

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
Astrolink International LLC)
Application for Authority to Construct, Launch,) File Nos. 182 through 186-SAT-P/LA-95
and Operate a Ka-band Satellite System in the) & SAT-MOD-19971222-00200
Fixed-Satellite Service)

ORDER AND AUTHORIZATION

Adopted: January 30, 2001

Released: January 31, 2001

By the Chief, International Bureau:

I. INTRODUCTION

1. With this Order and Authorization, we modify Astrolink International LLC's ("Astrolink") license to launch and operate a satellite system in the geostationary-satellite orbit ("GSO") to provide fixed-satellite service ("FSS") in a portion of the Ka-band. In particular, we authorize Astrolink to operate inter-satellite links ("ISLs") and specify additional downlink operating frequencies for satellite-to-user transmissions. In addition, we assign milestone requirements for construction, launch, and operation of the satellite system. This will ensure that Astrolink will make timely progress toward launching its satellites and making its advanced broadband communication services available to businesses and consumers around the world. Failure by Astrolink to meet its milestones will render this authorization null and void.

II. BACKGROUND

The Astrolink License

2. In May 1997, as part of the first Ka-band processing round, the International Bureau ("Bureau") authorized Lockheed Martin Corporation, Astrolink's predecessor-in-interest, to launch and operate a GSO satellite system to provide FSS in the Ka-band. Astrolink, the current license-holder,

1 The Ka-band refers to the Earth-to-space (uplink) frequencies at 27.5-30.0 GHz and the corresponding space-to-Earth (downlink) frequencies at 17.7-20.2 GHz.

2 ISLs are communication links between in-orbit satellites. ISLs operate in spectrum allocated to the inter-satellite service. International Telecommunication Union ("ITU") Radio Regulation S1.22.

3 See In the Matter of Lockheed Martin Corporation Application for Authority to Construct, Launch, and Operate a Ka-band Satellite System in the Fixed Satellite Service and a Ku-band Broadcast Communications Satellite System, 12 FCC Rcd 23014 (Int'l Bur. 1997) ("Astrolink Authorization Order"). On November 18, 1999, Lockheed amended its application to reflect a change in ownership of the licensee. See File No. SAT-AMD-

intends to use this system to provide global internet service, video conferencing, distance learning, telemedicine, high-speed data networks and “bandwidth on demand.” The system consists of nine interconnected GSO FSS satellites assigned to five orbit locations.⁴ The Authorization Order permits Astrolink to operate its service links--satellite transmission links to and from user units--in the 28.35-28.6 GHz and the 29.25-30.0 GHz bands for uplink transmissions and the 19.7-20.2 GHz band for downlink transmissions.⁵ The Authorization Order did not include operating authority for inter-satellite link service, nor did it include additional downlink spectrum requested by Astrolink.

Inter-Satellite Links

3. In its original application, Astrolink proposed to use ISLs in portions of the 54.25-58.2 GHz and 59-64 GHz frequency bands. When we awarded Astrolink its license, we deferred assigning ISL frequencies because none of these bands were suitable at that time for inter-satellite link service.⁶

4. Specifically, these bands are shared on a co-equal basis with U.S. Government operations, including ongoing operations in the inter-satellite and Earth exploration-satellite service. The National Telecommunications and Information Administration (NTIA) expressed concern regarding potential harmful interference between commercial ISL operations and these government services. In 1997, the United States presented proposals to the then-upcoming World Radiocommunication Conference (WRC-97) concerning ISL operations in the 54.25-59.3 GHz and 64-71 GHz bands.⁷ These proposals were designed to allow us to assign ISLs to all first-round Ka-band system applicants requesting them, while addressing NTIA’s interference concerns. In view of the uncertainty surrounding this issue, we deferred awarding ISL frequencies pending the outcome of WRC-97.

19991118-00111. That change in ownership had been previously authorized by the Commission. *See Astrolink International LLC*, DA 99-2049 (Int’l. Bur., Sat. Div. released October 1, 1999).

⁴ The five orbital locations are 97° W.L., 21.5° W.L., 2° E.L., 130° E.L., and 175.25° E.L. In our recent order, *In the Matter of Astrolink International, LLC, Application to Modify the Astrolink System Authorization, Order and Authorization*, DA 00-2671 (Int’l Bur., rel. Nov. 29, 2000) (“*Astrolink TT&C Order*”), we modified Astrolink’s license to substitute the 2° E.L. location for the 38° E.L. orbital position currently specified consistent with our separate order regarding the orbital assignment plan for geostationary Ka-Band satellites. *See Assignment of Orbital Locations to Space Stations in the Ka-Band*, 12 FCC Rcd 22004 (Int’l Bur. 1997). This action was taken without prejudice to any further decision we may make regarding the Ka-Band orbital assignment plan.

⁵ *Astrolink Authorization Order* at 23019-20, ¶¶ 17, 20.

⁶ *Id.* at 23020, ¶20.

⁷ *See United States Proposals for the Work of the [WRC-97] Conference*, Document USWRC-97.10-E, dated July 24, 1997, Proposals for Agenda Item 1.9.4.3, entitled “The Existing Frequency Allocations Near 60 GHz and, if Necessary, Their Respective Allocation, with a View to Protecting the Earth Exploration-Satellite (passive) Service Systems Operating in the Unique Oxygen Absorption Frequency Band from About 50 GHz to About 70 GHz. (A Consequential Allocation to the Inter-Satellite Service in the 65-71 GHz Bands) (JPDP 12).”

5. Among other actions relating to ISLs, WRC-97 limited the 54.25-59.3 GHz band to communications between GSO satellites.⁸ Additionally, ITU Radio Regulation S5.556A states that satellites operating in the 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz bands shall meet the specified power flux-density limit at all altitudes from 0 km to 1000 km above the Earth's surface.⁹ In June 1998, the International Bureau requested that each Ka-band FSS licensee update its ISL request in light of the actions taken at WRC-97.¹⁰ In addition, the Bureau asked each applicant to provide the Bureau with the specific frequency bands on which it proposes to operate its ISL service and to coordinate its proposed frequency bands with the other Ka-band licensees before it presented its proposal to the Commission. In response, the GSO FSS Ka-band licensees requesting ISL spectrum submitted a report in October 1998 (hereinafter the "*GSO FSS Sharing Report*"),¹¹ concluding that ISLs of the licensed GSO FSS systems could share the same frequencies with few constraints.

6. At the same time, Teledesic LLC ("Teledesic"), the only NGSO licensee employing ISLs in the same frequency bands, also submitted a sharing report (hereinafter the "*Teledesic Sharing Report*").¹² The *Teledesic Sharing Report* concluded that its ISLs could operate on the same frequencies as the GSO system ISLs, except for possible mutual interference in the limited case of GSO networks using ISL links among satellites that are separated by 157 to 162 longitudinal degrees.

7. After reviewing the *GSO FSS Sharing Report*, the Bureau concluded that it needed additional information to support the report's findings. Accordingly, the Bureau sent a letter to each of the parties, including Astrolink, requesting a description of the ISL arrangement, including which satellites at which licensed orbital locations will communicate with each other through the ISLs, the amount of ISL spectrum required by each satellite, and the justification for the amount of the ISL spectrum requested.¹³ In its letter, the Bureau noted that there are additional requests from applicants requesting ISL spectrum in the 40 GHz band, and that several of the applicants in the second Ka-band processing round also proposed systems using ISLs.¹⁴ To maximize the number of systems that could operate in the bands available for ISLs, the

⁸ *Id.*

⁹ ITU Radio Regulation S5.556A reads: "Use of the bands 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz by the inter-satellite service is limited to satellites in geostationary-satellite orbit. The single-entry power flux-density at all altitudes from 0 km to 1000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed -147 dB (W/m²/100 MHz) for all angles of arrival."

¹⁰ *See, e.g.*, Letter from Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, International Bureau, to Raymond G. Bender, Astrolink LLC (June 10, 1998).

¹¹ *Sharing of Various Frequency Bands Allocated to the Inter-Satellite Service* (October 9, 1998). The study did not examine sharing between GSO and non-GSO systems sharing the same ISL frequencies.

¹² *Interference between Teledesic and GSO Inter-Satellite Links* (dated October 8, 1998).

¹³ *See, e.g.*, Letter from Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, International Bureau, to Raymond G. Bender, Astrolink LLC (December 9, 1999).

¹⁴ *Id.* These parties include four from the second Ka-band processing round and five from the 40 GHz processing round. The 40 GHz service links are in segments contained in the 36-51.4 GHz band.

Bureau said it would only authorize first round Ka-band licensees for the specific amount of ISL spectrum actually required for ISL operations.¹⁵

8. In response, Astrolink requested three 600 megahertz channels in the 54.25-54.85 GHz, 55.925-56.525 GHz, and 57.6-58.2 GHz frequency bands for ISLs.¹⁶ Astrolink represented that it intends to use ISLs in its five licensed GSO orbital locations.¹⁷

Service Downlink Bands

9. In addition to the remaining issue regarding its ISL frequencies, there is also an outstanding issue regarding Astrolink's satellite-to-user frequencies. In its original application, Astrolink requested 1000 megahertz of spectrum at 18.55-18.8 GHz and 19.45-20.2 GHz for its service downlink bands.¹⁸ The Ka-band arrangement in effect at that time, designated only a portion of these bands -- specifically the 17.7-18.8 GHz and 19.7-20.2 GHz bands -- for GSO/FSS downlink operations.¹⁹ Consistent with the plan, we authorized Astrolink to operate on 500 megahertz at 19.7-20.2 GHz for its service downlinks. We stated, however, that Astrolink could make up the remaining 500 megahertz by operating in a portion of the 17.7-18.8 GHz frequency band. Nevertheless, because Astrolink had not applied for 500 megahertz of spectrum in this band, and because the Ka-band arrangement requires GSO/FSS operations in this band to be conducted on a co-primary basis with other services, we found it was premature to grant Astrolink operating authority in any portion of this band.²⁰ Rather, we directed Astrolink to file a license modification application when it determined which 500 megahertz it wished to use in the 17.7-18.8 GHz band.²¹ Since that time, the Commission has released the *18 GHz Report and Order*, which allows GSO/FSS operators to use the 18.3-18.8 GHz band and 19.7-20.2 GHz band for downlink operations, subject to coordination with other co-primary services.²² Consequently, we are now in a

¹⁵ *Id.*

¹⁶ See Letter from Richard L. Gobbi to Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, International Bureau (January 19, 2000).

¹⁷ *Id.*

¹⁸ *Astrolink Authorization Order* at 23020, ¶19.

¹⁹ *Rulemaking to Amend Parts 1, 2, 21 and 25 of the Commission's Rules to Redesignate the 27.5 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*, First Report and Order and Fourth Notice of Proposed Rulemaking, 11 FCC Rcd. 19005 (1996).

²⁰ *Astrolink Authorization Order* at 23020, ¶20.

²¹ *Id.*

²² See *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 Use*, Report and Order, 15 FCC Rcd 13430, 13443-44, ¶28 (2000) ("*18 GHz Report and Order*").

position to assign additional downlink spectrum to Astrolink.²³

III. DISCUSSION

A. *Inter-Satellite Links*

10. Given the sharing studies done by the licensees and the actions taken at WRC-97, we can now assign specific ISL spectrum to Astrolink's system. First, the ISL sharing analyses performed by the GSO FSS licensees and Teledesic reasonably accommodate all of the first round licensees that requested ISLs. Second, the technical issues with respect to Astrolink's requested 54.25-54.85/55.925-56.525/57.6-58.2 GHz bands have been resolved. Specifically, the WRC-97 adopted a provision to limit these bands to GSO satellite transmissions and to establish a p.f.d. limit for ISL operations in these bands.²⁴ These p.f.d. limits are to protect Government and non-Government NGSO satellites operating in the space research (passive) and Earth exploration-satellite (passive) services. Any non-Government systems requesting to operate ISLs in these bands will be required to coordinate with U.S. Government systems through NTIA's Interdepartment Radio Advisory Committee's Frequency Assignment Subcommittee ("FAS").

11. Astrolink proposes to conduct ISL operations in the 54.25-54.85 GHz, 55.925-56.525 GHz and 57.6-58.2 GHz bands based on its constellation deployment scenario. Astrolink's Ka-band satellite constellation will consist of nine satellites located at five different orbital locations, with a single satellite operating at 175.25° E.L., and two co-located satellites operating at each of the following locations: 97° W.L., 21.5° W.L., 2° E.L., and 130° E.L. Each satellite will require two 300 megahertz ISL transmit channels to transmit to the adjacent spacecraft, one channel for the antenna facing east, and one channel for the antenna facing west. In addition to these two transmit channels, the co-located satellites at 97° W.L., 21.5° W.L., 2° E.L., and 130° E.L. will each require a third 300 megahertz transmit channel, which implies that each satellite at these locations will require three 300 megahertz transmit channels and three 300 megahertz receive channels, for a total of six 300 megahertz channels, or 1800 megahertz of ISL spectrum. Each 300 megahertz ISL channel will be required to support a data rate of 310 Mbps. With the use of dual polarization by the Astrolink system, each satellite will be able to re-use the same spectrum at different orbital locations. According to Astrolink, the requested 1800 megahertz of ISL spectrum will allow better coordination among its satellites, improving the efficiency of the system and the quality of transmissions.

12. Based on the Ka-band service link reuse factor and the constellation deployment scenario, we agree that Astrolink's ISL request is reasonable. We will therefore authorize Astrolink to conduct ISL operations in the 54.25-54.85 GHz, 55.925-56.525 GHz, and 57.6-58.2 GHz bands, subject to the relevant ITU Radio Regulations²⁵ and coordination among the licensees pursuant to the *GSO FSS Sharing Report*

²³ We note that Astrolink has filed an application in the second Ka-band processing round to add additional spectrum to its licensed first-round system. *See Application to Modify the Astrolink System Authorization, SAT-MOD 19971222-0200*, (December 22, 1997). In this application, Astrolink also sought authority to perform telemetry, tracking and control functions ("TT&C") for its first-round system in extended C-band frequencies. We granted the TT&C request in *Astrolink TT&C Order*, DA 00-2671 (rel. Nov. 29, 2000).

²⁴ ITU-RR 5.556A establishes a single entry p.f.d. at an altitude between 0 km to 1000 km above the Earth's surface produced by a space station in the inter-satellite service.

²⁵ *See supra* paragraph 5 (discussion of ITU Radio Regulation S5.556A). The Commission recently adopted

and the *Teledesic Sharing Report*.

B. Service Downlink Bands

13. Recently, the Commission adopted rules for the deployment of services in the 17.7-20.2 GHz band (“18 GHz band”).²⁶ These rules are designed to reduce potential interference among the terrestrial and satellite services allocated in the band. The new band arrangement redesignates much of the spectrum that had been designated for co-primary satellite and terrestrial use as exclusive spectrum for either service. This should reduce the need to coordinate with other services. Under the band arrangement adopted in the *18 GHz Report and Order*, the Commission retained the 19.7-20.2 GHz band for GSO FSS primary use, and split the 17.7-18.8 GHz band, originally shared on a co-primary basis by GSO FSS and the Fixed Service (“FS”), into three designations. Specifically, the Commission designated 500 megahertz to FS for primary use in the 17.7-18.3 GHz band, 280 megahertz for co-primary use by GSO FSS and FS in the 18.3-18.58 GHz band, and 220 megahertz to GSO FSS for primary use in the 18.58-18.8 GHz band.²⁷ In adopting this band arrangement, the Commission stated that a total 720 megahertz of unshared GSO FSS downlink spectrum (the 18.58-18.8 GHz band along with the 19.7-20.2 GHz band), plus the flexible rules that permit sharing of 280 megahertz at 18.3-18.58 GHz, will enable each system to have ample spectrum and allow multiple systems to operate.²⁸

14. In its original application, Astrolink requested 1000 megahertz of downlink spectrum.²⁹ We authorized Astrolink to operate using 500 megahertz of spectrum in the 19.7-20.2 GHz range.³⁰ At that time, however, we were not in a position to grant Astrolink’s request for the remaining 500 megahertz of downlink spectrum given the 18 GHz arrangement then in effect.³¹ The Commission recently designated 500 megahertz of spectrum at 18.3-18.8 GHz for downlink GSO FSS operations. Consequently, on our own motion, we grant Astrolink’s request for an additional 500 megahertz of downlink spectrum by authorizing it to operate in the 18.3-18.8 GHz band in accordance with the *18 GHz Report and Order*.³²

S5.556A domestically. See *Amendment of Part 2 of the Commission’s Rules to Allocate Additional Spectrum to the Inter-Satellite, Fixed, and Mobile Services and to Permit Unlicensed Devices to Use Certain Segments in the 50.2-50.4 GHz and 51.4-71.0 GHz Bands*, ET Docket No. 99-261, Report and Order, FCC 00-442, at ¶ 50 (rel. December 22, 2000).

²⁶ See *18 GHz Report and Order*, 15 FCC Rcd 13430.

²⁷ *Id.* at 13443 ¶ 28.

²⁸ *Id.* at 13444 ¶ 30.

²⁹ *Astrolink Authorization Order* at 23020, ¶ 19.

³⁰ *Id.*

³¹ *Id.*, wherein the Bureau requested Astrolink to determine exactly which 500 megahertz it wishes to use in the 17.7-18.8 GHz band and file a modification application to operate in these frequency bands.

³² *18 GHz Report and Order* at 13443-44, ¶ 28.

15. In addition, Astrolink must coordinate with the U.S. Government systems operating in the 17.7-18.8 GHz band in accordance with footnote US 334 to the Table of Frequency Allocations.³³ We note that Government GSO and NGSO networks are presently operating in the 18.3-18.6 GHz and 19.7-20.2 GHz bands, and plan to operate in accordance with the power flux-density limits contained in the current ITU Radio Regulations.³⁴ Additionally, we note that Astrolink must also comply with footnote US 255 to the Table of Frequency Allocations which contains power flux-density limits to protect the Earth exploration-satellite service (passive) for the 18.6-18.8 GHz band.³⁵

C. *Milestones*

16. When we granted Astrolink its license in 1997, we were not in a position to assign to it a specific range of ISL frequencies. Consequently, we did not require Astrolink to begin building its satellite system by including implementation milestones in its license. We did, however, state that we would impose a strict milestone schedule once ISL frequencies were authorized.

17. In authorizing ISL frequencies, we are now in a position to impose system implementation milestones as a condition of Astrolink's modified license. Requiring licensees to adhere to implementation deadlines prevents the valuable orbit-spectrum resource from being held indefinitely by licensees who are unable or unwilling to proceed with their plans. Specifically, Section 25.145(f) of the Commission's rules requires Ka-band GSO FSS licensees "[1] to begin construction of its first satellite within one year of grant, [2] to begin construction of the remainder within two years of grant, [3] to launch at least one satellite into each of its assigned orbit locations within five years of grant, and [4] to launch the remainder of its satellites by the date required by the International Telecommunication Union [ITU] to assure international recognition and protection of those satellites."³⁶ Failure to meet any of these construction milestones will render those satellite authorizations null and void.

18. The dates by which the Astrolink licensed satellites must be "brought into use" to protect the date priority of the ITU filings for its service links generally are in June and July 2005, except for the satellite licensed at 175.25° E.L., which must be "brought into use" in October 2004.³⁷ We recognize that,

³³ 47 C.F.R. § 2.106 US 334 (as revised in the *18 GHz Report and Order*, 15 FCC Rcd 13489). This footnote requires coordination of non-Government systems with U.S. Government GSO and NGSO FSS systems in the 17.8-20.2 GHz band.

³⁴ See *18 GHz Report and Order*, 15 FCC Rcd 13473 ¶ 90. These power flux-density limits are -115/-105 dB (W/m²) in any 1 megahertz, depending upon the angle of arrival in the 18.3-18.6 GHz band. There are currently no power flux-density limits in the 19.7-20.2 GHz band. See Letter from William T. Hatch, NTIA to Dale Hatfield, Chief, Office of Engineering and Technology, FCC (March 29, 2000).

³⁵ 47 C.F.R. § 2.106 US 255 (as revised in the *18 GHz Report and Order*, 15 FCC Rcd 13489) states:

In addition to any other applicable limits, the power flux-density across the 200 MHz band 18.6-18.8 GHz produced at the surface of the Earth by emissions from a space station under assumed free-space propagation conditions shall not exceed -95 dB(W/m²) for all angles of arrival. This limit may be exceeded by up to 3 dB for no more than 5% of the time.

³⁶ 47 C.F.R. § 25.145(f). See also *Third Report and Order* at ¶ 61 and fn. 77.

³⁷ The exact date is nine years after the date the ITU publishes the Advanced Publication Information for the

in this case, applying the ITU “bringing into use” dates to the last implementation milestone has the incongruous result of our rules requiring Astrolink to launch one satellite into each of its assigned orbit locations by January 2006, *i.e.*, after the date Astrolink is required to bring *all* of its satellite locations “into use” to protect the date priority of the U.S. ITU filings for its orbital locations. To address this misalignment, we require Astrolink to launch a satellite to each licensed orbit location which “brings into use” all of the frequency assignments it plans to operate at that orbit location by the appropriate October 2004/June and July 2005 date. At those orbit locations where more than one satellite is authorized to operate, the second co-located satellite, if not launched by the appropriate ITU “bringing into use” date, would be required to operate on the same frequencies that are used by the first satellite that met the ITU deadline. This will protect the United States’ and thus, Astrolink’s ability to coordinate and gain international recognition for satellites at each of its assigned orbit locations. Moreover, we do not anticipate that meeting this milestone will be difficult. First, it is consistent with Astrolink’s business plan.³⁸ Second, Astrolink has had almost four years since we granted its license in May 1997 to refine its system design for everything except its ISLs. Third, the launch milestone imposed here still provides Astrolink with over four years to incorporate ISLs into its system and launch the satellites.³⁹ Further, in light of the actions taken at WRC-97 regarding ISLs and the licensees’ 1998 studies demonstrating that they can share ISL spectrum, we expect that Astrolink will have already made significant progress incorporating its requested ISL frequencies into its system.⁴⁰

concerned frequency assignment at each orbit location. *See* ITU Radio Regulations S.11.44, as modified by Final Acts of the 2000 World Radiocommunication Conference, Istanbul (2000). Thus, the ITU Radio Regulations require that:

- the USA satellite network advanced published at 97° W.L. be brought into use by June 25, 2005;
- the USA satellite network advanced published at 21.5° W.L. be brought into use by July 9, 2005;
- the USA satellite network advanced published at 2° E.L. be brought into use by July 9, 2005;
- the USA satellite network advanced published at 130° E.L. be brought into use by July 23, 2005;
- and the USA satellite network advanced published at 175.25° E.L. be brought into use by October 10, 2004.

³⁸ *See* Astrolink International, LLC, Annual Statement from Raymond G. Bender, Jr., Counsel for Astrolink International, LLC (June 30, 2000) (“*Annual Statement*”).

³⁹ *See id.* Astrolink indicates that in its initial stage of deployment its first satellites at the 97° W.L., 21.5° W.L., 2° E.L., and 130° E.L. orbital locations will not be equipped with ISLs. Astrolink states that it plans to use ISLs for the remaining five of the operating satellites in its constellation. We remind Astrolink that it must bring its ISL frequencies into use in order to protect the date priority of the U.S. ITU filings for these frequencies. *See* ITU RR S11.44.

⁴⁰ Astrolink represents that it has made significant progress in system implementation. *See Annual Statement*.

IV. CONCLUSION

19. Accordingly, upon review, we modify Astrolink's Ka-band system license to include ISL frequencies and additional downlink frequencies. In addition, we assign milestone requirements for construction, launch and operation of the satellite system. These actions provide Astrolink with the opportunity to provide a variety of advanced broadband communication services to businesses and consumers around the world.

V. ORDERING CLAUSES

20. Accordingly, IT IS ORDERED that the license granted to Astrolink International LLC by Order and Authorization, 12 FCC Rcd. 23014 (Int'l Bureau 1997) IS MODIFIED to add the 54.25-54.85 GHz, 55.925-56.525 GHz, and 57.6-58.2 GHz bands for inter-satellite link operations, in accordance with *In the Matter of Amendment of Part 2 of the Commission's Rules to Allocate Additional Spectrum to the Inter-Satellite, Fixed, and Mobile Services and to Permit Unlicensed Devices to Use Certain Segments in the 50.2-50.4 GHz and 51.4-71.0 GHz Bands*, ET Docket No. 99-261, Report and Order, FCC 00-442 (rel. December 22, 2000).

21. IT IS FURTHER ORDERED that Astrolink International LLC must coordinate its inter-satellite link operations in accordance with the report submitted to the Commission entitled, "Sharing of Various Frequency Bands Allocated to the Inter-Satellite Service," (dated October 9, 1998) and "Interference Between Teledesic and GSO Inter-Satellite Links" (dated October 9, 1998), with the other Ka-band licensees that are included in the referenced reports.

22. IT IS FURTHER ORDERED that Astrolink International LLC shall coordinate its inter-satellite link operations in the 54.25-54.85 GHz, 55.925-56.525 GHz and 57.6-58.2 GHz bands through NTIA's Interdepartment Radio Advisory Committee's Frequency Assignment Subcommittee.

23. IT IS FURTHER ORDERED that Astrolink International LLC is authorized for an additional 500 megahertz for its downlink operations in the 18.3-18.8 GHz band in accordance with *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 Use*, Report and Order, 15 FCC Rcd 13430 (2000) ("18 GHz Report and Order").

24. IT IS FURTHER ORDERED that Astrolink International LLC. must coordinate all of its Ka-band downlink operations with the U.S. government systems in accordance with footnote US334 to the Table of Frequency Allocations, 47 C.F.R. § 2.106.

25. IT IS FURTHER ORDERED that Astrolink International LLC's authorization shall become NULL and VOID with no further action on the Commission's part in the event the space station is not constructed, launched, and placed into operation in accordance with the technical parameters and terms and conditions of the authorization by the following dates:

Commence Construction

First Satellite	January 2002
Remaining Satellites	January 2003

Launch and Operate

Satellite licensed at 97° W.L.	June 25, 2005
Satellite licensed at 21.5° W.L.	July 9, 2005
Satellite licensed at 2° E.L.	July 9, 2005
Satellite licensed at 130° E.L.	July 23, 2005
Satellite licensed at 175.25° E.L.	October 10, 2004

At those orbit locations where more than one satellite is authorized to operate, the second co-located satellite, if not launched by the appropriate ITU "bringing into use" date, would be required to operate on the same frequencies that are used by the first satellite that met the ITU deadline.

26. IT IS FURTHER ORDERED that Astrolink International LLC is subject to all terms and conditions in its original Authorization Order, 12 FCC Rcd 23014 (Int'l Bur 1997).

27. IT IS FURTHER ORDERED that the license term for a space station is ten years and will begin to run on the date Astrolink International LLC certifies to the Commission that the satellites have been successfully placed into orbit and the operations fully conform to the terms and conditions of this authorization.

28. IT IS FURTHER ORDERED that Astrolink International LLC. is afforded thirty days from the date of the release of this *Order and Authorization* to decline this authorization as conditioned. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.

29. This *Order and Authorization* is issued pursuant to Section 0.261 of the Commission's rules on delegations of authority, 47 C.F.R. § 0.261, and is effective upon release. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the date of public notice of this *Order and Authorization* (*see* 47 C.F.R. § 1.4(b)(2)).

FEDERAL COMMUNICATIONS COMMISSION

Donald Abelson
Chief, International Bureau