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

In the Matter of	)	
	)	
CyberStar Licensee LLC	)	File Nos. 109-SAT-P/LA-95
	)	110-SAT-P-95
Application for Authority to Construct,	)	187-SAT-AMEND-95
Launch, and Operate a Ka-band Satellite	)	188/189-SAT-P/LA-95
System in the Fixed-Satellite Service	)	102/103-SAT-AMEND-96
	)	
Application for Modification of Authorization	)	103/104/105-SAT-ML-98
to Construct, Launch, and Operate a Ka-band	)	
Satellite System in the 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 CyberStar Licensee LLC's ("CyberStar's") 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.[1] In particular, we modify CyberStar's GSO FSS Ka-band system license to allow it to operate inter-satellite links ("ISLs")[2] and to specify additional downlink operating frequencies. However, we defer action on CyberStar's request to perform its spacecraft tracking, telemetry, and command ("TT&C") operations in the extended C-band.[3] In addition, we assign milestone requirements for construction, launch, and operation of the satellite system. This will ensure that CyberStar 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 CyberStar to meet its milestones will render this authorization null and void.

[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] TT&C communications provide data on a satellite's functions via a two-way telemetry link between the satellite and a controlling earth station, or control center. TT&C communications are used throughout the satellite's life, including the launch and deployment phase, to monitor the health of the spacecraft. The TT&C function allows the earth station to control the satellite's physical orbital position and internal functioning.

II. BACKGROUND

The CyberStar License

2. In May 1997, as part of the first Ka-band processing round, the International Bureau ("Bureau") authorized CyberStar to launch and operate a GSO satellite system to provide FSS in the Ka-band.[4] CyberStar intends to use this system to offer "broadband on demand" for a variety of high quality audio, video and data services for business and consumer applications. CyberStar is authorized to operate one satellite at each of the following orbit locations: 115° W.L., 93° W.L., and 105.5° E.L.[5] The *CyberStar License* permitted CyberStar to operate its service links – satellite transmission links to and from user units – in the 28.35-28.6 GHz and the 29.5-30.0 GHz bands for uplink transmissions and the 19.7-20.2 GHz band for downlink transmissions.[6] The *CyberStar License* did not include operating authority for ISL service, nor did it include additional downlink spectrum or TT&C frequencies that CyberStar requested. CyberStar subsequently submitted a license modification application, seeking to resolve the ISL, downlink, and TT&C issues.[7]

Inter-Satellite Links

3. By employing ISLs, CyberStar's satellites will be able to communicate directly with each other, which, according to CyberStar, will extend the coverage regions of different satellite orbit locations. At the time that CyberStar was given its license, the Bureau deferred assigning ISL frequencies because there was no suitable spectrum allocated for these operations.[8] In its original application, Cyberstar proposed to use ISLs in portions of the 60 GHz frequency band, a band that is shared on a co-equal basis with U.S. Government operations, including ongoing operations in the inter-satellite and Earth exploration-satellite services. 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 64.0-71.0 GHz bands, among others.[9] These

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[4] *Loral Space & Communications Ltd.*, Order and Authorization, 13 FCC Rcd 1379 (Int'l Bur. 1997) ("*CyberStar License*"). CyberStar is ultimately controlled, through a series of intermediate entities, by Loral Space & Communications Ltd. ("Loral Ltd."). On April 22, 1998, pursuant to FCC consent granted March 31, 1998, Loral Ltd. assigned the authorizations subject to the *CyberStar License* to CyberStar.

[5] *Id.* CyberStar's authorization currently specifies the 28° E.L. orbital position instead of the 93° W.L. location. As discussed in Section III.E. below, we are modifying the authorization to conform it to the Ka-band Orbital Assignment Plan. *See Assignment of Orbital Locations to Space Stations in the Ka-Band*, Order, 12 FCC Rcd 22004 (Int'l Bur. 1997) ("*December 1997 Reassignment Order*") (reassigning Loral Ltd.'s (now CyberStar's) satellite at 28° E.L. to the 93° W.L. orbit location in a revised orbital assignment plan).

[6] *CyberStar License*, 13 FCC Rcd at 1390 ¶ 34.

[7] *See* Loral Space & Communications Ltd. Application for Modification, File No. 103/104/105-SAT-ML-98 (April 6, 1998) ("Modification Application"). *See also* Public Notice, Report No. SPB-124 (rel. April 24, 1998).

[8] *CyberStar License*, 13 FCC Rcd at 1386-87 ¶¶ 24-26.

[9] *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

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.

4. Among the actions taken on frequency bands to be used by ISLs, the WRC-97 allocated 64.0-71.0 GHz for ISLs for both non-geostationary orbit ("NGSO") and GSO systems, including those operating in the FSS.[10] In June 1998, the Bureau requested that each Ka-band FSS licensee requesting ISL spectrum update its ISL request in light of the actions taken at WRC-97.[11] 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 submitted a report in October 1998 (hereinafter the "*GSO FSS Sharing Report*"), concluding that ISLs of the licensed GSO FSS systems could share the same frequencies with few constraints.[12]

5. 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*").[13] 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.

6. 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 the parties, including CyberStar, 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.[14] In its letter, the Bureau noted that there are additional requests for ISL spectrum from applicants in the 40 GHz band, and that several of the applicants in the second Ka-band processing round also proposed systems using ISLs.[15] To maximize the number of systems that can operate in the bands available for ISLs, the Bureau

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(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)."

[10] *See* Final Acts of the 1997 World Radiocommunication Conference, Geneva (1997); ITU Radio Regulations Article S5 (frequency allocations).

[11] *See, e.g.*, Letter from Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, FCC to Philip L. Verveer, Counsel for Loral Space & Communications Ltd. (June 10, 1998).

[12] "Sharing of Various Frequency Bands Allocated to the Inter-Satellite Service" (October 9, 1998). The study did not examine sharing between GSO and NGSO systems sharing the same ISL frequencies. *See also* Letter from Philip L. Verveer, Counsel for CyberStar Licensee LLC to Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, FCC (October 9, 1998) (specifying bands for ISL operations).

[13] "Interference between Teledesic and GSO Inter-Satellite Links" (October 9, 1998).

[14] *See, e.g.*, Letter from Thomas S. Tycz, Chief, Satellite and Radiocommunication Division, FCC to Philip L. Verveer, Counsel for CyberStar Licensee LLC (December 9, 1999).

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

said it will only authorize first round Ka-band licensees for the specific amount of ISL spectrum actually required for ISL operations.[16]

7. In response, CyberStar requests ISLs in the 65.0-71.0 GHz frequency bands.[17] CyberStar represents that it intends to use ISLs to directly interconnect the CyberStar Ka-band satellites with each other, and with other operationally integrated Ka-band satellites licensed to Loral-affiliated entities.[18] In the combined network, CyberStar plans to implement ISLs among satellites separated by 4 to 159 longitudinal degrees, with between four to seven duplex ISLs at each orbital location.[19] CyberStar states that it will fully reuse the ISL spectrum at each authorized location in order to minimize the total spectrum it requires for ISLs.[20]

Service Downlink Bands

8. In its original application, CyberStar requested 750 megahertz of spectrum in the 18.95-19.2 GHz and 19.7-20.2 GHz bands for its service downlink transmissions.[21] The Ka-band arrangement in effect at that time, however, designated only the 17.7-18.8 GHz and 19.7-20.2 GHz bands for GSO FSS downlink operations.[22] Consistent with the band arrangement, we authorized CyberStar to operate on 500 megahertz at 19.7-20.2 GHz for its service downlinks. We stated that CyberStar could make up the remaining 250 megahertz by operating in a portion of the 17.7-18.8 GHz frequency band. Nevertheless, because CyberStar had not applied for specific operating frequencies in this band, and because the Ka-band arrangement in effect at that time required GSO FSS operations in the 17.7-18.8 GHz band to be conducted on a co-primary basis with the terrestrial fixed-service ("FS"), we found that it was premature to grant CyberStar operating authority in any portion of this band.[23] Rather, we directed

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[16] *Id.*

[17] *See* Letter from Jennifer D. McCarthy, Counsel for CyberStar Licensee LLC to Magalie Roman Salas, Secretary, Federal Communications Commission (January 4, 2000) ("CyberStar ISL Letter").

[18] *See, e.g.*, *Orion Network Systems, Inc.*, Order and Authorization, 12 FCC Rcd 23027 (Int'l Bur. 1997) ("*Orion Network License*") (authorizing Orion Network to operate Ka-band satellites at the 89° W.L., 81° W.L. and 78° E.L. orbit locations) *and Orion Atlantic, L.P.*, Order and Authorization, 13 FCC Rcd 1416 (Int'l Bur. 1997) ("*Orion Atlantic License*") (authorizing Orion Atlantic to operate in the Ka-band at the 47° W.L. orbit location). *See also Loral Space & Communication Ltd. and Orion Network Systems, Inc., et al.*, Order and Authorization, 13 FCC Rcd 4592 (Int'l Bur. 1998) (authorizing Orion Network and Orion Atlantic to transfer control of the *Orion Network License* and the *Orion Atlantic License* to Loral Ltd.) *and Loral Space & Communication Corporation*, Order and Authorization, DA 01-227 (Int'l Bur., rel. January 31, 2001) (modifying the *Orion Network License* and the *Orion Atlantic License* to permit the use of ISLs).

[19] CyberStar ISL Letter at 2.

[20] *Id.* at 3.

[21] *CyberStar License*, 13 FCC Rcd at 1385 ¶ 19.

[22] *See Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 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*, CC Docket No. 92-297, First Report and Order and Fourth Notice of Proposed Rulemaking, 11 FCC Rcd 19005 (1996).

[23] *CyberStar License*, 13 FCC Rcd at 1385 ¶ 20.

CyberStar to file a license modification application when it determined which 250 megahertz it wished to use in the 17.7-18.8 GHz band.[24] In its Modification Application, CyberStar identified the 18.55-18.8 GHz band to complete its downlink assignment.[25] Since that time, the Commission has released the *18 GHz Report and Order*, which designated the 18.3-18.8 GHz portion of the 17.7-18.8 GHz band for GSO FSS downlink operations.[26] Consequently, we are now in a position to assign additional downlink spectrum to CyberStar.

Tracking, Telemetry, and Command (TT&C)

9. In addition to the remaining issues regarding its ISL and satellite-to-user frequencies, there is also an outstanding issue regarding CyberStar's TT&C operations. In its original application, CyberStar proposed to conduct its "on station" TT&C operations in the Ka-band, and "transfer orbit" TT&C operations in the Ku-band.[27] Under the U.S. Table of Frequency Allocations, TT&C operations may be provided in frequency bands allocated to the Space Operations Service or within the bands in which the particular satellite system will be providing service.[28] Because the Ku-band is neither allocated to the Space Operations Service nor is CyberStar's service band, CyberStar's proposed TT&C operations would constitute a non-conforming use of the Table of Frequency Allocations. Further, CyberStar had not demonstrated it could conduct these non-conforming TT&C operations without causing interference into other conforming operations in the band. We therefore decided not to grant CyberStar's request.[29] Nevertheless, we indicated that we would revisit this finding if CyberStar could demonstrate that it could operate its TT&C transmissions on a non-interference basis, or that it has successfully coordinated its proposed operations with all affected operators in the band.[30] CyberStar subsequently proposed to perform its "on station" and "transfer orbit" TT&C operations in the extended C-band.[31]

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[24] *Id.*

[25] Modification Application at 6.

[26] *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-Service Use*, IB Docket No. 98-172, Report and Order, 15 FCC Rcd 13430 (2000) ("*18 GHz Report and Order*"), *petition for review pending, Teledesic LLC v. FCC*, D.C. Cir. No. 00-1466 (filed November 6, 2000).

[27] *CyberStar License*, 13 FCC Rcd at 1386 ¶ 22. As used here, the term "Ku-band" refers to the Earth-to-space (uplink) frequencies at 14.0-14.5 GHz and the corresponding space-to-Earth (downlink) frequencies at 11.7-12.2 GHz.

[28] 47 C.F.R. § 2.106.

[29] *CyberStar License*, 13 FCC Rcd at 1386 ¶ 23.

[30] *Id.*

[31] Modification Application at 7-8. The term "C-band" or "standard C-band" refers to the 3700-4200 MHz (downlink) and 5925-6425 MHz (uplink) frequency bands. The term "extended C-band" refers to frequencies allocated to the FSS and adjacent to the standard C-band, such as the 3625-3700 MHz (downlink) and 5850-5925/6425-6525 MHz (uplink) bands.

III. DISCUSSION

A. *Inter-Satellite Links*

10. Given the *GSO FSS Sharing Report* and the *Teledesic Sharing Report*, and the actions taken at WRC-97, we can now assign specific ISL spectrum to CyberStar's three satellites. First, the ISL sharing analyses performed by the GSO FSS licensees and Teledesic reasonably accommodate all of the first round Ka-band licensees that requested ISLs. Second, the WRC-97 allocated CyberStar's requested band at 65.0-71.0 GHz for ISLs for both NGSO and GSO systems operating in the FSS.[32] Recognizing that this band was allocated on a co-primary basis for various Government services, NTIA suggested that implementing the WRC-97 allocations domestically would better accommodate existing Government and proposed non-Government satellite systems. Therefore, the Commission conducted a rulemaking proceeding to implement the WRC-97 Final Acts with respect to the 50.2-71.0 GHz frequency bands, specifically designating the 65.0-71.0 GHz band segment for non-Government ISL use.[33]

11. As noted above, CyberStar plans to implement ISLs among multiple satellites separated by 4 to 159 longitudinal degrees, with between four to seven duplex ISLs at each orbital location.[34] Each ISL will support 1 Gbps duplex transmission capacity using Quadrature Phase Shift Keying (QPSK) modulation, which requires a minimum of 840 megahertz of bandwidth.[35] Thus, the total spectrum bandwidth required for the CyberStar ISL network is 5880 megahertz (*i.e.*, 840 megahertz $\times$ a maximum of seven duplex ISLs), which can be accommodated within the requested 65.0-71.0 GHz band. Based on CyberStar's representations, we find that its request for 5880 megahertz of ISL spectrum is reasonable. Consequently, we will authorize CyberStar to conduct ISL operations in 5880 megahertz of spectrum at 65.0-70.88 GHz, subject to coordination among the licensees pursuant to the *GSO FSS Sharing Report* and the *Teledesic Sharing Report*,[36] and with U.S. Government (non-ISL) operations through NTIA's Interdepartment Radio Advisory Committee's Frequency Assignment Subcommittee.

B. *Service Downlink Bands*

12. Recently, the Commission adopted rules for the deployment of services in the 17.7-20.2 GHz band ("18 GHz band").[37] 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

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[32] *See supra* footnote 10 and accompanying text.

[33] *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 ¶ 45 (rel. December 22, 2000).

[34] *See supra* paragraph 7.

[35] CyberStar ISL Letter at 2-3.

[36] We note that none of CyberStar's satellite locations are separated by 157 to 162 longitudinal degrees from each other or any of the Ka-band satellites licensed to Loral-affiliated entities that are proposed to be operationally integrated with CyberStar's satellites. Thus, CyberStar's use of ISL links does not implicate the potential for possible mutual interference with Teledesic's proposed system, as described in the *Teledesic Sharing Report*.

[37] *See 18 GHz Report and Order*, 15 FCC Rcd 13430.

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 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.[38] 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.[39]

13. In the *CyberStar License*, we authorized CyberStar to operate using 500 megahertz (of its requested 750 megahertz) of downlink spectrum in the 19.7-20.2 GHz frequency range.[40] In its Modification Application, CyberStar requests its remaining 250 megahertz of downlink spectrum in the 18.55-18.8 GHz band because it is available, as described above, and needed for system deployment.[41] We find that CyberStar's request is reasonable, as this request is consistent with the revised 18 GHz band arrangement as set forth in the *18 GHz Report and Order*. We therefore authorize CyberStar to operate its satellites with service downlinks in the 18.55-18.8 GHz band, in addition to the previously-authorized 19.7-20.2 GHz bands.

14. Operations in the shared 30 megahertz at 18.55-18.58 GHz are, of course, subject to the sharing rules adopted in the *18 GHz Report and Order*.[42] In addition, CyberStar 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.[43] We note that Government GSO and NGSO FSS 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.[44] Additionally, we note that Cyberstar must also comply with footnote US 255 to the Table of Frequency Allocations, which contains

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[38] *Id.* at 13443 ¶ 28.

[39] *Id.* at 13444 ¶ 30.

[40] *CyberStar License*, 13 FCC Rcd at 1385 ¶ 19.

[41] Modification Application at 6.

[42] *18 GHz Report and Order*, 15 FCC Rcd at 13446-54 ¶¶ 34-49.

[43] 47 C.F.R. § 2.106 US 334 (as revised in the *18 GHz Report and Order*, 15 FCC Rcd at 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.

[44] *See 18 GHz Report and Order*, 15 FCC Rcd at 13473 ¶ 90. These power flux-density limits in the 18.3-18.6 GHz band are -115/-105 dB (W/m^2) in any 1 megahertz, depending upon the angle of arrival. 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).

power flux-density limits to protect the Earth exploration-satellite service (passive) for the 18.6-18.8 GHz band.[45]

C. Tracking, Telemetry, and Command (TT&C)

15. In its Modification Application, CyberStar requests two command frequencies, each with a bandwidth of one megahertz, and two telemetry frequencies, each with a bandwidth of 300 kilohertz. CyberStar specifically requests command (uplink) frequencies centered at 6426.5 MHz and 6428.5 MHz and telemetry (downlink) frequencies centered at 3697 MHz and 3699 MHz. CyberStar specifically chose frequencies at the edges of the band to facilitate coordination.[46] These frequencies are in the extended C-band,[47] *i.e.*, outside of CyberStar's Ka-band FSS service links.

16. As when CyberStar requested Ku-band frequencies for TT&C, its modified plan proposes TT&C frequencies outside its service links, a system design that does not comport with Section 25.202(g) of the Commission's rules.[48] In that regard, the Commission has a pending proceeding seeking comment on whether Part 25 of the Commission's rules should be modified to permit TT&C operations in the extended C-bands for FSS systems that operate outside of the C-band frequencies upon a particularized showing of need.[49] Although CyberStar "believes it will be able to coordinate its system," and states that it will mitigate interference to terrestrial systems using portions of the extended C-band,[50] it has neither represented that discussions have occurred, nor provided a technical showing that it can conduct extended C-band TT&C operations on a non-interference basis. Therefore, we deny CyberStar's modified TT&C request, without prejudice to refiling based on the outcome of the *3650-3700 MHz Second NPRM*.[51]

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[45] 47 C.F.R. § 2.106 US 255 (as revised in the *18 GHz Report and Order*, 15 FCC Rcd at 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.

[46] Modification Application at 8.

[47] *See supra* footnote 31.

[48] Section 25.202(g) states that TT&C functions for U.S. domestic satellites "shall be conducted at either or both edges of the allocated band(s)," *i.e.*, at either or both edges of a frequency band assigned to a satellite licensee for communication. 47 C.F.R. § 25.202(g).

[49] *See Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band*, ET Docket No. 98-237, *The 4.9 GHz Band Transferred from Federal Government Use*, WT Docket No. 00-32, First Report and Order and Second Notice of Proposed Rule Making, FCC 00-363, at ¶¶ 129-132 (rel. October 24, 2000) ("*3650-3700 MHz Second NPRM*").

[50] Modification Application at 7-8.

[51] *But c.f. Astrolink International LLC*, Order and Authorization, DA 00-2671, at ¶¶ 9-10 (Int'l Bur., rel. November 29, 2000) (Bureau granting Ka-band licensee's request to operate TT&C in the extended C-band because licensee "proceeded with diligence in addressing Commission concerns").

D. Milestones

17. When we granted CyberStar its license in 1997, we were not in a position to assign it to a specific range of ISL frequencies. Consequently, we did not require CyberStar 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.[52]

18. In authorizing ISL frequencies, we are now in a position to impose system implementation milestones as a condition of CyberStar'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 to assure international recognition and protection of those satellites."[53] Failure to meet any of these construction milestones will render those satellite authorizations null and void.

19. The dates by which CyberStar's satellites must be "brought into use" to protect the date priority of the U.S. ITU filings for its service links at these orbital locations are June and July 2005.[54] We recognize that, in this case, applying these ITU "bringing into use" dates to the last implementation milestone has the incongruous result of our rules requiring CyberStar to launch its satellites into each of its assigned orbit locations by January 2006, *i.e.*, after the date Loral is required to bring 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 CyberStar to launch its satellites into each licensed orbit location which "brings into use" all of the frequency assignments it plans to operate at that orbit location by the appropriate June and July 2005 ITU "bringing into use" date. This will protect the United States' and thus, CyberStar's ability to coordinate and gain international recognition for the satellites at each of its assigned orbit locations. Moreover, we do not anticipate that meeting this milestone will present undue difficulty. First, it is consistent with CyberStar's business plan.[55] Second, CyberStar has had almost four years since we granted its license in May 1997 in which to refine its system design for everything except its ISLs. Third, the launch milestone imposed here still provides CyberStar with more than four years to incorporate ISLs

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[52] *CyberStar License*, 13 FCC Rcd at 1387-88 ¶ 27.

[53] 47 C.F.R. § 25.145(f). *See also Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 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*, CC Docket No. 92-297, Third Report and Order, 12 FCC Rcd 22310, 22334-35 ¶ 61 & n.77 (1997).

[54] The exact date is nine years after the date the ITU publishes the Advanced Publication Information for the 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 satellite at 115° W.L. be brought into use by June 25, 2005; the satellite at 93° W.L. be brought into use by June 25, 2005; and the satellite at 105.5° E.L. be brought into use by July 16, 2005.

[55] *See* Loral Space & Communications Ltd. Annual Status Report for the year ending May 31, 2000, redacted version at 25 (June 30, 2000) ("CyberStar currently anticipates launch of its first space station by May 2002, with launch of the remainder of its satellites by the date required by the International Telecommunication Union to ensure international protection and recognition of the satellites.").

into its system and launch the satellites. 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 CyberStar will have already made significant progress in incorporating its requested ISLs into its system.

E. Miscellaneous Matters

20. Consistent with our separate order, in which we modified the orbital locations available for the CyberStar system by substituting the 93° W.L. orbit location for the 28° E.L. orbital position,[56] we are modifying CyberStar's license to conform to those locations. This action is taken without prejudice to any further decision we may make regarding the Ka-band orbital assignment plan.

IV. CONCLUSION

21. Accordingly, upon review, we modify CyberStar's Ka-band system license to specify authorized orbital positions, and 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 CyberStar with the opportunity to implement a variety of advanced broadband communication services to businesses and consumers around the world.

V. ORDERING CLAUSES

22. Accordingly, IT IS ORDERED that the Application for Modification filed by CyberStar Licensee LLC on April 6, 1998, File No. 103/104/105-SAT-ML-98, IS GRANTED IN PART and DENIED IN PART to the extent indicated herein.

23. IT IS FURTHER ORDERED that the license granted to CyberStar Licensee LLC by *Order and Authorization*, 13 FCC Rcd 1379 (Int'l Bur. 1997) IS MODIFIED to substitute the 93° W.L. orbit location for the previously assigned 28° E.L. for one of the authorized satellites.

24. IT IS FURTHER ORDERED that the license granted by *Order and Authorization*, 13 FCC Rcd 1379 (Int'l Bur. 1997) IS FURTHER MODIFIED to assign the 65.0-70.88 GHz band for inter-satellite link operations, in accordance with *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).

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

26. IT IS FURTHER ORDERED that CyberStar Licensee LLC shall coordinate the inter-satellite link operations in the 65.0-70.88 GHz band through NTIA's Interdepartment Radio Advisory Committee's Frequency Assignment Subcommittee.

[56] *December 1997 Reassignment Order*, 12 FCC Rcd 22004.

27. IT IS FURTHER ORDERED that CyberStar Licensee LLC is authorized for an additional 250 megahertz for its downlink operations in the 18.55-18.8 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-Service Use*, IB Docket No. 98-172, Report and Order, 15 FCC Rcd 13430 (2000).

28. IT IS FURTHER ORDERED that CyberStar Licensee LLC must coordinate all of its Ka-band downlink operations with the U.S. government systems in accordance with footnote US 334 to the Table of Frequency Allocations, 47 C.F.R. § 2.106.

29. IT IS FURTHER ORDERED that CyberStar Licensee 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:

Construction Commenced		Launch and Operate	
First satellite	January 2002	115° W.L. Orbit Location	June 25, 2005
Remaining satellites	January 2003	93° W.L. Orbit Location	June 25, 2005
		105.5° E.L. Orbit Location	July 16, 2005

30. IT IS FURTHER ORDERED that CyberStar Licensee LLC is subject to all terms and conditions in its original *Order and Authorization*, 13 FCC Rcd 1379 (Int'l Bur. 1997).

31. IT IS FURTHER ORDERED that the license term for a space station is ten years and that each license will begin to run on the date CyberStar Licensee LLC certifies to the Commission that a satellite has been successfully placed into orbit and the operations fully conform to the terms and conditions of this authorization.

32. IT IS FURTHER ORDERED that CyberStar Licensee 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.

33. 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