “No Deployment Soon” Argument is False and Speculative.**

Northrop Grumman, @Contact, and even SkyBridge II have had non-GSO FSS applications for authority to launch and operate non-GSO FSS systems in the 18.8-19.3 GHz and 28.6-29.1 GHz bands pending before the Commission since December 1997.<sup>7</sup> All of these companies have been vigorous in their prosecution – both before the FCC and in the

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<sup>5</sup> *Id.*

<sup>6</sup> See Applications of EchoStar Corporation, File Nos. SAT-LOA-20030827-00180/00182/00185/0187 (“EchoStar Applications”). On October 24, 2003, Northrop Grumman filed a Consolidated Petition to Dismiss these applications as not in conformance with Commission rules and policies. See Northrop Grumman Consolidated Petition to Dismiss, File Nos. SAT-LOA-20030827-00180, et. seq. (filed October 24, 2003).

<sup>7</sup> See Application of Northrop Grumman Corporation, File No. SAT-AMD-19971222-00219; Application of @Contact, LLC (“@Contact”), File No. SAT-LOA-19971222-00222; Application of SkyBridge II, LLC (“SkyBridge II”), File No. SAT-LOA-19971222-00221.

International Telecommunication Union (“ITU”) – of these applications and system proposals for that entire time. With the active involvement of all three companies, the Commission has just concluded an 18-month-long rulemaking proceeding by adopting service rules that will enable these and perhaps other non-GSO FSS systems to successfully share the Ka-band non-GSO FSS spectrum.<sup>8</sup> The Commission has called for the submission of conforming amendments early next month, and licensing of the qualified applicants is expected to occur by early next year.

Contrary to EchoStar’s repeated speculations, it must be presumed, as a matter of policy and by rule, that the deployment plans of the three remaining non-GSO FSS system applicants are proceeding apace, and that the systems they propose will be “deployed soon.” In other words, once the licenses are issued, the applicants will be presumptively on track for deployment, according to a milestone schedule that will be established in their licenses, as long as the conditions of the licenses are satisfied. EchoStar’s three-for-one indictment of the prospects for eventual system deployment for all of the Ka-band applicants, which is based solely on a negative trade press article about the funding woes of a non-GSO FSS system that is proposed for the 10/12 GHz bands by an affiliate of Ka-band non-GSO applicant SkyBridge II,<sup>9</sup> is singularly ineffective and shamelessly self serving.<sup>10</sup>

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<sup>8</sup> *Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ka-band*, FCC 03-137, *Report and Order* (released July 9, 2003) (“*Ka-band Non-GSO Service Rules II*”).

<sup>9</sup> See EchoStar Petition at 10 n.24 . EchoStar is taken enough with this citation to repeat it verbatim later in its Petition. *Id.* at 17 n.39.

<sup>10</sup> EchoStar itself has sounded many of these same economic themes in conjunction with a 2002 request by an EchoStar subsidiary for a three-year extension of the implementation milestones for the Ka-band GSO FSS satellite at 113° W.L. See Request of VisionStar, Inc. for Extension of Time to Complete Construction and to Launch Fixed-Satellite Service Satellite, File No. SAT-MOD-20020430-00075, at 3 (filed April 30, 2002) (milestone extension request and indefinite delay in payments to satellite manufacturer were “a result of the dramatic and unforeseen change in the financial community’s willingness to fund substantial additional investment in any Ka-band satellite project”).

**2. EchoStar Does Not Claim – And Indeed Cannot Claim – That 1,000 MHz Of Co-Primary Ka-Band Spectrum In Each Direction Is Insufficient For The GSO FSS.**

One of the “unanswered questions” from EchoStar’s Petition and its associated bevy of applications is why EchoStar is even bothering to seek a modification of the Commission’s recent decision (made just seven years ago) to designate a 2 x 500 MHz segment of the Ka-band frequencies for use by non-GSO FSS systems. After all, GSO FSS operators have the ability to use 1,000 MHz of Ka-band GSO spectrum in each direction on a primary basis today, and all of that spectrum is now available for use on a blanket-licensed basis. *See* 47 C.F.R. § 25.138.

EchoStar’s Petition provides no obvious clues as to motive. The only statement in the whole filing on this point is the throwaway assertion that “the requested action will mitigate the bandwidth constraint that will otherwise hamper the rollout of satellite broadband services that will reach remote rural areas and compete with cable modems and DSL in more urban areas.”<sup>11</sup> Just last year, in an order aligning the GSO FSS spectrum in the 17.7-20.2 GHz FSS downlink band with the 1,000 MHz previously allocated to the GSO FSS in the 27.5-30 GHz uplink band, the Commission stated that “[t]he 1000 megahertz of exclusively allocated GSO FSS downlink spectrum brings the GSO FSS downlink band into parity with the 1000 megahertz of uplink spectrum in the 28 GHz band plan already allocated for this service and, consistent with our prior findings, provides a reasonable opportunity for GSO FSS licensees to operate the type of satellite service proposed.”<sup>12</sup>

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<sup>11</sup> EchoStar Petition at 2.

<sup>12</sup> *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, 17 FCC Rcd 24248, ¶ 12 (2002).

EchoStar did not seek reconsideration of or otherwise take issue with this recent Commission pronouncement. It most certainly was incumbent upon EchoStar to show in its Petition why 1,000 MHz of GSO FSS primary spectrum in each direction is suddenly insufficient, and EchoStar has not even attempted to do so.

Moreover, there is no shortage of orbital locations from which EchoStar or any other putative GSO FSS operator can seek to provide Ka-band service to the continental United States (“CONUS”). In the first and second Ka-band GSO FSS processing rounds, a total of 83 satellites were licensed or covered by letters of intent.<sup>13</sup> As of August 12, 2003, fully 48 of those licenses – nearly 60 percent of all authorizations issued – had either been voluntarily returned to the Commission or were recaptured by the Commission through the operation of its implementation milestones.<sup>14</sup> The Commission’s August 12, 2003 public notice, which was issued just days before EchoStar filed its Petition, identified at least 15 CONUS-serving orbital locations as available for application.<sup>15</sup>

Clearly, then, bandwidth constraints and lack of available orbital locations are not the motivating factors behind EchoStar’s filing. If EchoStar’s intention was somehow to capture the remaining spectrum that is of even potential utility for GSO FSS operations at orbital locations

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<sup>13</sup> Public Notice, Assignment of Orbital Locations to Space Stations in the Ka-band, DA 97-2654 (Dec. 19, 1997) (“Round I Reassignment Order”); *Second Round Assignment of Geostationary Satellite Orbit Locations to Fixed-Satellite Service Space Stations in the Ka-band*, Order, 16 FCC Rcd 14389 (Int’l. Bur. 2001).

<sup>14</sup> Public Notice, Report No. SPB-189, International Bureau Explains Procedure for Ka-band GSO-Like Satellite Applications, DA 03-2630 (released Aug. 12, 2003). Four of the licenses listed in the Commission’s notice were voluntarily returned earlier this year by Northrop Grumman, which had indicated at the time that its surrender of licenses stemmed in part from the rapidly-approaching ITU deadlines, a comprehensive evaluation of the short-term business prospects for the system that was conducted by Northrop Grumman after it acquired original licensee TRW Inc. in December 2002, and the anticipated ability to reapply and quickly be licensed anew following completion of the Commission’s then-pending space station licensing reform rulemaking proceeding. Northrop Grumman reiterated its intent to continue to prosecute its remaining pending applications, including its application for a non-GSO FSS system to operate in the 18.8-19.3 GHz and 28.6-29.1 GHz bands. *See* Letter dated March 5, 2003, from counsel for Northrop Grumman to the Commission in File No. SAT-AMD-19971222-00229.

<sup>15</sup> Public Notice, Report No. Report No. SPB-189, DA 03-2630, slip op. at Attachment.

for which EchoStar or its competitors hold current rights or interests, it can accomplish this objective with a purely secondary authorization. Operation on such a basis with respect to non-GSO FSS systems would insulate EchoStar from any future attempts by GSO FSS networks to access the United States from the subject bands, and such operation could be consistent with Commission policy determinations and rules and could be accomplished under the current international regime. In contrast, and as will be explained below, the conversion of the primary non-GSO FSS bands to bands where non-GSO FSS use is co-primary with GSO FSS networks will dramatically alter the landscape that was so carefully sculpted by the Commission, and will prevent the implementation of the non-GSO/non-GSO sharing plan the Commission just adopted in *Ka-band Non-GSO Service Rules II*. Indeed, some types of non-GSO FSS systems could be forever precluded from operating in the bands.

In short, EchoStar has not demonstrated a legitimate need for 500 MHz of additional co-primary spectrum in each direction for use by GSO FSS Ka-band networks. EchoStar's Petition should thus not be allowed to mature into a rulemaking proceeding.

**B. The Commission Should Not Consider Reversing Its Ka-Band Band Plan.**

The Commission's omnibus band plan for the 27.5-30 GHz and 17.7-20.2 GHz bands initially took three years and a negotiated rulemaking proceeding to develop, and involved myriad constituent interests from government and industry, from the terrestrial and the satellite services, and from the non-GSO and GSO communities. As the Commission recapitulated in its recent *Ka-Band Non-GSO Service Rules II* decision, "[t]he Commission has worked for more than a decade on various aspects of a band-segmentation plan that can accommodate all the terrestrial and satellite communication systems operating in the Ka-Band frequencies, including

those at issue here.”<sup>16</sup> The ink on the July 2003 Ka-band non-GSO service rules decision was not even dry, and the item had not even been published in the Federal Register, before EchoStar was at the Commission with its Petition to eviscerate the regime the Commission and private industry have worked for ten years to create.

Northrop Grumman reminds the Commission that non-GSO FSS systems, while able to serve most of the same marketplace objectives that GSO FSS networks serve, offer some unique considerations. For example, by virtue of their orbital characteristics and system architectures, non-GSO systems are able to serve populations and areas (e.g., rural and urban communities that lack southward-looking lines of sight, and Alaska and other regions of the world at high latitudes) that are poorly served, if they are served at all, by satellites in the GSO. To be consistent with many of its recent regulatory initiatives in other areas, the Commission needs to maintain this prospect for diversity and universal service that is offered only by non-GSO systems. What EchoStar is requesting would inevitably reduce provider diversity in a way that is inconsistent with the Commission’s spectrum management policies.

Now also is not the time for the Commission to contemplate abandoning its vision for the successful, multi-service use of the commercial frequencies at 20/30 GHz. A stable, workable band plan has been established, and those few entities in the early rounds with viable, measured business plans are beginning to approach the entry-into-service point. Patience on the part of the Commission is called for here, not rashness of the sort advocated by EchoStar.

Just ten years ago, the only commercial proposals for Ka-band frequencies were those made by non-GSO mobile-satellite service applicants that sought to use part of the spectrum for feeder link operations. The National Aeronautics and Space Administration was running an

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<sup>16</sup> *Ka-Band Non-GSO Service Rules II*, FCC 03-137, slip op. at ¶ 6 (footnote omitted).

experimental/developmental program in the bands primarily to demonstrate to the world the feasibility of using such “high” frequency bands on a commercial basis. The failure ratio of the earliest Ka-band licensees – be they GSO FSS, non-GSO FSS or local multipoint distribution service – will inevitably be high. In the Ka-band, however, as in so many other new services in so many other bands in the past, success will flow to those who learn not to repeat the mistakes made by early entrants with overambitious proposals or insufficiently-refined business plans.

For all of the wrong reasons, and none of the right ones, EchoStar is calling for the Commission to abandon its sage and equitable solution for the Ka-band band plan, and terminate the non-GSO FSS at Ka-band. The unfortunate demise of the sole first-round Ka-band non-GSO FSS licensee is no more of a reason to overhaul the band plan than are the demises of the more than forty GSO FSS licenses that have been returned or canceled to date. Success, if it is to come, will arrive on the back of a regulatory scheme that is stable, consistent, and supported by the Commission. Such perseverance is what will lead to spectrum efficiency in the long run, not a change in rules that cuts off rights and expectations of applicants such as Northrop Grumman who have helped establish the Commission’s Ka-band policies and who have relied for nearly six years on having the opportunity to carry out those policies.

**C. The Rule Changes Advocated By EchoStar Amount To A Fundamental Reversal Of The Commission’s Ka-Band Policy, And Must Not Be Further Considered.**

The fallacy of EchoStar’s principal argument -- “if the Commission does not open up the non-GSO Ka-bands to co-primary use, they won’t be used at all” – has already been exposed. What is left of EchoStar’s Petition is a series of unsupported assertions regarding the impact of its proposal that do not accurately reflect the current international or domestic situations in the

band, and that grossly understate the effect that the “limited” change EchoStar seeks will have on the ability of non-GSO FSS systems to use the 18.8-19.3 GHz and 28.6-29.1 GHz bands.

Internationally, the United States was the champion of a proposal that 500 MHz of spectrum in each direction at Ka-band be made available for use on a global basis by non-GSO FSS systems under a regulatory regime that removed from non-GSO systems the extant obligation of No. 22.2 of the ITU Radio Regulations for non-GSO systems not to cause unacceptable interference to co-frequency GSO FSS networks.<sup>17</sup> This was accomplished over the course of two ITU World Radiocommunication Conferences, in 1995 and 1997. However, while non-GSO FSS systems and GSO FSS networks were placed on an equal regulatory footing in the 18.8-19.3 GHz and 28.6-29.1 GHz bands in Article 5 of the ITU Radio Regulations – i.e., GSO networks and non-GSO systems would have to coordinate with one another as equals under the provisions of Section II of Article 9 of the ITU Radio Regulations, using a queue established by the date of receipt by the ITU of coordination materials – this regulatory scheme does not address the feasibility of achieving successful coordination between GSO networks and non-GSO systems. In fact, the principal complaint within the international community about the removal of ITU Radio Regulation No. 22.2 from the 18.8-19.3 GHz and 28.6-29.1 GHz bands, and its replacement with the procedural provisions of Section II of Article 9, was the expectation that a single low-Earth orbit non-GSO FSS system with a position at the head of the coordination

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<sup>17</sup> Today, ITU Radio Regulation No. 22.2 (the successor to Radio Regulation No. 2613 that is discussed in EchoStar’s Petition), provides in pertinent part as follows: “Non-geostationary-satellite systems shall not cause unacceptable interference to geostationary-satellite systems in the fixed-satellite service and the broadcasting-satellite service operating in accordance with these Regulations.” Unacceptable interference is defined indirectly in the Radio Regulations as a level of interference that is greater than the interference level associated with power limits, and exceeds as well a level of interference (accepted interference) that is fixed by agreement between concerned administrations using relevant ITU recommendations as a guide. *See* ITU Radio Regulation Nos. 1.168, 1.167, and A.22.1.

queue would effectively preclude all later GSO use of the band, as the later GSO filers would be unable successfully to coordinate with the non-GSO FSS system.

The Commission, in its 1996 decision adopting the band-segmentation plan for the 27.5-30 GHz band, explicitly recognized this to be the case. It stated that, “we cannot conclude the co-frequency sharing is possible between GSO/FSS systems and NGSO/FSS systems and therefore a separate band designation is warranted.”<sup>18</sup> Nothing has changed from a technical standpoint since 1996; most types of non-GSO FSS systems will not be able to operate on a co-primary basis with GSO FSS networks at Ka-band.<sup>19</sup>

For this reason, EchoStar’s assertion that removal of footnote NG 165<sup>20</sup> from Section 2.106 of the Commission’s Rules would place non-GSOs and GSOs on an equal footing and “simply return them to the position contemplated in the international rules,”<sup>21</sup> is misleading.

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<sup>18</sup> *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission’s Rules to Redesignate the 17.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Services and for Fixed Satellite Services*, 11 FCC Rcd 19005, 19030 (¶ 59) (footnote omitted) (1996) (“*Ka-Band Allocation Order*”).

<sup>19</sup> EchoStar incorrectly asserts that the adoption of equivalent power flux density (“EPFD”) limits that occurred in other portions of Ka-band at the ITU’s 2000 World Radiocommunication Conference show that co-primary operation between non-GSO FSS systems and GSO FSS networks is now possible in the 18.8-19.3 GHz and 28.6-29.1 GHz bands. EchoStar Petition at 13-15. EchoStar is mixing apples and oranges. The EPFD limits to which it refers are a quantification of No. 22.2 of the ITU Radio Regulations, which obligates non-GSO FSS systems not to cause unacceptable interference to GSO FSS networks, and thus do not represent sharing in any kind of co-equal sense. There are no known system proposals in the U.S. for non-GSO FSS operation under the repressive EPFD limit regime in Ka-band, and there is an effort underway internationally, led by Japan, to have the EPFD limits relaxed on the ground that they prevent even normally GSO-friendly highly-elliptical orbit non-GSO FSS systems from operating. *See* Final Acts of the ITU 2003 World Radiocommunication Conference at Resolution 140 (WRC-03). Northrop Grumman fully addresses EchoStar’s misleading argument about the effect of EPFD limits in Section II.D, below.

<sup>20</sup> NG 165 is the footnote in Section 2.106 of the Commission’s Rules, 47 C.F.R. § 2.106, that implements the Commission’s decision to limit use of the 18.8-19.3 GHz band to non-GSO FSS systems.

<sup>21</sup> EchoStar Petition at 7.

Having “the usual coordination rights”<sup>22</sup> is meaningless if coordination cannot be successfully achieved.<sup>23</sup>

Thus, what EchoStar is proposing is not a domestic rule change that is “limited in scope;”<sup>24</sup> it is proposing an outright reversal of the Commission’s policy to provide a 2 x 500 MHz portion of the Ka-band FSS frequencies for use by non-GSO FSS systems. EchoStar mentions, but totally fails to counter, the fact that in the *Ka-Band Allocation Order*, the Commission explicitly considered and rejected a proposal to accord GSO FSS networks co-primary status in the 18.8-19.3 GHz and 28.6-29.1 GHz bands.<sup>25</sup>

Just as later-filed GSO FSS networks would be unable to coordinate with a non-GSO FSS system at the head of the queue, many types of later-filed non-GSO FSS systems would be unable to coordinate with previously-filed GSO FSS networks. The same difficulties that would be experienced internationally under the formal coordination process in Section II of Article 9 of the ITU Radio Regulations would be experienced domestically under the operation of the Commission’s new first-come, first-served approach if GSO FSS networks were elevated to co-primary status with non-GSO FSS networks in the 18.8-19.3 GHz and 28.6-29.1 GHz bands. Once the Commission reaches a GSO FSS network application in the International Bureau

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<sup>22</sup> *Id.* at 8.

<sup>23</sup> EchoStar acknowledges as much later in its Petition, when it suggests that the need for future reallocation of the sharing burdens between GSO and non-GSO FSS systems may be moot if GSO networks have date priority over non-GSO FSS systems in the bands. *Id.* at 15. What EchoStar means is that if a GSO FSS network gains date priority, most types of non-GSO FSS systems that would be obliged to coordinate with that GSO FSS network under Section II of Article 9 would not be able successfully to do so.

<sup>24</sup> *Id.*

<sup>25</sup> See EchoStar Petition at 12. In the *Ka-Band Allocation Order*, the Commission concluded that because non-GSO FSS systems operate under the handicap of what is now ITU Radio Regulation No. 22.2 in the majority of the FSS bands at 20/30 GHz, and thus GSO FSS networks in those bands would have no incentive to accommodate non-GSO FSS interference, it was appropriate to designate spectrum for non-GSO FSS use where non-GSOs would not have to be incentivized to resolve interference problems with co-frequency GSO networks. *Ka-Band Allocation Order*, 11 FCC Rcd at 19031.

Queue Report, most, if not all later-filed non-GSO FSS systems seeking to access the bands would have to be dismissed as mutually exclusive.

Under the current regime, where non-GSO FSS systems alone are primary, a new non-GSO FSS system application filed in the future would be able to employ the interference-sharing scheme the Commission established just three months ago in its *Ka-Band Non-GSO Service Rules II* decision. Under the regime desired by EchoStar, the Commission's band-sharing scheme would fall apart, as the burdens on non-GSO FSS systems would become potentially overwhelming. Non-GSO FSS systems would have to add satellites at great monetary cost and/or shed capacity in an effort to avoid interference to and from GSO FSS satellites. Particularly for GSO FSS networks with small terminals, the data loss (i.e., the reduction in system capacity) for non-GSO FSS systems would be substantial, as the interference-avoidance angles for such systems would have to be quite large due to the slow roll-off of the GSO earth terminals.

Although the rule changes EchoStar seeks are "simple" changes that are administratively easy to implement, their effect on the viability of the non-GSO FSS service at Ka-band would be profoundly negative. EchoStar does not, and indeed cannot, show that GSO FSS networks would be able successfully to operate on a co-primary basis with non-GSO FSS systems in the 18.8-19.3 GHz and 28.6-29.1 GHz bands. The Commission, which rejected the identical proposal in 1996, should not consider EchoStar's grossly-belated petition for reconsideration any further.

**D. EchoStar's Reliance On The Development Of EPFD Limits On Non-GSO FSS Systems In The GSO Portions of Ka-band And In The FSS Bands At 10/12 GHz Is Misplaced; The EPFD Limits Provide No Support whatsoever For The Action EchoStar Urges The Commission To Take.**

There is absolutely no merit to EchoStar's argument that the development of EPFD limits that apply to non-GSO FSS networks in the 10/12 GHz bands and in the portions of the Ka-band FSS spectrum other than the 2 x 500 MHz segments that are domestically available for exclusive non-GSO FSS use "answer dispositively" the question of whether GSO FSS networks and non-GSO FSS systems can operate successfully on a co-primary basis.<sup>26</sup> EchoStar is either misinformed about what the ITU has done with its adoption of EPFD limits, or it is knowingly trying to mislead the Commission. Either way, its argument fails.

As explained in Section II.C above, the Commission set aside the 18.8-19.3 GHz and 28.6-29.1 GHz bands for non-GSO FSS use on a co-primary basis, free from the "handicap" of ITU Radio Regulation No. 22.2 (and the obligation thereunder on non-GSO FSS systems not to cause unacceptable interference to GSO FSS networks). In other FSS bands, including the remaining portions of the Ka-band FSS frequencies, ITU Radio Regulation No. 22.2 continues to apply. Following the 1995 World Radiocommunication Conference, where No. 22.2 was removed or identified for potential removal from the 18.8-19.3 GHz and 28.6-29.1 GHz bands, entities dissatisfied with the prospect of co-equal status for non-GSO FSS systems in FSS bands, and the attendant dismal prospects for successful co-frequency coordination under Section II of Article 9 of the ITU Radio Regulations, began an effort within the ITU processes to quantify in the form of power limits the obligation of non-GSO FSS systems under No. 22.2. The result was the adoption of EPFD limits at the 2000 World Radiocommunication Conference for most Ka-

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<sup>26</sup> EchoStar Petition at 13-15.

band frequencies other than the 2 x 500 MHz band where No. 22.2 does not apply and GSO FSS and non-GSO FSS operations are co-primary.

The EPFD limits, many of which have been incorporated into the Commission's Rules, codify and quantify the obligation on non-GSO FSS systems not to cause unacceptable interference to GSO FSS networks.<sup>27</sup> In other words, they embody the very "handicap" the Commission was avoiding when it created the non-GSO FSS bands in its *Ka-Band Allocation Order*. To the extent that the EPFD limits may be said to protect GSO FSS systems "without placing undue constraints" on non-GSO FSS systems,<sup>28</sup> the determination of whether constraints on non-GSO FSS systems are undue must necessarily be made by assessing whether the particular constraint is appropriate for placement on systems that have an obligation not to cause unacceptable interference. As such, the EPFD limits that have been adopted over the last few years in the ITU are not constraints that can be in any way found appropriate for application to co-primary non-GSO FSS systems or provide a foundation for the development of domestic rules.<sup>29</sup> Moreover, even if some kind of EPFD limit on non-GSO FSS systems that would quantify "co-primary basis operation," could theoretically be developed, there is nothing in the ITU literature to this point that could be used as a basis for assuring that non-GSO FSS systems

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<sup>27</sup> If a non-GSO FSS system in these bands demonstrates compliance with the EPFD limits, it is deemed not to be causing unacceptable interference to a GSO FSS network. No agreement between administrations under No. A.22.1 and No. 1.68 of the ITU Radio Regulations is required, and the GSO FSS network operator is relieved of the uncertainty that was associated with having to wait for actual interference to occur before complaining about a potentially unenforceable violation of No. 22.2 to the offending administration.

<sup>28</sup> EchoStar Petition at 13 (citation omitted).

<sup>29</sup> Notwithstanding the implication to the contrary urged by EchoStar (*see id.* at 15-16), this situation applies for the 10/12 GHz band EPFD limits, as well as those in Ka-band frequencies where No. 22.2 applies. ITU Radio Regulation No. 22.2 applies in the 10/12 GHz FSS bands, and non-GSO FSS systems have had to accept many undesirable design constraints – with significant cost penalties in terms of operational capabilities and space segment hardware requirements – in order to show that they can comply with the EPFD criteria that quantify the regulation's "no unacceptable interference" obligation. Moreover, the ITU regulations provide little if anything in the way of protection to the non-GSO FSS from co-frequency GSO FSS emissions.

would be adequately or otherwise protected from GSO FSS emissions. This too is a fundamental shortcoming of the approach advocated by EchoStar.

These are no mere “academic” shortcomings. EchoStar suggests that the Commission conduct a further rulemaking proceeding (apparently beyond the rulemaking proceeding that is the subject of EchoStar’s Petition) to address the burden-sharing aspects of the co-primary GSO/non-GSO relationship EchoStar seeks in the 18.8-19.3 GHz and 28.6-29.1 GHz bands.<sup>30</sup> Northrop Grumman has been pursuing a primary non-GSO FSS license for nearly six years; EchoStar has been pursuing a co-primary allocation for a mere six weeks. EchoStar’s suggestion that non-GSO FSS interests wait a further indefinite period of time for the resolution of critical spectrum-access issues stemming from the possible introduction of co-primary GSO FSS networks into the bands is patently unacceptable.

In short, EchoStar’s reliance on the development of EPFD limits on non-GSO FSS systems is misplaced. These limits quantify the very handicap the Commission established non-GSO FSS primacy to avoid; their adaptation for application in a co-primary sharing situation is not likely to be possible and would still leave unaddressed the protection of non-GSO FSS systems from GSO FSS emissions; and the time it would take to resolve such issues would only reduce the likelihood that non-GSO FSS systems could be put into place before some GSO FSS operator seizes the bands and forever precludes anything but secondary-type non-GSO FSS use. The EPFD experience most certainly does not provide a foundation for the advancement by the Commission of the flawed rulemaking proposal EchoStar has made.

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<sup>30</sup> *Id.* at 15.

**E. Northrop Grumman Could Support A Properly-Crafted Regulation That Allows GSO FSS Operators To Use The 18.8-19.3 GHz and 28.6-29.1 GHz Bands On A Truly Secondary Basis.**

The Commission should reject EchoStar's flawed proposal to alter the exclusive primary status of non-GSO FSS systems in the 18.8-19.3 GHz and 28.6-29.1 GHz bands for all of the many reasons discussed above. With that said, however, the fact remains that Northrop Grumman is committed to the principle of efficient use of the radiofrequency spectrum.

If there is interest, either from EchoStar or any other GSO FSS operators, in having a secondary allocation to the GSO FSS in both the 18.8-19.3 GHz and the 28.6-29.1 GHz bands, Northrop Grumman would support such an addition to the Commission's Ka-band plan. As a former GSO FSS Ka-band licensee, Northrop Grumman believes that such an allocation could be useful, notwithstanding the primacy of non-GSO FSS systems, for certain applications.

Under the concept envisioned by Northrop Grumman, any GSO FSS use of the 18.8-19.3 GHz and 28.6-29.1 GHz bands would have to be achieved on a truly secondary basis to non-GSO FSS networks. In other words, GSO FSS use of the bands would be on the conditions that: (1) no harmful interference is caused to non-GSO FSS systems; (2) that non-GSO FSS systems have no obligation to protect in any way GSO FSS use of the bands; and (3) that GSO FSS use of the bands would not impose any constraints or burdens on future non-GSO use of the bands. The Commission would have to adopt requirements that confirm the satisfaction of these conditions, including an identification of interference levels from GSO FSS networks that could not be tolerated, and applicants for such authority would have to present unequivocal showings demonstrating that the requirements are met.<sup>31</sup> Of course, the GSO FSS operator would at all

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<sup>31</sup> In its *Third Report & Order* in the Ka-band proceeding, the Commission stated clearly that "[t]o ensure non-interfering operations, we will require all secondary operators to submit to the Commission a technical demonstration that it [sic] can operate on a non-harmful interference basis to the type of satellite system with licensing priority." *Rulemaking to Amend Parts 1, 2, 21 and 25 of the Commission's Rules to Redesignate the 27.5-*

times remain responsible for ensuring that harmful interference is not caused, and would have to immediately cease operations in the bands if interference exceeding the identified level was received within the non-GSO FSS system.

The prospect of secondary-only use of the 18.8-19.3 GHz and 28.6-29.1 GHz band must, on some level, have appeal to EchoStar as well. In its August 27 applications, three of the four proposed satellites would be used only to provide GSO FSS in the non-GSO FSS bands. Nevertheless, EchoStar states at one point that its “application requests . . . operation of the FSS payloads in the NGSO portions of the Ka-band on a non-harmful interference basis.”<sup>32</sup> If EchoStar wishes to establish three dedicated secondary FSS satellites with no prospect of ever upgrading to co-primary status, and can show that its operations would meet the conditions outlined above, Northrop Grumman could go along. Such a move would promote efficient use of the spectrum, without violating anyone’s rights and in a manner consistent with the Commission’s Ka-band allocation decisions.

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*29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band to Establish Rules and Policies for Local Multi-point Distribution Service for Fixed Satellite Services*, 12 FCC Rcd 22310, 22326 (1997). TRW Inc. (Northrop Grumman’s predecessor-in-interest) and others had their proposals to use the 18.8-19.3 GHz and 28.6-29.1 GHz bands for secondary GSO FSS operations dismissed for not submitting such showings. See *TRW Inc.*, 16 FCC Rcd 14407 (¶ 17) (Int’l. Bur. 2001). Any application for secondary GSO FSS operation in these bands that does not contain such a showing must meet a similar fate.

<sup>32</sup> Applications of EchoStar Corporation, File Nos. SAT-LOA-20030827-00180, et. seq., at 15. In other portions of the application, EchoStar is less clear about its intentions. In the section of its Applications addressing sharing with non-GSO Ka-band satellite systems, for example, EchoStar proposes that the EPFD limits for adjacent bands – i.e., the power limits that quantify the non-GSO obligation in those bands not to cause unacceptable interference to the GSO FSS -- apply to future non-GSO FSS systems in the 18.8-19.3 GHz and 28.6-29.1 GHz band. *Id.* at Attachment A, p.30. That is a very unsecondary-like proposal, and directly conflicts with its earlier assertions.

### **III. CONCLUSION**

For all of the foregoing reasons, Northrop Grumman urges the Commission to reject the call of EchoStar for the initiation of a rulemaking proceeding that would destroy the equitability of the band-segmentation plan the Commission established just six years ago in its *Ka-Band Allocation Order*, and effectively preclude non-GSO FSS use of the 18.8-19.3 GHz and 28.6-29.1 GHz bands. There is no legitimate policy reason whatsoever for the Commission to revisit its well-reasoned prior actions, and companies such as Northrop Grumman are on the threshold of helping bring those policy decisions to fruition. The only type of GSO FSS use of the non-GSO FSS Ka-band frequencies that can be countenanced is truly secondary use. If EchoStar or other GSO FSS operators desire to make such use of the bands, and can show that they will neither cause harmful interference to non-GSO FSS systems nor constrain the future development of the non-GSO FSS, Northrop Grumman would not object to the opening of both bands to secondary GSO FSS use.

Respectfully submitted,

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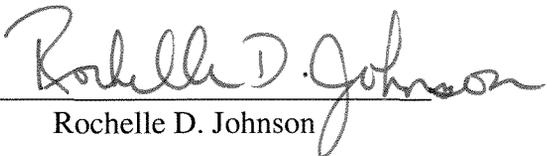
**CERTIFICATE OF SERVICE**

I, Rochelle D. Johnson, do hereby certify that on this 27<sup>th</sup> day of October, 2003, I sent by U.S. first-class, postage prepaid mail, a copy of the foregoing Comments of Northrop Grumman Space Technology and Mission Systems Corporation to the following:

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