

reduced to less than 27 km. As shown in Appendix C2, in many areas around the SARSAT stations, the radio horizon is less than 27 km. Therefore, path profiling (i.e., selecting locations for ATC base stations where main-beam coupling would be less likely to occur) would further reduce this distance. MSV shall take all steps to avoid causing interference to the SARSAT earth station located at the sites listed in Table 3.3.A of Appendix C2. We adopt section 25.253(f)(1) to require the ATC base station licensee to provide the Commission with sufficient information to complete coordination of any ATC base station placed within 27 km from one of the locations listed in Table 3.3.A and within the radio horizon of the SARSAT earth station prior to operation.

(iv) Systems Operating Adjacent to the 1626.5-1660.5 MHz Portion of the L-Band

178. MSV's ATC MTs will transmit to ATC base station receivers in the 1626.5-1660.5 MHz frequency band. Below the 1626.5 MHz band, Big LEO systems operate in the 1610-1626.5 MHz MSS allocation. Big LEO MSS MET emissions are limited in EIRP density by national and international regulations.⁴⁷¹ Additionally, Big LEO MSS METs are subject to the out-of-band emission mask contained in section 25.202(f) of the Commission's rules. Given these parameters, Big LEO systems must be capable of tolerating MET emissions in the 1610-1626.5 MHz band that range from -47 dBW/4kHz to -58 dBW/4kHz. The peak EIRP of MSV's ATC MTs is 0.0 dBW with a bandwidth of 200 kHz. Using the same section 25.202(f) out-of-band emission mask that applies to Big LEO terminals yields a maximum ATC MET emission level of -60 dBW/4kHz that could be present in the Big LEO frequency band. Since this value is lower than the more restrictive emission levels that Big LEO METs are permitted to emit in the Big LEO band, out-of-band emissions from MSV's ATC METs will not interfere with Big LEO systems operating in the adjacent spectrum.

(v) Systems Operating Adjacent to the 1525-1559 MHz Band

179. Mobile Aeronautical Telemetry (MAT) systems operate below 1525 MHz in the 1435-1525 MHz allocation in the United States and its possessions. MSV analyzed the interference situation and asserts that, under the worst-case scenario, there would be no interference to an MAT receiver if it is located at least 0.9 km from an MSV ATC base station.⁴⁷² However, we believe that radio line of sight would be the appropriate trigger for coordination between ATC base stations in the L-band and MAT stations operating in the adjacent spectrum because this trigger was used previously to coordinate Satellite Digital Audio Radio Service (SDARS) terrestrial repeaters operating near the 2360-2390 MHz MAT allocation.⁴⁷³ We adopt section 25.253(f)(2) to require L-band ATC operators to take all practicable steps to avoid locating ATC base stations within radio line of sight of MAT receive sites in order to protect U.S. MAT systems consistent with ITU-R Recommendation ITU-R M.1459. MSS ATC base stations located within radio line of sight of a MAT receiver must be coordinated with the Aerospace and Flight Test

⁴⁷¹ See ITU Radio Regulations, Article 5, Table of Frequency Allocations, S5.364, available at <<http://people.itu.int/~meens/P12/RR/s5note2.htm>> (last visited, Dec. 24, 2002); 47 C.F.R. § 2.106 (incorporating S5.364 into the domestic table of allocations). Specifically, Big LEO METs are limited to an EIRP density of -15 dBW/4kHz in parts of the band where airborne electronic aids to air navigation are being developed, and -3 dBW/4kHz elsewhere in the band.

⁴⁷² A smaller distance of 0.1 km would be the result if there is no direct line of sight between the ATC base station and the MAT receiver. See MSV Jan. 11, 2002 *Ex Parte* Letter at 29.

⁴⁷³ See Letter From William K. Keane, Counsel, Aerospace and Flight Test Radio Coordinating Council, to Magalie Roman Salas, Secretary, Federal Communications Commission, IB Docket No. 95-91 (filed Sept. 19, 2000) (submitting an agreement between AFTRCC and XM to use a line of sight trigger).

Radio Coordinating Council (AFTRCC) for non-Government MAT receivers.⁴⁷⁴ For government MAT systems, the licensees must supply the Commission with sufficient information to coordinate with the Inter-department Radio Advisory Committee (IRAC) on a case-by-case basis prior to operation.⁴⁷⁵ A listing of current and planned MAT receiver sites can be obtained from the AFTRCC for non-Government sites and through the IRAC Liaison for Government MAT receiver **sites**.

180. We also evaluated the potential interference to the Global Positioning System (GPS) from ATC BSs and MTs operating in the L-band. GPS operates in a portion of the 1559-1610 MHz Radionavigation Satellite Service (RNSS) allocation. In the *Flexibility Notice*, the Commission recognized that the unwanted emissions from terrestrial stations in the MSS will have to be carefully controlled in order to avoid interfering with GPS receivers.⁴⁷⁶ The Commission specifically requested comment on whether limits for base stations similar to those specified in section 25.213(b) for mobile earth terminals (METs) are adequate to protect GPS receivers.⁴⁷⁷ NTIA responded to our request for comment along with several other parties.⁴⁷⁸ NTIA asserts that there are two issues that must be considered in the request for comment on the protection of GPS: (i) the frequency range(s) over which the emission level would be applicable; and (ii) whether the emission level established for a mobile earth station in an MSS system should be applied to ATC BSs and MTs.⁴⁷⁹

181. Since the release of the *Flexibility Notice*, the Commission has adopted the *GMPCS Order* that requires MSS METs transmitting on frequencies between 1610 MHz and 1660.5 MHz conform to two restrictions: a wideband limit of -70 dBW/MHz, averaged over 20 milliseconds, on the EIRP density of the out-of-band emissions in the 1559-1605 MHz frequency range and a narrowband limit of -80 dBW/700 Hz, also averaged over 20 milliseconds, on emissions in the 1559-1605 MHz frequency range.⁴⁸⁰ The wideband emission level in the 1605-1610 MHz is determined by linear

⁴⁷⁴ AFTRCC is a professional organization of Radio Frequency Management Representatives from major aerospace manufacturing companies. See Aerospace and Flight Test Radio Coordinating Council Organization, *available at* <<http://www.aftrcc.org/afintro.htm>> (last visited, Dec. 30, 2002).

⁴⁷⁵ IRAC is a government forum designed to assist the Assistant Secretary of the Department of Commerce in assigning frequencies to U.S. Government radio stations and in developing and executing policies, programs, procedures, and technical criteria pertaining to the allocation, management, and use of the spectrum. See IRAC Functions and Responsibilities, *available at* <<http://www.ntia.doc.gov/osmhome/iracdefn.html>> (last visited, Dec 30, 2002).

⁴⁷⁶ *Flexibility Notice*, 16 FCC Rcd at 15559 & 15565, ¶¶ 68 & 83

⁴⁷⁷ *Id.*

⁴⁷⁸ See, e.g., NTIA Nov. 12, 2002 *Ex Parte* Letter at 1-4; Globalstar July 1, 2002 *Ex Parte* Letter at 24; Letter from Bruce D. Jacobs, Counsel, Mobile Satellite Ventures L.P. and Raul R. Rodriguez, Counsel U.S. GPS Industry Council to Marlene H. Dortch, Secretary, Federal Communications Commission, IB Docket No. 01-185 at 1-2 (filed July 17, 2002) (*MSV/USGPSIC Agreement*).

⁴⁷⁹ See NTIA Nov. 12, 2002 *Ex Parte* Letter at 2. NTIA also urges the Commission to adopt out-of-band emission levels for the newly allocated L2 (1215-1240 MHz) and L5 (1164-1188 MHz) frequency bands for future GPS operations.

⁴⁸⁰ *GMPCS Order*, 17 FCC Rcd at 8936, ¶ 88. Additionally, separate licensing Orders for MSS METs in the L-band. NTIA filed comments urging the International Bureau to require METs to meet the -70 dBW/MHz and -80 dBW emission limits in the 1559-1610 MHz band. See Comments of the National Telecommunications and Information Administration, IB Docket No. 99-81, at 9 (filed, June 24, 1999), *available at* (continued....)

interpolation from -70 dBW/MHz at 1605 MHz to -10 dBW/MHz at 1610 MHz. On NTLA's first point, then, the **GMPCS Order** expanded the frequency range from that required of section 25.213(b) to protect GPS from MSS MET out-of-band emissions. On NTLA's second point about whether the emission levels established for a mobile earth station in an **MSS** system should be applied to ATC BSs and MTs, **NTIA** indicates that the **GMPCS** emission limits in the 1559-1610 MHz band for METs operating in the 1610-1660.5 MHz frequency range are based on protection of a GPS receivers used on aircraft in a precision approach landing operational scenario and **not** to protect terrestrial operational scenarios.⁴⁸¹ **NTIA** is correct that the **GMPCS** rules, and the rules that we adopt here, that apply to **MSS** equipment are based on aircraft usage of the GPS system.⁴⁸² **NTIA** also expressed its concern and reluctance to limit the protection of GPS based on the aviation scenario only and believes strongly that protection of terrestrial uses of GPS such as E911-assisted GPS should be **addressed**.⁴⁸³ We are extending this standard to apply to terrestrial based GPS subject to further consideration through a public notice that will be issued by OET.

182. The record before us does not support the adoption out-of-band emission levels more stringent than those required of **GMPCS** equipment. Nor does it support expanding the limits to frequency allocations other than the 1559-1610 MHz **RNSS** band. It would not be appropriate to apply more stringent out-of-band emission levels unilaterally to ATC equipment any more than it would be appropriate to apply more stringent out-of-band emission levels to terrestrial mobile systems such as **PCS**. Furthermore, we disagree with certain of the assumptions made by **NTIA** in its analysis to support its position that the out of band levels for L-Band ATC base stations and mobile terminals should be made more stringent than for **GMPCS** and terrestrial mobile equipment. For example, we do not agree that a 3 dB allowance for BS interference allotment included in the **NTIA** analysis for terrestrial GPS receivers or the 6 dB allowance for **BS** interference allotment included in the **NTIA** analysis for aviation GPS receivers are necessary.⁴⁸⁴ We also are unpersuaded at this juncture by NTLA's assertion that it is appropriate to establish interference standards based on a 2 meter separation distance given that the probability of a L-band ATC MT transmitter located within 2 meters of a GPS receiver⁴⁸⁵ is relatively small.⁴⁸⁶ We recognize that **NTIA** disagrees with this assessment, which further warrants consideration of

(Continued from previous page)

<http://svartifoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6007946277> (last visited, Dec. 30, 2002).

⁴⁸¹ See, e.g., **NTIA** Nov. 12, 2002 *Ex Parte* Letter at 1-4.

⁴⁸² **GMPCS Order**, 17 FCC Rcd at 8923-25, ¶¶ 49-52. The limits adopted in the **GMPCS Order** are based on an assumed separation distance of approximately 100 feet between an airborne GPS receiver and a single terrestrial transmitter.

⁴⁸³ **NTIA** Jan. 24, 2003 *Ex Parte* Letter at 2-3.

⁴⁸⁴ See **NTIA** Nov. 12, 2002 *Ex Parte* Letter, Encl. 3 at 7.

⁴⁸⁵ *Id.*, Encl. 2 at 8.

⁴⁸⁶ We estimate that the probability of an L-band ATC MT being located within two meters of a GPS receiver is on the order of 0.024%, assuming a cell size of 1 kilometer radius that is served by three sector antennas and 21 randomly distributed terminals within the cell. See *supra* § III(D)(1)(b). **NTIA**, however, states that the -70 dBW/MHz EIRP limit for ATC MTs results in a required distance separation of 107.8 meters between the GPS receiver and the ATC MT. For the same cell size (1 km radius) and the same number of MTs, **NTIA** states that the probability increases to 73%. We will seek comment on what constitutes appropriate protection for GPS operations through a public notice.

this issue through the OET public notice.

183. To protect GPS operations, therefore, we require L-band ATC BSs and MTs to meet the already established GMPCS wideband and narrowband out-of-band emission levels. MSV provides ATC base station equipment specifications that MSV claims demonstrates that its equipment manufacturer, Ericsson, is committed to meeting specific out-of-band emission attenuation requirements.⁴⁸⁷ Furthermore, in order to demonstrate that its base stations will be capable of meeting the -70 dBW/MHz and -80 dBW for discrete spurious emissions measured in a 700 Hz bandwidth to protect GPS. MSV will operate its ATC base stations with a maximum transmit power of 23.9 dBW EIRP, per sector, and it will incorporate a 1.2 MHz guard band between the ATC base station transmission and the band edge of the RNSS allocation and the band edge of MSV's assignment.⁴⁸⁸ Based on this information, MSV's base stations should be capable of meeting the -70 dBW/MHz (and -80 dBW for discrete spurious emissions) out-of-band emission levels in the RNSS allocation as required by other transmitters currently operating in frequency bands adjacent to GPS operations and interference to GPS aviation uses, as envisioned in the context of the GMPCS proceeding, is not expected.

184. On July 17, 2002, an agreement was submitted to the FCC jointly by the GPS Industry Council and MSV. This agreement specifies that the MSV ATC base stations will "[u]se filtering to achieve -100 dBW/MHz, or lower" emissions in the 1559-1605 MHz frequency band. Also, the ex parte filing states that the ATC Terminals will "[u]se filtering to achieve -90 dBW/MHz, or lower, in [the] short-term" and will "migrate to -95 dBW/MHz, or lower, for new terminals in 5 years (from the date MSV service is operational)" for emissions in the [1559-1605 MHz] band. The limits spelled out in this agreement are well below the GPS protection limits contained in the **GMPCS Order** and contained in the Commission Rules. We recognize the importance of the GPS system to commercial, government and consumer users. We fully support and encourage negotiations among parties whose operations may affect GPS. In certain instances, concerns have been expressed, including by Federal agencies, regarding protection of GPS operations. Though we are adopting the existing limit of -70 dBW/MHz for ATC operations, we plan to continue to assess the appropriate interference protection levels for GPS. As discussed above, OET will issue a public notice shortly soliciting comments from all stakeholders to assist in the examination of what changes in the level of protection for GPS, if any, should be established in the future.

c. Technical and Operational Provisions for L-Band ATC

185. **Additional Spectrum to Support ATC.** Inmarsat contends that MSV's ATC operations will degrade the performance of its own space-based services, reduce the traffic-carrying capacity of the MSV space segment, and thereby increase MSV's need for additional L-band spectrum.⁴⁸⁹ Alternatively, Inmarsat argues that if MSV does not need the spectrum that it has currently coordinated for its satellite system's use, then under the MOU coordination process, the excess spectrum should be made available to another MSS provider that needs it.⁴⁹⁰ MSV asserts that by carefully increasing its intra-system noise level (i.e., self-interference) and limiting it to 0.25 dB due to ATC operations, it can use its coordinated

⁴⁸⁷ MSV Comments, Ex. E.

⁴⁸⁸ MSV uses a base station EIRP of 19.1 dBW/200 kHz per carrier and 3 carriers per sector or a total of 23.9 dBW per sector. See MSV Comments, Technical App., EA. E.

⁴⁸⁹ Inmarsat Comments, Technical Annex § 1.5

⁴⁹⁰ Inmarsat Reply at 26.

and licensed MSS frequency assignments for ATC operations. MSV has based its interference analyses on this objective. Using this and other conservative assumptions, MSV claims it can operate its proposed terrestrial facilities, including thousands of ATC terminals operating simultaneously on each of MSV's carrier frequencies, without risk of causing harmful interference to its own satellite operations or to any of the cochannel, adjacent channel, or adjacent band operations of Inmarsat.⁴⁹¹

186. The analyses we discussed earlier show that if MSV limits its system noise to an increase of 0.25 dB due to ATC, the impact on Inmarsat's current and planned satellite networks is not significant. Furthermore, our analyses confirm that MSV will be able to provide for thousands of simultaneous nationwide ATC users and MSS users by using ATC assignments in geographic areas where MSS is not capable of being delivered directly by satellite that would otherwise go unused. Indeed, MSV will still need to coordinate spectrum with other L-band operators to support its MSS requirements and its ATC operations must adhere to the same frequency assignments that support its MSS requirements. Therefore, use of the spectrum that is coordinated for MSS to support MSV's ATC operations would not be at the expense of other L-Band MSS operations or MSV's own MSS operations. In this regard, MSV will only be permitted in MSS coordination negotiations to base its spectrum requirements on MSS operations without ATC.⁴⁹²

187. *Recordkeeping Requirements for ATC Operations.* We determined earlier that if MSV limits the number of co-frequency, 200 kHz bandwidth, base station carriers to less than 1725, the aggregate effect of ATC on Inmarsat's current and future satellite networks will not be significant. This same number of simultaneously transmitting ATC METs (1725) will increase MSV's satellite receiver noise level by 0.25 dB and, therefore, this same number of simultaneously transmitting, co-frequency METs was used to evaluate the co-frequency interference effects on other MSS systems. Since MSV's proposed TDMA-GSM ATC system can, at most, serve a single MET transmitting per base station carrier, by limiting the number base station carriers to 1725 on any single frequency, we limit the maximum increase in MSV's satellite receiver noise level to 0.25 dB and, correspondingly, limit the co-frequency interference to other MSS systems. This 1725 limit is not a limit on the total number of base stations or a limit on the simultaneously number of transmitting METs. This is a limit on the number of base stations operating on any one frequency. To ensure that MSV's ATC operations will not cause unacceptable interference to other MSS systems, we adopt section 25.253(c) to limit the number of co-frequency base stations to 1725 which is less than the 2000 proposed by MSV.

188. To enforce the limit we place on ATC base stations in section 25.253(e), we also require L-band ATC operators to maintain a record of the total number of base stations throughout the U.S. operating on any given 200 kHz of spectrum. ATC operators must provide this information to the Commission, upon request, to resolve any interference complaint it receives from any L-band MSS operator that ATC operations are causing co-channel interference to its MSS network. Additionally, we will condition ATC authorizations such that the licensee must monitor and report, on an annual basis, the number of co-frequency base station carriers implemented. Since, MSV may only implement an ATC system in sub-bands obtained through the L-Band MOU coordination process, based upon its MSS needs, the total number of base stations is determined by the total coordinated MSS bandwidth. During future coordination, the L-Band spectrum identified for the various MSS operators may be aggregated. Furthermore, since the adjacent channel interference to other MSS systems was based upon a total

⁴⁹¹ MSV Reply at 13

⁴⁹² MSV states that it is committed to continuing to limit its coordination efforts to gaining access to spectrum for its satellite operations. See MSV Reply at 17

number of 90,000 simultaneously transmitting MTs, we require that ATC operators report to the Commission. on an annual basis, the peak traffic on the ATC system and to limit this peak traffic to no more than 90,000 ATC MTs. These reporting requirements are in addition to any other reporting requirements and licensing conditions ultimately applied to an ATC authorization.

3. Big LEO Systems

189. In 1992, the World Administrative Radio Conference (WARC-92) allocated the 1610-1626.5 MHz band on a co-primary basis to the Mobile Satellite Service (MSS) in the Earth-to-space direction, and the 1613.8-1626.5 MHz band in the space-to-Earth direction on a secondary basis. WARC-92 also allocated the 2483.5-2500 MHz band on a co-primary basis to MSS operations in the space-to-Earth direction.⁴⁹³ In 1994, the Commission domestically allocated the 1610-1626.5/2483.5-2500 MHz bands to the MSS in the U.S.⁴⁹⁴ In that same year, the Commission released the service rules for MSS systems in these frequency bands which, among other things, established licensing procedures for time division multiple access/frequency division multiple access (TDMA/FDMA) operations in the 1621.35-1626.5 MHz portion of the allocation and code division multiple access (CDMA) operations in the 1610-1621.35 MHz and 2483.5-2500 MHz bands.⁴⁹⁵

190. Currently, Globalstar and Iridium are licensed and operational in the Big LEO Bands. Both systems are required to protect Radio Astronomy Service (RAS) observations that take place in the 1610.6-1613.8 MHz portion of the band by limiting MET emissions and (in Iridium's case) satellite out-of-band emissions in the RAS band and avoiding simultaneous operations during RAS observations within several coordination areas throughout the U.S.⁴⁹⁶ Big LEO licensees are also required to protect systems operating in the frequency bands immediately adjacent to the MSS allocation. Specifically, Big LEO MSS MET out-of-band emission levels must be significantly attenuated to protect systems operating in the Radio Navigation Satellite Service (RNSS) allocation such as the U.S. Global Positioning System (GPS) and the Russian Global Navigation Satellite System (GLONASS).⁴⁹⁷ Globalstar is the only Big LEO system authorized to operate in the 2483.5-2500 MHz band in the downlink direction. Globalstar's system is required to share the downlink spectrum with industrial scientific and medical (ISM) equipment; Broadcast Auxiliary Service (BAS) electronic news gathering (ENG) equipment; private land mobile operations; fixed microwave services both in the 2483.5-2500 MHz band and in the band below 2183.5 MHz; and the multi-point distribution service/instructional television fixed service (MMDS/ITFS) systems operating above 2500 MHz.

191. Globalstar proposes to deploy ATC in a Forward Band Mode of operation in conjunction

⁴⁹³ See ITU Radio Regulations Article 5.

⁴⁹⁴ See *Amendment of Section 2.106 of the Commission Rules to Allocate the 1610-1625 MHz and the 2483.5-2500 MHz Bands for Use by the Mobile-Satellite Service, Including Non-Geostationary Satellites*, Report and Order, 9 FCC Rcd 536, 536, ¶ 1 (1994) (*Big LEO Order*).

⁴⁹⁵ See *Big LEO Service Rules Order*, 9 FCC Rcd at 5954-5965, ¶¶ 43-63. Hereafter we refer to these frequency bands as the "Big LEO" bands. Globalstar is licensed to operate its MSS system in the 1610-1621.35/2483.5-2500 MHz bands and Iridium is licensed to operate its MSS system in the 1621.35-1626.5 MHz band.

⁴⁹⁶ See 47 C.F.R. § 25.213.

⁴⁹⁷ See *CMPCS Order*, 17 FCC Rcd at 8928, ¶ 64 (2002) (establishing specific out-of-band emission levels that Big LEO MSS METs must meet according to a specified time schedule).

with its Big LEO system?” and it proposes to operate its ATC base stations in the MSS downlink band using either cdma-2000 or IS-95 system characteristics.⁴⁹⁹ Therefore, Globalstar’s ATC mobile terminals will transmit in the same uplink band as the MSS mobile earth terminals and the ATC base stations will transmit in the same downlink band where its MSS satellites transmit.⁵⁰⁰ Under the Globalstar ATC proposal, ATC would temporarily receive its own block of spectrum in regions around ATC base stations and the MSS service would not use the same frequency channels that are assigned to the ATC service in the regions near ATC base stations on a dynamic basis. The frequency assignments would be changeable and managed according to total demand, peaking periods, geographic distribution of terminals, fixed versus mobile usage, etc.⁵⁰¹ Though Iridium does not object to the technical feasibility of ATC, (indeed Iridium indicates that it is technically possible for Iridium to incorporate an ATC network into its currently authorized Big LEO system), Iridium does question whether ATC would be a commercially viable option for its currently licensed TDMA/FDMA Big LEO network.⁵⁰² In place of providing technical information on how ATC could be incorporated into its currently licensed TDMA/FDMA Big LEO system, Iridium provided general information on its alternative to ATC: a Secondary Terrestrial Service (STS). Moreover, Iridium has filed a petition with the Commission requesting additional spectrum for its Big LEO system in the 1.6GHz band.⁵⁰³ For reasons indicated elsewhere in this Order, we decline to adopt Iridium’s STS proposal” and we address Iridium’s petition for additional spectrum in a Notice of Proposed Rulemaking.⁵⁰⁵

192. To implement the decision in this Order, we adopt rules for ATC used in conjunction with Big LEO MSS systems. Big LEO CDMA licensees will be permitted to deploy ATC systems using either cdma-2000 or IS-95 system characteristics.⁵⁰⁶ The rules we adopt today do not bar Iridium from

⁴⁹⁸ See Globalstar Bondholders Mar. 13, 2002 *Ex Parte* Letter at 13

⁴⁹⁹ See Letter from William D. Wallace, Counsel to Globalstar, L.P. to Marlene Dortch, Secretary, Federal Communications Commission, IB Docket No. 01-185 (filed May 29, 2002). Globalstar incorporates by reference the cdma2000 system characteristics contained in the “Final Report-Spectrum Study of the 2500-2690 MHz band” (March 30, 2001), Tables 1 and 2 of App. 2.1, and to the Recommended Minimum Performance Standards for Base Stations supporting Dual Mode Wideband Spread Spectrum Cellular Mobile Stations (**IS-97A**) and Recommended Minimum Performance Standards for Mode Wideband Spread Spectrum Cellular Mobile Stations IS-97.

⁵⁰⁰ Globalstar Bondholders Mar. 13, 2002 *Ex Parte* Letter at 13-15

⁵⁰¹ Globalstar Supplemental Comments at 25

⁵⁰² The currently licensed Iridium system is required to operate both its uplink and downlink transmissions in the 5.15 megahertz of spectrum from 1621.35-1626.5 MHz. “New Iridium has no doubt that, as a purely technical matter, it can operate a terrestrial signal within the existing TDMA allocation without causing interference to its satellite signal. The larger question is whether this can be accomplished in a commercially viable manner.” See Iridium Comments at 4.

⁵⁰³ See *Amendment of Parts 2.106, 25.143 and 25.202 of the Commissions Rules to Require Operation of LEO MSS Systems Using TDMA/FDMA Techniques in the 1615.5-1626.5 MHz Frequency Bands*, Petition for Rulemaking, at 4-7 (filed July 26, 2002) (proposing a new band arrangement for Big LEO CDMA and TDMA/FDMA systems. Iridium makes no request for additional spectrum in the 2483.5-2500 MHz band).

⁵⁰⁴ See discussion *supra* at § III(B)(3).

⁵⁰⁵ See discussion *infra* at § IV(B).

⁵⁰⁶ Globalstar provided sufficient technical information for us to consider in developing our rules for ATC systems used in conjunction with CDMA MSS systems

applying for ATC authorization in its licensed MSS spectrum from 1621.35-1626.5 MHz, though the record lacks sufficient information to demonstrate how an ATC network could operate in conjunction with a TDMA/FDMA MSS system. Also, given Iridium's petition for additional Big LEO MSS spectrum, it would be premature to adopt rules to implement ATC in those portions of the Big LEO bands implicated by the Notice of Proposed Rulemaking. To prevent the actions we take today from prejudicing the outcome of our Notice of Proposed Rulemaking, however, we will permit CDMA licensees to deploy ATC in the 1610-1615.5 MHz portion of the 1.6GHz hand and the 2492.5-2498 MHz portion of the 2.4 GHz band.⁵⁰⁷ The disposition of the spectrum from 1615.5-1621.35 MHz will be determined by the Commission's ruling on the Notice of Proposed Rulemaking. Here, we address the potential interference concerns raised by in-hand MSS, and adjacent band system licensees below. We conclude, generally, that Big LEO ATC can operate in the designated CDMA portions of the Big LEO bands using either cdma-2000 or IS-95 system characteristics without causing interference to other in-hand MSS systems and systems operating in adjacent allocations to the MSS spectrum.

193. With regard to permitting ATC base stations to operate in the 2492.5-2498.0 MHz portion of the 2483.5-2500 MHz MSS band, because the use of the remainder of the band will not be decided by this Order and in order not to prejudice possible future action by the Commission, it is necessary that any ATC base stations installed in the 2492.5-2498.0 MHz band be tunable across the entire 2483.5-2500 MHz MSS allocation. To this end, we adopt section 25.254(a)(4) which requires that the applicant demonstrate that the base stations are, in fact, tunable across the entire 2483.5-2500 MHz MSS allocation.

a. Protection of In-band Systems in the 1610-1626.5 MHz Band

194. Globalstar demonstrates that at least two CDMA systems operating in the 1.6/2.4 GHz bands would be able to coordinate use of the assigned frequencies so that both could provide ATC and MSS without causing harmful interference to the other. ATC operations in the uplink band would be made possible by placing limitations on ATC mobile terminal aggregate EIRP levels in one portion of the hand while the already established aggregate EIRP level for MSS mobile earth terminals would continue to apply in another portion of the uplink band.⁵⁰⁸ MSS operations would continue to share the whole downlink band through application of satellite power flux density limits and limiting ATC base station operations to certain portions of the downlink hand in a given geographical area.⁵⁰⁹ Moreover, Globalstar maintains that the Radioastronomy Service (RAS) which operates in the MSS uplink band would be protected from ATC interference in accordance with the existing coordination agreement which uses exclusion zones and power limits to protect RAS observations from MSS mobile earth terminal operations.⁵¹⁰

195. First we address the possibility of multiple CDMA system access to the Big LEO frequency bands. The Commission concluded that the Big LEO hand arrangement would accommodate four CDMA systems and one TDMA/FDMA system.⁵¹¹ Based on Recommendation ITU-R M.1186

⁵⁰⁷ See discussion *infra* at § IV(B).

⁵⁰⁸ Globalstar Supplemental Comments at 35.

⁵⁰⁹ Globalstar Bondholders Mar. 13, 2002 *Ex Parte* Letter at 33.

⁵¹⁰ *Id.* at 25.

⁵¹¹ See *Big LEO Service Rules Order*, 9 FCC Rcd at 5954-5965, ¶¶ 13-63.

which establishes the parameters that **CDMA MSS** system operators use to coordinate their operations in a manner that enables them to reuse the same spectrum.⁵¹² Globalstar asserts that at least **two CDMA MSS** systems can deploy an **ATC** network in the Big LEO bands without causing mutually unacceptable interference. Constellation agrees with Globalstar that **ATC** operations can be effectively coordinated among **CDMA** licensees using channel assignments.⁵¹³ We agree with Globalstar and Constellation that at least two **CDMA MSS** systems would be able to operate in the Big LEO bands if the **systems** implement **ATC** operations. Indeed, Recommendation ITU-R M.1186 has been used successfully by **CDMA MSS** operators to coordinate the operations of their systems and its framework will facilitate the coordination **ATC** used in conjunction with the **CDMA MSS** systems to avoid causing mutually unacceptable interference. Since Globalstar is currently the only **CDMA** licensee in the Big LEO bands, interference from Globalstar's **ATC** system to another **CDMA** system is not an issue. However, the amount of Big LEO spectrum designated for **CDMA** operations is subject to the outcome of our *Notice of Proposed Rulemaking* and there exists the possibility that a second, future, **CDMA MSS** system could enter the Big LEO bands.⁵¹⁴ We would require a second **CDMA MSS** system to coordinate its network (including **ATC** if it is part of the **MSS** network) using the Recommendation ITU-R M.1186 parameters. To this end, we provide a way for Globalstar to readily implement **ATC**, we leave open the possibility for multiple **CDMA MSS** entry, and do not preclude the possibility that Iridium could be granted access to additional Big LEO spectrum for its **TDMA/FDMA** system.

196. We also evaluated the potential interference that **ATC** systems could cause to the Radio Astronomy Service (RAS) which operates in the 1610.6-1613.8 MHz band at various locations in the U.S. As we indicated earlier, Big LEO **MSS** mobile earth terminals are required to protect the **RAS** from out-of-band emissions interference. Big LEO **MSS ATC** operators must: (1) ensure the Big LEO network is capable of determining the position of its mobile earth terminals; and (2) take specific measures to prevent interference to **RAS** observations in the event any of the licensee's mobile earth terminals enter any of the pre-established coordination zones around the U.S. **RAS** sites.⁵¹⁵ Globalstar proposes that the same limitations be placed on Big LEO **ATC** systems and there were no objections to this approach. We see no reason why the same procedures that apply to protect **RAS** observations in the 1610.6-1613.8 MHz band from **MSS MET** operations could not also apply to **ATC** mobile terminals. We therefore apply our rules that currently apply only to Big LEO **MSS METs** to include **MSS** terminals with **ATC** capability. Specifically, we adopt section 25.254(d) to provide interference protection to **RAS** observations in the

⁵¹² See ITU, Recommendation ITU-R M.1186, *Technical Considerations for the Coordination Between Mobile Satellite Service (MSS) Networks Utilizing Code Division Multiple Access (CDMA) and Other Spread Spectrum Techniques in the 1-3 GHz Band*, available at <http://www.itu.int/rec/recommendation.asp?type=items&lang=e&parent=R-REC-M.1186-0-199510-1> (last visited, Feb. 3, 2003). We do note, however, that the assertions made by Globalstar were presumably based on the use of 11.35 MHz and 16.5 MHz of spectrum in the uplink and downlink bands, respectively. Additional information is needed in the context of the *Notice of Proposed Rulemaking* to determine how many **CDMA MSS** systems could operate **ATC** in the band sharing arrangement ultimately adopted by the Commission. See *infra* § IV(B).

⁵¹³ See Constellation Comments at 16.

⁵¹⁴ See discussion, *infra* § IV(B) (seeking comment on whether a second processing round should be established for additional **MSS** licenses).

⁵¹⁵ See 47 C.F.R. § 25.213 of the Commission's rules. All 1.612.4 GHz Mobile Satellite Service systems shall be capable of determining the position of the user transceivers accessing the space segment through either internal radiodetermination calculations or external sources such as LORAN-C or the Global Positioning System. During periods of radio astronomy observations, land mobile earth stations shall not operate when located within geographic protection zones defined in 47 C.F.R. § 25.213 (a)(1)(i)-(iv).

U.S. from ATC mobile terminals.

b. Protection of Systems Operating in Bands Adjacent to 1610-1626.5 MHz

197. We address the potential interference to the Global Positioning System (GPS) from ATC BSs and MTs operating in the Big LEO-bands. GPS operates in a portion of the 1559-1610 MHz Radionavigation Satellite Service (RNSS) allocation. In the *Flexibility Notice*, the Commission recognized that the unwanted emissions from terrestrial stations in the MSS will have to be carefully controlled in order to avoid interfering with GPS receivers.⁵¹⁶ The Commission specifically requested comment on whether limits for base stations similar to those specified in section 25.213(b) for mobile earth terminals (METs) are adequate to protect GPS receivers.⁵¹⁷ NTIA responded to our request for comment along with several other parties.⁵¹⁸ NTIA asserts that there are two issues that must be considered in the request for comment on the protection of GPS: (i) the frequency range(s) over which the emission level would be applicable; and (ii) whether the emission level established for a mobile earth station in an MSS system should be applied to ATC BSs and MTs.⁵¹⁹ Globalstar supports the application of the GMPCS limits to ATC BSs and MTs.⁵²⁰

198. Since the release of the *Flexibility Notice*, the Commission has adopted the **GMPCS Order** that requires MSS METs transmitting on frequencies between 1610 MHz and 1660.5 MHz conform to two restrictions: a wideband limit of -70 dBW/MHz, averaged over 20 milliseconds, on the EIRP density of the out-of-band emissions in the 1559-1605 MHz frequency range and a narrowband limit of -80 dBW/700 Hz, also averaged over 20 milliseconds, on emissions in the 1559-1605 MHz frequency range.⁵²¹ The wideband emission level in the 1605-1610 MHz is determined by linear interpolation from -70 dBW/MHz at 1605 MHz to -10 dBW/MHz at 1610 MHz. On NTIA's first point, then, the **GMPCS Order** expanded the frequency range from that required of section 25.213(b) to protect GPS from MSS MET out-of-band emissions. On NTIA's second point about whether the emission levels established for a mobile earth station in an MSS system should be applied to ATC BSs and MTs, NTIA indicates that the GMPCS emission limits in the 1559-1610 MHz band for METs operating in the 1610-1660.5 MHz frequency range are based on protection of a GPS receivers used on aircraft in a precision

⁵¹⁶ *Flexibility Notice*, 16 FCC Red at 15559 & 15565, ¶¶ 68 & 83

⁵¹⁷ *Id.*

⁵¹⁸ See generally NTIA Nov. 12, 2002 *Ex Parte* Letter; Globalstar July 1, 2002 *Ex Parte* Letter at 24; *MSV/USGPSIC Agreement* at 1-2

⁵¹⁹ NTIA Nov. 12, 2002 *Ex Parte* Letter at 2. NTIA also urges the Commission to adopt out-of-band emission levels for the newly allocated L2 (1215-1240 MHz) and L5 (1164-1188 MHz) frequency bands for future GPS operations. *Id.*

⁵²⁰ See Globalstar July 1, 2002 *Ex Parte* Letter at 24.

⁵²¹ **GMPCS Order**, 17 FCC Red at 8936, ¶ 88. Additionally, separate licensing Orders for MSS METs in the L-band. NTIA filed comments urging the International Bureau to require METs to meet the -70 dBW/MHz and -80 dBW emission limits in the 1559-1610 MHz band. See Comments of the National Telecommunications and Information Administration, IB Docket No. 99-81, at 9 (filed June 24, 1999), available at <http://svartiloss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6007946277> (last visited Dec. 30, 2002).

approach landing operational scenario and not to protect terrestrial operational scenarios.” NTIA is correct that the GMPCS rules, and the rules that we adopt here, apply to aircraft usage of the GPS system. We recognize that NTIA believes that these rules do not provide adequate protection to terrestrial terminals.⁵²³

199. The record before us does not support the adoption of out-of-band emission levels more stringent than those required of GMPCS equipment. Nor does it support expanding the limits to frequency allocations other than the 1559-1610MHz RNSS band. It would not be appropriate to apply more stringent out-of-band emission levels unilaterally to ATC equipment any more than it would be appropriate to apply more stringent out-of-band emission levels to terrestrial mobile systems such as PCS.⁵²⁴ As indicated above, concerns have been expressed, including by Federal agencies, regarding protection of GPS operations. NTIA also expressed their concern and reluctance to limit the protection of GPS based on the aviation scenario only and believes strongly that protection of terrestrial uses of GPS such as E91 I assisted GPS should be addressed.⁵²⁵ Though we are adopting the existing limit of -70 dBW/MHz (wideband emissions) and -80 dBW (narrowband emissions) for ATC operations; however, we plan to continue to assess the appropriate interference protection levels for GPS. As discussed above OET will issue a public notice shortly soliciting comment from all stakeholders to assist in the examination of what changes in the level of protection for GPS, if any, should be established in the future.

200. To protect GPS operations, Globalstar proposes that interference to GPS and GLONASS in the adjacent frequency band be limited by applying the same out-of-band emission specifications that are required of Globalstar’s MSS mobile earth terminals to ATC mobile terminals.⁵²⁶ We agree with Globalstar’s approach. The recent adoption of our GMPCS rules is the culmination of several years’ work to strike a balance between the MSS system operations in the Big LEO bands (among others) and the protection requirements of RNSS systems such as GPS operating in the frequency band immediately adjacent to the MSS allocation.⁵²⁷ We apply the same out-of-band emission levels to ATC base stations and mobile terminals’ protection of adjacent systems in the RNSS allocations as those adopted in the GMPCS proceeding. We adopt section 25.254(b)(4) to apply the GMPCS out-of-band emission levels to Big LEO ATC mobile terminals.

c. **Protection of Systems Operating in and Near the 2483.5-2500 MHz Band**

201. The Society of the Broadcast Engineers (SBE) contends that TV BAS equipment operating below 2483.5 MHz and MMDS/ITFS equipment operating above 2500 MHz will experience

⁵²² See NTIA Nov. 12, 2002 *Ex Parte* Letter at 5

⁵²³ **GMPCS Order**, 17 FCC Rcd at 8923-25, ¶¶ 49-52. The limits adopted in the **GMPCS Order** are based on an assumed separation distance of about 100 feet between an airborne GPS receiver and a single terrestrial transmitter.

⁵²⁴ For a discussion of the basis for our assumptions about cell size, the number of randomly distributed terminals and other factors that lead us to different conclusions about the requisite level of protection for GPS than NTIA reached, see, e.g., *supra* § III(D)(1)(b).

⁵²⁵ NTIA Jan. 24, 2003 *Ex Parte* Letter at 2-3

⁵²⁶ See Globalstar Bondholders Mar. 13, 2002 *Ex Parte* Letter at 26

⁵²⁷ See **GMPCS Order**, 17 FCC Rcd at 8928, ¶ 64.

interference from Big LEO ATC base stations.⁵²⁸ SBE specifically commented that MSS ATC base stations in the 2483.5-2500 MHz band will cause out-of-band interference in TV BAS ENG Channels A8 and A9.⁵²⁹ SBE also claims that ENG channel A10 (2483-2500 MHz) is operating at the same frequency as the Big LEO space-to-earth (downlink) component and that brute force overload of ENG receivers would occur.⁵³⁰ We also note that fixed and mobile services are permitted to operate in these frequency bands. Specifically, Private Land Mobile Services and Fixed Microwave Services that include video transmissions operate in this same frequency range.”

202. The IS-95 system characteristics that Globalstar proposes as a candidate for its ATC operations allow for higher EIRP levels for base stations than for cdma-2000 base stations.⁵³² We evaluate the affects of the potentially more interfering ATC network using IS-95 system characteristics. As explained in greater detail in Appendix C3, Section 4.2, the amount of interference caused to BAS equipment is a function of how close (geographically) the ATC base station is located to the BAS receivers of these systems. By selecting certain operating frequencies for the ATC base stations and the BAS assignments, one can simultaneously operate the equipment without causing mutually unacceptable interference at shorter distances. We evaluated the separation distance as a function of frequency assignment and conclude that ATC base station operations (using either cdma-2000 or IS-95 characteristics) can be conducted so as not to cause adjacent band interference to BAS systems operating below 2483.5 MHz given the band-sharing arrangement we adopt for ATC operations in the band and the availability of information on the BAS.” The fixed and mobile operations in the adjacent 2450-2483.5 MHz band include many video links that are generally similar to, but of a lower power than, those of BAS. By analogy to the analysis in the appendix for BAS, we would expect that ATC base stations could be operated on selected frequencies so that interference to these fixed and mobile stations could be avoided. Insofar as fixed and mobile operations in this frequency range are similar to the BAS characteristics, we conclude that adjacent band interference to these systems will also be avoided through coordination.⁵³⁴ ATC operators will be required to protect all existing licensees in the adjacent bands.

203. Additionally, there are several hundred BAS, fixed and mobile facilities licensed on a grandfathered basis throughout the U.S. where the receivers could potentially receive brute force overload interference from ATC base stations operating in the 2483.5-2500 MHz band. To avoid causing brute force overload interference to BAS, fixed and mobile equipment, ATC operators, prior to construction and operation of ATC base stations, must consult local coordination committees for information on the frequencies used and the geographic locations of these systems that may receive brute force overload

⁵²⁸ See SBE Comments at 10

⁵²⁹ *Id.*

⁵³⁰ *Id.*

⁵³¹ See, e.g., 17 C.F.R. §§ 90.20, 90.35, 90.103 & 101.147. There are nearly 500 active licenses under Paris 90 and 101 in the band 2450-2483.5 MHz, including critical public safety functions.

⁵³² CDMA-2000 base stations operate at 10W of power with a 17dBi antenna while IS-95 base stations operate at 20W of power with a 19dBi antenna. See Globalstar May 29, 2002 *Ex Parte* Letter, Technical Statement Attach. at 2 (including the system characteristics for cdma-2000 and IS-95 systems).

⁵³³ See discussion *infra* at ¶ 191 & App. C3 § 4.2

⁵³⁴ Globalstar has indicated that it is willing to coordinate with existing fixed service installations. See Globalstar March 13, 2002 *Ex Parte* Letter at 25.

interference. ATC operators shall take such steps necessary to avoid causing brute force overload interference to previously licensed facilities. If a mutual agreement to this effect cannot be reached, the Commission must be notified and it will take such action as may be necessary to ensure that a mutually acceptable arrangement is arrived at.⁵³⁵ In any event, ATC operators will be required to protect against adjacent-channel and brute-force overload interference to previously licensed users. Coordination among the shared services within the 2450-2483.5 megahertz band varies from service to service. Part 90 licensees are not required to coordinate their operations within the band. Part 74 licensees coordinate among other **BAS** licensees. And **Part** 101 licensees are required to coordinate according to section 101.103(d). In the past, the Commission has encouraged participation in situations where it has not expressly required coordination in this band or established procedures for inter-service coordination. ATC operators will **be** required to take measures to protect against all types of interference to existing licensed services in this band.

204. Globalstar contends that ATC base stations operating below **2498.0** MHz will not interfere with **MMDS/ITFS**.⁵³⁶ We evaluated in Appendix C3, Section 4.2, the worst case potential for ATC base stations to interfere with currently deployed **MMDS/ITFS** operations above 2500 MHz under various situations and we agree with Globalstar that ATC base station operators (using either cdma-2000 or IS-95 characteristics) would protect existing **MMDS/ITFS** equipment, provided that ATC base station operations are below 2498.0 MHz. ATC base stations using either cdma-2000 or IS-95 characteristics can be located within a meter of **MMDS/ITFS** equipment without causing unacceptable interference.⁵³⁷ We also note that the Commission has before it a petition to reform the band above 2500 MHz to provide for cellular-like services and the use of the band is subject to **change**.⁵³⁸ Therefore, we will permit ATC base stations using cdma-2000 or IS-95 characteristics in the portion of the downlink band from 2492.5-2498.0 MHz.

205. Although unlicensed ISM equipment is not subject to any protection from current MSS downlink operations, our research indicates that most unlicensed ISM equipment manufacturers build out-of-band signal rejection features into their **hardware**.⁵³⁹ As indicated above, in order for Big LEO ATC base stations to protect licensed adjacent band receivers, the operating frequency is an important factor in reducing interference while keeping the geographic separation distance between the equipment to a minimum. For other reasons, we are limiting ATC base station operations to assignments above 2492.5 MHz which places the frequency band edge of the ATC base stations greater than 25 MHz from the users

⁵³⁵ See, e.g., 47 C.F.R. § 74.604

⁵³⁶ Globalstar Bondholders March 13, 2002 *Ex Parte* Letter at 26.

⁵³⁷ See discussion *infra* at App. C3 § 4.2.3 (comparing geographic separation distances as a function of frequency separation)

⁵³⁸ *Srr Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, First Report and Order and Memorandum Opinion and Order, 16 FCC Rcd 17222, 17240-42, ¶ 33-36 (*ITFS/MMDS Order*); *Wireless Telecommunications Bureau Seeks Comment on Proposal to Revise Multichannel Multipoint Distribution Service and the Instructional Television Fixed Service Rules*, Public Notice, RM-10586, 17 FCC Rcd 20516 (rel. Oct. 17, 2002), available at <http://svantifoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513307317> (last visited, Dec. 24, 2002)

⁵³⁹ See WaveLAN Technical Bulletin 003/A, Lucent Technologies, available at <<http://www.novocmp.de/prod/wirel/WLAN/bilder/Download/Tb-003.pdf>> (last visited, Dec. 12, 2002)

of lower 2.4 GHz ISM band making interference to ISM devices a non-issue.

206. In summary, we adopt a band arrangement for Big LEO ATC operations based on the technical information provided by the Big LEO licensees and users of the adjacent frequency allocations. We apply the same out-of-band emission limits to ATC capable terminals and base stations that apply to MSS mobile earth terminals to protect RNSS systems operating below 1610 MHz. Additionally, we apply the same operational rules to ATC terminals that currently apply to Big LEO MSS mobile earth terminals to protect RAS observations within the Big LEO uplink band. Furthermore, by requiring ATC base stations to operate at EIRP and out-of-channel emission levels consistent with cdma-2000 or IS-95 architectures, the band arrangement we adopt today for Big LEO ATC base stations will not cause adjacent band interference to BAS and MMDS/ITFS users of the allocations adjacent to the Big LEO downlink band. We also adopt coordination provisions for ATC base stations that cause brute force overload to BAS and other licensed services in the 2.4 GHz band.

E. Statutory Considerations

1. Section 303(y)

207. In the *Flexibility Notice*, we sought comment on whether permitting ATC in the MSS spectrum would be consistent with section 303(y) of the Act.⁵⁴⁰ Section 303(y) of the Act⁵⁴¹ gives the Commission additional authority to allocate spectrum to provide flexibility of use, provided that the use is consistent with international agreements to which the United States is a party; and, if after notice and comment, the Commission finds that such an allocation would be in the public interest: would not deter investment in communications services and systems, or technology development; and would not result in harmful interference among users.⁵⁴²

208. As a preliminary matter, we find that our decision to permit qualifying MSS licensees to incorporate ATC does not require that we make a finding under section 303(y). The Commission has previously found that the section 303(y) review requirement applies only to flexible use determinations by the Commission that would enable the sharing of specific spectrum bands by services treated as distinct by the international and domestic allocations process, and not as a precondition to adoption of flexible intra-service regulations.⁵⁴³ Our decision today grants limited flexibility by permitting the reuse of already licensed spectrum. We do not adopt new allocations in the 2 GHz, L- and the Big LEO MSS bands, but rather indicate that ATC is permissible by footnote in the domestic table of allocations; therefore, we find that we are not required to make any findings under section 303(y) of the

⁵⁴⁰ *Flexibility Notice*, 16 FCC Rcd at 15544, ¶ 25

⁵⁴¹ 47 U.S.C. § 303(y).

⁵⁴² The Commission also has general authority to allocate spectrum for flexible use and has previously noted that nothing in the language or legislative history of section 303 of the Communications Act, 47 U.S.C. § 303, suggests any limitation on the Commission's discretion to prescribe the nature or number of the service or services to be rendered over radio frequencies. See *Allocation of Spectrum Below 5 GHz; Transferred from Federal Government Use*, 1998 WL 812430. Memorandum Opinion and Order, ET Docket 94-32, ¶ 15 (ret., Nov. 25, 1998); see also *In the matter of Allocation of Spectrum Below 5 GHz; Transferred from Federal Government Use*, Second Report and Order, 11 FCC Rcd 624 at 633-4, ¶¶ 20-21 (noting that Commission precedent supports the permissibility of allocating spectrum in a manner that allows for its use by a broadly defined service).

⁵⁴³ *Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules*, 15 FCC Rcd 476, 486, ¶ 22 (2000).

Communications Act. We note, however, that parties have raised important issues in response to our questions in the *Flexibility Notice* concerning 303(y) that merit discussion here. We have previously considered the criteria contained in section 303(y) under our broader public interest mandates in the statute, when making decisions that may affect the broader allocation through service rules, and we believe it is in the public interest to do so in this proceeding in light of the issues raised in the record.⁵⁴⁴ Accordingly, while the flexibility to provide ATC that we grant today is subject to limiting conditions, we nevertheless find that permitting qualifying MSS licensees the flexibility to incorporate ATC, which will permit them to improve service to certain geographic areas by improving signal quality through the use of terrestrial facilities in the 2 GHz, L-band, and the Big LEO MSS bands, is consistent with the criteria in section 303(y) of the Act and with the Commission's long standing policy of granting spectrum users additional flexibility to implement new services.⁵⁴⁵ We have already determined elsewhere in this Order that providing flexibility for MSS licensees to incorporate ATC serves the public interest⁵⁴⁶ and would not result in harmful interference.⁵⁴⁷ We address below the remaining elements raised by commenters.

a. Investment Incentives

209. Some commenters state that granting MSS licensees the flexibility to incorporate ATC service will attract investment to the band in question.⁵⁴⁸ Other commenters argue that there is insufficient evidence on the record on the issue of capital investment and whether it would be spurred or deterred by granting ATC.⁵⁴⁹ Others claim that granting ATC in certain bands, such as the upper L-band, would deter investment in new technologies employing these frequencies.⁵⁵⁰

210. We disagree with commenters claiming that there is not enough evidence of potential

⁵⁴⁴ *Id.*

⁵⁴⁵ See, e.g., *Common Carrier Point-to-Point Microwave Radio Service*, First Report and Order, 29 F.C.C.2d 870 (1971); *Amendment of Parts 2 & 22 of the Commission's Rules to Permit Liberalization of Technology & Auxiliary Service Offerings in the Domestic Public Cellular Radio Telecommunications Service*, Report and Order, 3 FCC Rcd 7033, 7037, ¶¶ 24-30 (1988); *Amendment of Parts 2 & 22 of the Commission's Rules to Permit Liberalization of Technology & Auxiliary Service Offerings in the Domestic Public Cellular Radio Telecommunications Service*, Memorandum Opinion and Order, 5 FCC Rcd 1138, 1139, ¶ 10 (1990); 47 C.F.R. § 22.901 (cellular services); 47 C.F.R. Parts 24 and 27 (broadband PCS and Wireless Communications Services rules); *PCS Second Report and Order*, 8 FCC Rcd 7700, 7710-13, ¶¶ 19-24 (1993); *Allocation of Spectrum Below 5 GHz: Transferred from Federal Government Use*, Second Report and Order, 11 FCC Rcd 624, 627-38, ¶¶ 6-28 (1995); *Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Services*, First Report and Order and Notice of Further Proposed Rulemaking, 11 FCC Rcd 8965, 8967, ¶ 3 (1996) (CMRS); *Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, 12 FCC Rcd 5754, 5787-816, ¶¶ 81-153 (1997) (DARS); *ITFS/MMDS Order*, 16 FCC Rcd at 17235-38, ¶¶ 22-30 (ITFS and MMDS).

⁵⁴⁶ See *supra* § III(A).

⁵⁴⁷ See *supra* § III(D) and Apps. C1-C3.

⁵⁴⁸ See, e.g., ICO Comments at 29; Celsat Comments at 12-13; Globalstar Comments at 8; MSV Comments at 21; Loral Comments at 9; Globalstar Bondholder Comments at 24 n.38.

⁵⁴⁹ See, e.g., Cingular/Sprint July 31, 2002 *Ex Parte* Letter at A-11; AT&T Wireless Comments at 11-13; Telephone and Data Systems Reply at 8.

⁵⁵⁰ See Aviation Industry Parties Comments at 9-10.

investment to move forward with ATC. We find that grant of flexibility to incorporate ATC makes previously unusable spectrum, and spectrum of limited use in particular locations, available for more innovative services, thereby promoting investment and the development of mobile satellite technology. For example, without ATC, in some cases, MSS operators are unable to provide service in urban areas reliably, because of a variety of factors discussed above. ATC will enable MSS providers to reuse their licensed spectrum to improve signal reliability. **As** a result, MSS operators will be in a better position to offer improved, more commercially valuable mobile satellite services. MSS operators may be able to offer nationwide mobile satellite services with a ubiquitous signal at more affordable prices. Without ATC, unused or underutilized licensed MSS spectrum would be used less efficiently or used less intensively.

211. The Commission has long recognized that increased flexibility in spectrum usage promotes technological development, innovation, investment, economic growth, and consumer choice. For example, our CMRS policies have emphasized flexible use of spectrum resources, and this broad flexibility has been the basis of a series of regulatory actions extending over many years by which the Commission has encouraged investment and innovation in wireless telecommunications technologies.⁵⁵¹ While we recognize that the flexibility to implement ATC that we adopt for MSS operators today is limited, we nevertheless find that it is likely to increase competition in mobile satellite services, which will result in improved MSS services and increased investment and enhanced technology development in the MSS industry.⁵⁵² We also find that our technical rules, which are designed among other things, to protect adjacent users and services from harmful interference from ATC operations are sufficient to mitigate any concerns expressed in the record about financial disincentives in adjacent services.

b. Consistency with International Agreements

(i) L-Band

212. Inmarsat claims that granting ancillary terrestrial operations to MSS operators is inconsistent with various international agreements to which the United States is a party, including the International Telecommunications Union (ITU) Radio Regulations and the Mexico City Memorandum of Understanding. We disagree with Inmarsat's analysis and find that granting the flexibility to implement ATC in the L-band, subject to conditions necessary to protect other users of the band, is consistent with all relevant international agreements to which the United States is a party.

(a) ITU Radio Regulations

213. Inmarsat argues that granting the proposed flexibility is inconsistent with the ITU Radio Regulations, the product of an international treaty to which the United States is a party.⁵⁵³ Inmarsat argues that the proposed terrestrial allocation is inconsistent with the Radio Regulations because there is no primary allocation for terrestrial services in the United States in the L-band and, therefore, such use would be a non-conforming use.⁵⁵⁴ **As** a non-conforming use, Inmarsat argues the proposed terrestrial

⁵⁵¹ See *supra* § III(A)(4)

⁵⁵¹ See *Seventh CMRS Competition Report*, 17 FCC Rcd at 13017-18

⁵⁵³ Inmarsat Sept. 12, 2002 Ex Parte Letter at 4

⁵⁵⁴ *Id.*

services must not, under applicable Radio Regulations,⁵⁵⁵ cause harmful interference outside of the United States.⁵⁵⁶ According to Inmarsat, the proposed terrestrial operations will cause harmful interference to the operations of the Inmarsat. Russian, Japanese⁵⁵⁷ and Mexican L-band satellite systems.⁵⁵⁸ Furthermore, Inmarsat argues that IMT-2000 studies,⁵⁵⁹ contained in ITU Recommendations, confirm the need for separate bands for the satellite and terrestrial components of mobile communications systems in order to avoid harmful interference.⁵⁶⁰ MSV acknowledges that, under applicable ITU Radio Regulations, its ATC operations will be required to operate on a non-harmful interference basis to all other services and systems, and argues that it will not cause harmful interference to the operations of the Inmarsat. Russian, Japanese and Mexican L-band systems.⁵⁶¹

214. As we have discussed above, we find that with appropriate technical limitations terrestrial service can be provided in the L-band without causing harmful interference to other L-Band users, including mobile aeronautical telemetry and radio astronomy operations.⁵⁶² ITU Radio Regulations provide for the operation of communications systems that do not conform to the service allocation, provided that the services are on a non-harmful interference basis.⁵⁶³ Accordingly, we conclude that our approach to permitting ATC in the L-band is consistent with applicable FCC regulations.

(b) Mexico City MOU

215. We believe that our decision to remove domestic barriers to improve the delivery of MSS signals in particular areas in the United States is consistent with our commitments under the Mexico City MoU. Under the MoU, parties agreed to attempt to avoid harmful interference and to use spectrum assignments in the most efficient manner practicable.⁵⁶⁴ As described in detail above and in the

⁵⁵⁵ ITU, Radio Regulations, Art. 4 §§ 4.4, 8.5.

⁵⁵⁶ Inmarsat Sept. 12, 2002 *Ex Parte* Letter at 4

⁵⁵⁷ It should be noted that Japan is not currently a party to the MOU in North America. Mexico and Russia have provided no objections to ATC in this proceeding. Moreover, TMI (the fifth party to the MOU and a Canadian licensee) is on the record supporting ATC.

⁵⁵⁸ Inmarsat Comments at 18.

⁵⁵⁹ ITU-R M.1036 Annex I.

⁵⁶⁰ Inmarsat Sept. 12, 2002 *Ex Parte* Letter at 4

⁵⁶¹ MSV Reply at 15

⁵⁶² See *supra* § III(D)(2)

⁵⁶³ ITU RR No 4.4 requires that "Administrations of the Member States shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations." See ITU, Radio Regulations § 4.4.

⁵⁶⁴ See also, e.g., *SatCom Systems, Inc., Order and Authorization*, FCC No. 99-344, 14 FCC Rcd 20798, 20813, ¶ 31 (1999) (noting that "the Commission must condition all licenses on the outcome of the international coordination process" and that "the U.S. Administration will continue to advocate the coordination of additional spectrum for the [MSV] system in the coordination process").

Technical Appendix, we believe that granting MSS licensees greater latitude in choosing their precise system architecture will not cause harmful interference to systems of other parties of the MoU and should improve spectrum efficiency.⁵⁶⁵ While we recognize that Inmarsat, which is also a party to the Mexico City MoU, may disagree with our interference and spectrum-efficiency conclusions,⁵⁶⁶ we have evaluated its claims, and we have addressed its concerns by placing constraints on MSV's ATC operations designed to overcome the potential for interference that Inmarsat has identified. Moreover, nothing in this Order is intended to adjust the spectrum assignment to which signatories are entitled under the Mexico City MoU. The only "purpose" of the Mexico City MoU is to establish a process to develop operating agreements for the operation of geostationary mobile satellite service networks in the L-band in the region around North America. Because the MoU adjusts the parties' L-band spectrum assignments, based on present and future *satellite* spectrum usage, we agree with MSV's assertion that parties could not legitimately identify terrestrial ATC usage to justify a larger MSS satellite spectrum assignment.⁵⁶⁷ We therefore conclude that permitting the integration of terrestrial infrastructure into licensed MSS systems remains fully consistent with the terms of the Mexico City MoU, to which the Commission is party.

(ii) **Other Bands**

216. With respect to the other bands at issue in this proceeding, namely the 2 GHz MSS and Big Leo bands, our analytical framework is similar. Our action today must be consistent with international agreements regarding spectrum, of which the principal governing law is the ITU Radio Regulations, the product of an international treaty to which the United States is a party.⁵⁶⁸ In ITU Region 2, the 2 GHz MSS band is allocated for terrestrial mobile and fixed services, and mobile satellite services on a co-primary basis.⁵⁶⁹ Consequently, our action today, permitting ATC in the 2 GHz MSS band, is consistent with the relevant international agreements to which the United States is a party without requiring ATC to operate on a non-interference basis

217. In the Big LEO band, there is an allocation for terrestrial mobile and fixed services in the 2.4 GHz service downlink band, but no allocation in the 1.6GHz uplink band.⁵⁷⁰ Therefore, in the uplink band ATC will be a non-conforming use.⁵⁷¹ As a non-conforming use, ATC must not, under applicable

⁵⁶⁵ See discussion *infra* at III.D.

⁵⁶⁶ See, e.g., Inmarsat Sept. 12, 2002 *Ex Parte* Letter, Attach. 1 at 4

⁵⁶⁷ See MSV Reply at 17 ("MSV is committed to continuing to limit its coordination efforts to gaining access to spectrum for its satellite operations."); see also, e.g., MSV Reply at 15 ("Authorizing terrestrial operations in the L-band is consistent with the ITU Radio Regulations as well as the Mexico City Memorandum of Understanding (MoU), because such operations will be on [a] non-interference basis to other systems, and [w]ill not be a factor in L-band coordination negotiations . . ."); MSV Jan. 10, 2002 *Ex Parte* Letter at 4 ("ATC operations will not require MSV to coordinate access to more spectrum").

⁵⁶⁸ See International Telecommunication Convention, Oct. 2, 1947, 63 Stat. 1399, T.I.A.S. No. 1901, 30 U.N.T.S. 316. This international treaty is the basic instrument that created and vested certain rights with the ITU. Signatory countries to the treaty retain any rights not explicitly granted to the ITU.

⁵⁶⁹ See 47 C.F.R. § 7.106 (Table of Frequency Allocations).

⁵⁷⁰ See *id.*

⁵⁷¹ ITU, Radio Regulations § 4.4

Radio Regulations,⁵⁷² cause harmful interference to systems of other services operating outside of the United States – and we have concluded that it will not. Therefore, we conclude that permitting ATC in the Big LEO band is consistent with the relevant international agreement to which the United States is a party.

218. We further note that the 2 GHz, Big LEO and L-band MSS bands are each included in the ITU allocations for IMT-2000.⁵⁷³ We agree with the commenters that argue that IMT-2000 contemplates a separate satellite component;” however, permitting ATC in the United States will not hinder further implementation of the terrestrial IMT-2000 deployment in the United States and abroad.” Therefore, ATC use of each of the satellite allocations proposed is consistent with the international obligations of the United States under the Radio Regulations. Finally, we have independently reviewed the complete record in this proceeding and conclude that granting such flexibility is consistent with international agreements to which the United States is a party.

2. Section 309(j)

219. We find that our decision to permit MSS operators to acquire ATC authority does not establish the requisite conditions for assigning terrestrial licenses in the MSS bands through competitive bidding, pursuant to section 309(j) of the Communications Act.

a. Section 309(j)(1)

220. In the *Flexibility Notice*, we observed that limiting terrestrial service rights in the MSS bands to MSS operators providing terrestrial service on an ancillary basis did not appear to implicate our obligation to use competitive bidding under section 309(j). We reasoned that, because terrestrial rights would be linked to pre-existing MSS authorizations and operations, there would be no mutually exclusive applications triggering the competitive bidding provisions of section 309(j).⁵⁷⁶ In support of this position, a number of commenters argue that the Commission issued MSS system licenses in a manner that avoids the “mutual exclusivity trigger” of section 309(j), and no new mutual exclusivity will be created by authorizing only MSS licensees “to operate ancillary facilities in the same bands allocated to MSS and subject to the same frequency selection, assignment, and coordination procedures established for their MSS systems.”⁵⁷⁷

221. Because we will grant ATC authority by modifying MSS operators’ rights under their existing authorizations, and we decline to allow terrestrial operations separate from MSS operations in

⁵⁷² *Id.* §§ 4.4, 8.5

⁵⁷³ IMT-2000 stands for International Mobile Telecommunications-2000 and it is sometimes referred to as third generation mobile systems (3G) or advanced mobile systems.

⁵⁷⁴ See Provisional Final Acts of WRC-2000 Article S5 351A and Resolution 225, *Use of Additional Frequency Bands for the Satellite Component of IMT-2000*.

⁵⁷⁵ See, e.g., Celsat Comments at 9-10; Loral Comments at 8-9; MCHI Comments at 3-5; ICO Reply at 12.

⁵⁷⁶ *Flexibility Notice*, 16 FCC Rcd at 15549, ¶ 39

⁵⁷⁷ Constellation Comments at 20-21; see also Loral Comments at 10-14; ICO Comments at 38; MSV Comments at 26, 34-35; MSV Reply at 19-20; Constellation Reply at 5-8; Celsat Reply at 18; Globalstar Reply at 12-15; ICO Reply at 12-13.

bands used by MSS operators. we conclude that our decision today precludes any possibility of the filing of mutually exclusive applications that would implicate the auction provisions of section 309(j)(1).⁵⁷⁸ As we have explained, we find, based on the record and our analysis, that establishing shared usage of the same frequency band by separate MSS and terrestrial operators would likely compromise the effectiveness of both systems, particularly satellites already operating in the L-band and Big LEO band. Faced with a choice of either making limited terrestrial authority available to MSS operators or declining to grant any terrestrial rights in the MSS bands, we find that to withhold all terrestrial rights in these bands would not be in the public interest. At the same time, we find that the integration of an ATC into authorized and existing MSS systems serves the public interest.⁵⁷⁹ Under these circumstances, and particularly in light of the fact that only MSS operators will be able to acquire terrestrial rights in the MSS bands, we agree with those commenters who argue that section 309(j)(1)'s requirement of mutually exclusive applications will not be met.

222. Certain commenters disagree with the Commission's suggestion that the obligation to use competitive bidding under section 309(j) "does not appear to be implicated" and argue that reallocation of this spectrum by competitive bidding is required by section 309(j).⁵⁸⁰ These commenters argue that the assertion that there is no "mutual exclusivity" in this proceeding because ATC service would be linked to preexisting MSS authorizations is "plainly erroneous."⁵⁸¹ They contend that, had ancillary services been a part of the original MSS authorizations, there would have been a much larger pool of mutually exclusive applicants, and competitive bidding procedures would have been required.⁵⁸² They further assert that "section 309(j) is violated where the Commission fundamentally changes the manner in which spectrum can be used shortly after licensing, where such a change would have likely created mutual exclusivity in the first place."⁵⁸³ They argue that the Commission's reliance on a prior finding of no mutual exclusivity is based upon "facts no longer in existence," and is "no more than an end run around the statutory scheme" to avoid compliance with section 309(j).⁵⁸⁴

⁵⁷⁸ 47 U.S.C. § 309(j)(1) states:

(1) GENERAL AUTHORITY.—If, consistent with the obligations described in paragraph (6)(E), mutually exclusive applications are accepted for any initial license or construction permit, then, except as provided in paragraph (2), the Commission shall grant the license or permit to a qualified applicant through a system of competitive bidding that meets the requirements of this subsection.

⁵⁷⁹ See *supra* §§ III(A)(1)-(4) (describing how ATC may increase MSS spectrum efficiency, foster public safety, encourage the deployment of services and reduce business inefficiencies and costs).

⁵⁸⁰ Cingular-Verizon Comments at 7-11; AT&T Wireless Comments at 16; TDS Comments at 2, 3-7; Cingular-Verizon Reply at 3-1; Rural Telecommunications Group at 5-6; SBE Comments at 2; CTIA Comments at 7-9.

⁵⁸¹ Cingular-Verizon Comments at 8-9.

⁵⁸² *Id.* at 9

⁵⁸³ Cingular-Verizon Reply at ii

⁵⁸⁴ Cingular-Verizon Comments at 9 (quoting *Burlington N. R.R. v. Transp. Bd.*, 75 F.3d 685, 694 (D.C. Cir. 1995)). Cingular-Verizon assert that the reason for adopting the 2 GHz band plan that avoided mutual exclusivity – to expedite the development of a satellite-only service to unserved communities – no longer exists. Cingular-Verizon Comments at 8-9; see also, e.g., Letter from Brian F. Fontes, Vice President, Cingular Wireless LLC, et al., to Marlene H. Dortch, Secretary, Federal Communications Commission, IB Docket No. 01-185 at 4 (filed, Dec. 26, 2002)

223. We find no merit in the argument that our decision to grant ATC authority solely to current MSS licensees requires an auction because, had ancillary terrestrial services been a part of the original MSS authorizations, there would have been a pool of mutually exclusive applicants and competitive bidding procedures would have been required.” The fact that mutually exclusive applications might have been filed had we originally included ATC authority in MSS licenses does not mean that we must now grant terrestrial rights in the MSS bands through procedures that **allow** parties other than MSS operators to apply, particularly since we find that it is in the public interest to do otherwise.

224. We also reject the argument that we are required to treat ATC authorizations as initial licenses subject to the auction requirements of section 309(j). We agree with those commenters who argue that, because the terrestrial rights associated with a grant of ATC authority to MSS operators will be directly linked to existing MSS authorizations, there will be no separate “initial” authorizations, and therefore no requirement to use competitive bidding to assign such rights.⁵⁸⁶ We disagree with those commenters who argue that granting ATC authority to MSS operators only “would create a new terrestrial offering” that would go “far beyond mere ancillary service,” and that such authority therefore is required “to be deemed ‘initial’ under section 309(j).”⁵⁸⁷ As we have made clear, MSS operators will not be allowed to use ATC authority for more than ancillary service.

225. The Commission has recognized that in certain instances it may be appropriate to treat a major modification as an initial application.⁵⁸⁸ In particular, the Commission has stated that “certain types of mutually exclusive applications to modify existing licenses . . . may be so different in kind or so large in scope and scale as to warrant competitive bidding if mutual exclusivity exists.”⁵⁸⁹ Under the rules and policies we adopt in this Order, an eligible MSS operator will have its space-station license modified to permit ATC subject to stringent requirements and service rules designed to ensure that any terrestrial components are ancillary to the principal MSS authority the Commission previously granted.⁵⁹⁰ Thus, to implement an ATC, an MSS licensee must (1) launch and operate its own satellite facilities; (2) provide substantial satellite service to the public; (3) offer ATCs on a commercially bundled basis with MSS, including offering satellite-capable equipment at the point of sale; (4) observe existing satellite geographic coverage requirements; and (5) limit ATC operations to the authorized satellite footprint. In light of these requirements, we find that the license modifications associated with ATC will not be modifications so different in kind or so large in scope and scale as to warrant treatment as “initial” licenses subject to section 309(j)(1). We note that the modification of MSS licensees’ authorizations to include ATC authority without competitive bidding is consistent with other decisions in which we have extended licensees additional operating rights without accepting competing applications that might have

⁵⁸⁵ Cingular-Verizon Comments at 9.

⁵⁸⁶ Constellation Comments at 20-21; Loral Comments at 10-12.

⁵⁸⁷ Cingular-Verizon Reply at 6 (internal quotations added)

⁵⁸⁸ See *Implementation of Section 309(j) of the Communications Act – Competitive Bidding for Commercial Broadcast and Instructional Television Fixed Service Licenses*, MM Docket No. 97-234, First Report and Order, 13 FCC Rcd 15920, 15925-8, ¶¶ 13-19 (1998) (*Broadcast/ITFS Auction First Report and Order*); *Implementation of Section 309(j) of the Communications Act – Competitive Bidding*, PP Docket No. 93-253, Second Report and Order, 9 FCC Rcd 2348, 2355, ¶¶ 37-40 (1994) (*Competitive Bidding Second Report and Order*).

⁵⁸⁹ *Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2355, ¶¶ 37-38

⁵⁹⁰ See *supra* § III(C) (discussing MSS ATC service rules)

required an auction.⁵⁹¹

226. We are also not persuaded that allowing MSS operators to incorporate ATCs without going through a competitive bidding process is inequitable to CMRS carriers or will unjustly enrich those MSS operators such that we must treat the modifications of their authorizations as initial licenses.⁵⁹² The modifications we permit today may indeed make MSS licenses more valuable. However, given the strict limitations we are placing on ATC authority, and the significant costs of launching and maintaining satellite operations, we do not believe that such added value will rise to a level that constitutes unjust enrichment or requires that we consider the modification of MSS licenses to include ATC authority as the assignment of initial licenses.

b. Section 309(j)(3)

227. We also find that our decision to restrict terrestrial rights in the bands used by MSS operators to the provision of ATC by MSS operators only, and our concomitant decision not to accept terrestrial applications from other parties, is consistent with the Commission's obligations under section 309(j)(3). Section 309(j)(3) states that "[i]n identifying classes of licenses and permits to be issued by competitive bidding, in specifying eligibility and other characteristics of such licenses and permits, and in designing the methodologies for use under this subsection, the Commission shall include safeguards to protect the public interest in the use of the spectrum and shall seek to promote" certain objectives, including the development and rapid deployment of new technologies, products, and services for the benefit of the public, including those residing in rural areas, and the efficient and intensive use of the electromagnetic spectrum.⁵⁹³ As we have explained in detail above, we find that our decision to accept requests from MSS operators to modify their licenses to permit the provision of ATC, without allowing the provision of separate terrestrial services in the same bands, will promote these goals.

228. We find, for example, that MSS operations have the potential ability to bring new technologies and services to consumers in rural areas, and that providing MSS operators with the flexibility to incorporate ATCs in their systems should enable them to achieve this goal.⁵⁹⁴ We also find that limiting eligibility for terrestrial rights in the MSS bands to qualified MSS operators is consistent with the goal of ensuring efficient and intensive use of spectrum because it will allow for the use of MSS

⁵⁹¹ See, e.g. *CMRS Flexibility Report and Order*, 11 FCC Rcd at 8979-80, ¶ 33 (deleting footnotes US330 and US331, which prohibited PCS licensees from providing fixed service, without triggering the competitive bidding requirements of Section 309(j)); *Amendment of Parts 21 and 74 to Enable Multipoint Disriburron Service and Instructional Television Fixed Service Licenses to Engage in Fixed Two-Way Transmissions*, 13 FCC Rcd 19112 (1998), *recon.*, 14 FCC Rcd 12764 (1999), *further recon.*, 15 FCC Rcd 14566 (2000) (permitting both MDS and ITFS licensees to provide two-way services and increasing flexibility on permissible modulation types and channelization). In both the CMRS and MDS/ITFS context, the Commission did not consider accepting competing applications from non-incumbents because of the difficulties of coordinating new fixed uses with existing mobile uses in CMRS and coordinating fixed two-way transmissions with existing one-way uses in MDS/ITFS. Although we sought comment on the possibility of coordination with respect to MSS spectrum, we have concluded that, as in those prior cases, there is no practical means by which a new licensee could coordinate terrestrial uses with existing satellite rights in the spectrum.

⁵⁹² See Cingular/Verizon Comments at 10-11 (alleging unjust enrichment); RTC Reply at 5 (alleging windfall)

⁵⁹³ 47 U.S.C. § 309(j)(3)

⁵⁹⁴ *Id.* § (309)(j)(3)(A).

spectrum in urban areas where that spectrum is otherwise unusable.⁵⁹⁵ We agree with those commenters that argue that it would be technically less efficient and inadvisable for different operators to provide MSS and terrestrial wireless service in the MSS bands assigned to MSS licensees.⁵⁹⁶ Specifically, as explained above, we find merit in the argument that there are spectrum efficiency benefits to dynamic allocation and that those benefits can only be realized by having one licensee control both the MSS and terrestrial rights to the spectrum in question.

229. We recognize that section 309(j)(3) also includes as one of its objectives the avoidance of unjust enrichment. As indicated above, however, we find that a grant of ATC authority to qualified MSS operators under the conditions prescribed in this Order should not result in the unjust enrichment of MSS licensees.⁵⁹⁷ We also do not believe that MSS, even with ATC, will be directly competitive with the terrestrial services offered by CMRS carriers. While there is always some competition on the margin between two mobile voice and data services, the operating, functional, and cost characteristics of MSS with ATC are sufficiently different from CMRS terrestrial services that we do not believe they will be close substitutes for each other for the vast majority of customers. Thus, we do not believe there is any substantial competitive inequity to CMRS carriers from our grant of ATC to MSS operators. In addition, we note that section 309(j)(3) requires us to consider a number of objectives, which we must consider together and sometimes balance against each other. Having thoroughly considered the record and our statutory obligations, we conclude that our decision today is not inconsistent with section 309(j)(3)(C) and, indeed, generally furthers the objectives of section 309(j)(3).

c. Other Matters

230. In the *Flexibility Notice*, we sought comment on how section 647 of the Open-Market Reorganization for the Betterment of International Telecommunications Act⁵⁹⁸ would affect the authorization of terrestrial service separate from MSS authorizations and flexible terrestrial use not ancillary to MSS operations.⁵⁹⁹ We also asked commenters to address whether the decision of the U.S. Court of Appeals for the D.C. Circuit in *National Public Radio, Inc. v. Federal Communications Commission* is in any respect applicable to the ORBIT Act exemption from competitive bidding for international and global satellite communications services and the issues raised in this proceeding.⁶⁰⁰ In light of our decision that granting only MSS operators the right to provide terrestrial service in MSS bands does not implicate the competitive bidding provisions of section 309(j) of the Communications Act, we need not address arguments regarding the applicability or non-applicability of the ORBIT Act.

⁵⁹⁵ See, e.g., MSV Comments at 36 (citing 47 U.S.C. § 309(j)(3)(D)).

⁵⁹⁶ See, e.g., Inmarsat Supplemental Comments at 5-15; Boeing Supplemental Comments at 8; Globalstar Supplemental Comments at 4-7; Celsat Supplemental Comments at 1-5; MSV Supplemental Comments at 4-9; ICO Supplemental Comments at 3-15.

⁵⁹⁷ Section 309(j)(3)(C) states that the Commission shall seek to recover for the public “a portion of the value of the public spectrum resource made available for commercial use and avoidance of unjust enrichment through the methods employed to award uses of that resource” 37 U.S.C. § 309(j)(3)(C) (emphasis added).

⁵⁹⁸ Open-Market Reorganization for the Betterment of International Telecommunications Act, Pub. L. No. 106-180, 114 Stat. 48 (enacted March 12, 2000) (ORBIT Act) (codified at 47 U.S.C. §§ 761 *et seq.*)

⁵⁴⁴ *Flexibility Notice*, 16 FCC Rcd at 15549, ¶ 39.

⁶⁰⁰ *National Public Radio v. Federal Communications Commission*, 354 F.3d 226 (D.C. Cir. 2001)

3. Section 332

231. Section 332 of the Communications Act addresses the regulatory treatment of mobile services, and generally requires that providers of commercial mobile service be treated as common carriers for purposes of the Act while providers of private mobile service are not treated as common carriers.⁶⁰¹ Section 332(d)(1) of the Act defines "commercial mobile service" as "any mobile service . . . that is provided for profit and makes interconnected service available (A) to the public or (B) to such class of eligible users as to be effectively available to a substantial portion of the public, as specified by regulation of the Commission."⁶⁰² The Commission has determined that when Congress defined CMRS, it intended the CMRS classification to apply to all mobile services that are for profit and that provide interconnected service to the public or a substantial portion of the public.⁶⁰³

232. In the *2 GHz MSS Rules Order*, the Commission addressed the regulatory treatment of mobile services delivered by satellite. The Commission concluded that it had discretion to regulate the provision of the space station segment of 2 GHz MSS on a non-common carrier basis.⁶⁰⁴ It indicated, however, that mobile earth station licenses, if used to provide a mobile service that meets the definition of CMRS under section 332(d) of the Act, would be regulated as CMRS.⁶⁰⁵ The Commission explained that, if the service were to be offered to the public, as described in section 332(d)(1) of the Act, then the service would fall within the statutory definition of CMRS.⁶⁰⁶ With respect to the L-band, we note that MSV, the MSS licensee in that band, was licensed as a common carrier for both the space segment and mobile handset licenses.⁶⁰⁷ With respect to the Big LEO band, there are two operating systems, Iridium and Globalstar. In each case, we have regulated handsets actually providing service to the general public as CMRS.⁶⁰⁸

233. Although MSS can qualify as CMRS under the Communications Act, the Commission has acknowledged the operational and network differences between satellite and terrestrial systems and has deferred implementation of certain CMRS carrier obligations on satellite-based CMRS licensees.⁶⁰⁹

^{M1} See generally 47 U.S.C. §§ 332 (c)(1)-(c)(2)

⁶⁰² 47 U.S.C. § 332(d)(1)

⁶⁰³ See *Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services*, Third Report and Order, GN Docket No. 93-252, 9 FCC Rcd 7988, 7993, ¶ 2 (1994).

⁶⁰⁴ See *2 GHz MSS Rules Order*, 15 FCC Rcd at 16172, ¶ 93

⁶⁰⁵ *Id.* at 16173, ¶ 97

^{Mb} *Id.* at 16173, ¶ 96.

⁶⁰⁷ See *Amendment of Parts 2, 22 and 25 of the Commission's Rules to Allocate Spectrum for and to Establish Other Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service for the Provision of Various Common Carrier Services*, GEN Docket No. 88-1234, Memorandum Opinion, Order and Authorization, 4 FCC Rcd 6041 (1989).

⁶⁰⁸ See *Space Station System Licensee, Inc.*, Memorandum Opinion, Order and Authorization, 17 FCC Rcd 2271, 2289, ¶ 45 (2002) (*Iridium Authorization*); *Vodafone Americas Asia, Inc.*, Order and Authorization, 17 FCC Rcd 12849, 12855, ¶ 18 (2002) (*Globalstar Authorization*).

⁶⁰⁹ See *Revision of the Commission's Rules to Ensure Compatibility With Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd (continued....)

Depending on the types of end-user services offered, however, the ATC component that MSS licensees may offer may more closely resemble traditional CMRS networks than traditional satellite networks. Accordingly, some parties have argued that to the extent ATC components resemble traditional terrestrial CMRS networks, MSS licensees should be required to meet the same CMRS obligations that terrestrial CMRS providers must observe.⁶¹⁰ Cingular and Sprint, for example, state that "MSS licensees [providing ATC] presumably **would** use mobile switches just like those of the terrestrial CMRS providers, and they also propose to sell terrestrial only handsets, which would presumably be similar to the terrestrial CMRS handsets in the market today." Other parties, such as Globalstar, however, claim that the Commission should not consider ATC the regulatory equivalent of terrestrial CMRS because **MSS will** be used by persons living and/or working outside areas of traditional wireline or terrestrial wireless coverage for the foreseeable future." As a nascent service, Globalstar asserts, the Commission should impose minimal regulatory requirements on **MSS ATC**.⁶¹³

234. We reaffirm our previous findings in the *2 GHz MSS Rules Order*, and hold that, if a mobile handset authorization meets the statutory definition of **CMRS** in section 332(d)(1) of the Act, then the service will be regulated as CMRS. We reject the arguments of Globalstar that our decision should rest on who the likely users of the service are, the size of the handsets, the cost of the service, or our assessment of whether MSS is a true competitor in the CMRS market. If MSS licensees seek to provide terrestrial mobile service in **MSS** bands, then the terrestrial component of the MSS ATC service shall be subject to the same regulatory treatment as any other operator providing the same or similar services in any other band.⁶¹⁴ As indicated in the *2 GHz MSS Rules Order*, we continue to reserve the right to review individual applications on a case-by-case basis to determine if this regulatory classification is appropriate.⁶¹⁵ We also retain our authority to forbear from applying certain provisions of Title II to CMRS providers as necessary.⁶¹⁶ We also will address, on a case-by-case basis, whether provisions not

(Continued from previous page)

18676.18718, ¶ 83 (1996), *recon.*, Memorandum Opinion and Order, 12 FCC Rcd 22665 (1997); *Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements*, Notice of Proposed Rulemaking, 14 FCC Rcd 5871, 5907, ¶ 98 (1999); *International Bureau Invites Further Comment Regarding Adoption of 911 Requirements for Satellite Services*, Public Notice, 16 FCC Rcd 3280 (2000); *Revision of the Commission's Rules to Ensure Compatibility With Enhanced 911 Emergency Calling Systems*, Further Notice of Proposed Rulemaking, 17 FCC Rcd 25576 (2002), available at <http://ihraunfora.fcc.ro/edocs_public/attachmatch/FCC-02-326A1.doc> (last visited Dec. 26, 2002).

⁶¹⁰ See, e.g., Letter from Brian Fontes, Cingular Wireless LLC, and Luisa Lancetti, Sprint Corporation, to Donald Abelson et al., Federal Communications Commission, IB Docket No. 01-185 at 9-10 (filed Dec. 2, 2002) (Cingular/Sprint Dec. 2, 2002 *Ex Parte* Letter) (arguing that the Commission should confirm that providers of terrestrial services in the MSS band will be subject to the statutory requirements and regulations applicable to other terrestrial mobile services, including CALEA, E911, local number portability, number pooling and TTY).

⁶¹¹ Cingular/Sprint Dec. 2, 2002 *Ex Parte* Letter at 10.

⁶¹² See Globalstar Comments at 11.

⁶¹³ *Id.*

⁶¹⁴ Accordingly, even if an MSS licensee offers only non-common-carrier *satellite* services, the Commission will require the MSS licensee to comply with common carrier rules for its *terrestrial* component if the terrestrial component of its service offering will, in fact, be offered on a common carrier basis.

⁶¹⁵ See *2 GHz MSS Rules Order*, 15 FCC Rcd at 16174, ¶ 97.

⁶¹⁶ See 47 C.F.R. § 20.15; see also 47 U.S.C. § 332(c)(1)(A).

required by statute to apply to all CMRS providers should be applied to specific MSS ATC offerings. However, requirements that must be applied to all common carriers will also apply to MSS CMRS.⁶¹⁷

F. Modification of Table of Allocations

235. In the *Flexibility Notice*, we sought comment on whether a footnote to the U.S. Table of Allocations contained in section 2.106 of our rules indicating that MSS operators are permitted to integrate terrestrial operations into their MSS systems would be sufficient to permit such operations.⁶¹⁸ Commenters addressing this issue support the use of footnotes,⁶¹⁹ some of whom note that such an approach is consistent with the Commission's decision to add footnote US327 to the Table of Allocations for terrestrial service in DARS.⁶²⁰

236. A licensee's authorized MSS assignments are conditioned on coordination agreements and based on the ITU Radio Regulations. MSS coordination agreements and the ITU Radio Regulations provide varying regulatory statuses to terrestrial operations in the frequency bands in which we permit ATC.⁶²¹ Due to our decision today that ATC networks are to be closely tied to a licensee's MSS network operations from a technical and operational standpoint, and our decision to allow an MSS licensee to operate an ATC network only on its frequency assignments for its satellite network, we agree with the commenters that adding footnotes to the U.S. Table of Allocations for the respective MSS bands is sufficient to permit ATC operations in the 2 GHz MSS, L-band and Big LEO MSS allocations. The new footnote, US380, reads as follows: "In the bands 1525-1559 MHz, 1610-1660.5 MHz, 2000-2020 MHz, 2180-2200 MHz, and 2483.5-2500 MHz, a non-Federal Government licensee in the mobile-satellite service (MSS) may also operate an ancillary terrestrial component in conjunction with its MSS network, subject to the Commission's rules for ancillary terrestrial components and subject to all applicable conditions and provisions of its MSS authorization."⁶²²

G. Licensing Requirements

1. Modification of MSS Space-Station Authorizations

237. In the *Flexibility Notice*, we sought comment on modifying a U.S.-licensee's space station license to authorize the provision of ATC. We proposed that we would license the terrestrial facilities provided that the licensee has requested a modification to its license and demonstrated that it has met the established eligibility criteria."⁶²³ We noted, however, that the terrestrial components of MSS

⁶¹¹ See, e.g., 47 C.F.R. §§ 20.63, 20.64; *Communications Assistance for Law Enforcement Act*, Pub. L. No. 103-414, 108 Stat. 4279 (1994) (codified as amended in scattered sections of 18 U.S.C. and 47 U.S.C. §§ 229, 1001-1010, 1021).

⁶¹⁸ *Flexibility Notice*, 16 FCC Rcd at 15559-60, ¶¶ 69-71

⁶¹⁹ See, e.g., MSV Comments at 32 & Reply at 26-27; Constellation Comments at 24; ICO Comments at 48-49.

⁶²⁰ See 47 C.F.R. § 2.106 US 327; *Amendment of the Commission's Rules with Regard to the Establishment and Regulation of New Digital Audio Radio Services*, GEN Doc No. 90-357, Report and Order, 10 FCC Rcd 2310 (1995); see also Celsat Reply at 17; Motient Reply at 32.

⁶²¹ See *supra* § III (E)(1)(b)

⁶²² See App. B (adopting US380, 47 C.F.R. § 2.106)

⁶²³ *Flexibility Notice*, 16 FCC Rcd at 15553-54, ¶ 50

operations could allow two-way traffic that could originate and terminate on the terrestrial component of the network without having to transverse the satellite component of the network. This architecture could entail a significant number of fixed stations deployed in a multi-cellular network, particularly in urban areas, that would allow traffic to be handed off from one cell to another. In the 2 GHz MSS bands, we also noted that not all incumbent fixed operations may be relocated, and that these incumbent fixed operations will remain co-primary until 2010.⁶²⁴ Therefore, we sought comment on whether to authorize the terrestrial facilities separately or on a blanket licensing basis, for the U.S. coverage of the MSS space segment (i.e., the 50 states, and U.S. territories and possessions, such as Puerto Rico and the U.S. Virgin Islands) or a smaller area.⁶²⁵

238. Commenters addressing the issue generally support authorizing ATC operations by modifying an MSS operator's space station license and state that individual coordination of base stations is not needed.⁶²⁶ MSV, for example, urges the Commission to adopt licensing requirements that "facilitate rapid deployment" of the MSS operators' ancillary terrestrial component.⁶²⁷ A few commenters supported individual licensing requirements on the grounds that doing so would promote inter-service coordination.⁶²⁸ Most commenters, however, characterized our alternative proposals to require some form of site-by-site licensing for each ATC base station as redundant, burdensome and of little practical value to other licensees or the Commission. According to MSV, for example, "requiring individual licensing of [terrestrial] facilities will be burdensome and unnecessary."⁶²⁹ Instead, MSV recommends adopting a procedure similar to the one used for base stations in the Wireless Communications Service, which requires individual applications only where construction or operation of the facility would have a significant environmental effect.⁶³⁰ MSV recommends that the Commission extend its existing policies and rules for the geographic-area licensing of terrestrial base-stations to MSS ATC operators. Under this approach, the Commission would not routinely review the proposed construction of base-station facilities built to support transmission equipment used by MSS licensees; however, the Commission would review any towers that require either a showing of compliance with the National Environmental Policy Act (NEPA),⁶³¹ or an antenna structure registration under Part 17 of our rules.⁶³²

239. Geographic area licensing provides licensees the flexibility to adjust spectrum usage dynamically, depending upon market demands. Given that one of the policies behind granting ATC is to

⁶²⁴ Id. at 15554-55, ¶ 52.

⁶²⁵ Id. at 15555, ¶ 52.

⁶²⁶ See, e.g., ICO Comments at 17; MSV Reply at 27.

⁶²⁷ MSV Comments at 28-29.

⁶²⁸ See, e.g., SBE Comments at 3.

⁶²⁹ MSV Comments at 29.

⁶³⁰ Id.

⁶³¹ *Srr National Environmental Policy Act of 1969*, 42 U.S.C. § 4321.

⁶³² 47 C.F.R. §§ 17.1-17.58. Under Part 17 of the Commission's rules, all antenna structures of more than 200 feet in height or within the flight path of an airport must be registered with the Commission prior to construction. See 47 C.F.R. § 17.7(a) ("...of more than 60.96 meters (200 feet) in height above ground level."). If the antenna structure may have a significant environmental effect, as defined by section 1.1307 of the Commission's rules, see 17 C.F.R. § 1.1307, the applicant must file an Environmental Assessment (EA) as part of its registration application. See 47 C.F.R. § 1.1308; see also *Streamlining the Commission's Antenna Structure Clearance Procedure, Report and Order*, 11 FCC Rcd 1272.3289, ¶ 41 (1995).

provide the flexibility to MSS licensees to use their licensed spectrum more efficiently, we implement geographic area licensing for all MSS ATC base stations in the United States that do not pose a potential hazard to the environment, public health, scenic and historic locations, tribal lands, aviation and related concerns.⁶³³ Specifically, section 1.1301 and related provisions of our rules describe certain types of facilities that require additional Commission scrutiny under the NEPA.⁶³⁴ These provisions apply to all Commission actions, including licensing, that may have a significant impact on the quality of the human environment.⁶³⁵ Similarly, our Part 17 rules on antenna structures govern every radiating or receiving transmission system and provide detailed guidance on antenna height, location, lighting and similar issues to protect aviation.⁶³⁶ As with other terrestrial transmission or reception equipment, therefore, we will require individual licensing of ATC base stations in any situation that may pose an adverse effect to the environment, public health, scenic and historic locations, tribal lands, aviation or related concerns.⁶³⁷

240. We adopt a blanket authorization process to implement geographic area licensing of ATC base station facilities operating in the U.S. coverage of the MSS space segment (i.e., the 50 states, and U.S. territories and possessions, such as Puerto Rico and the U.S. Virgin Islands). Blanket ATC base station authorization shall be conditioned upon the MSS licensees' satisfaction of the requirements of this Order in providing ATC and the rules adopted herein. We will require MSS licensees to modify their space station licenses using FCC Form **312**, and accompanied by the appropriate fee, to request blanket authority to construct and operate ATC base station facilities.⁶³⁸ MSS licensees shall provide specific information and certifications describing the ATC operations in the following categories: information demonstrating that the terrestrial facilities will comply with the technical restrictions adopted herein; a statement that the terrestrial facilities will comply with the Commission's rules regarding environmental impact;⁶³⁹ and that the terrestrial facilities will comply with Part 17 of the Commission's rules regarding antenna structure clearance with the Federal Aviation Administration; and a certification that the terrestrial facilities will be operated consistent with all international agreements. Any applications meeting these requirements will be treated as minor modifications.⁶⁴⁰ As with any minor modification, if upon Commission review the Commission deems it in the public interest to seek comment on an MSS ATC application, the Commission at its discretion may provide public notice and opportunity for comment. We recommend that licensees seeking approval of non-conforming operations submit separate applications for blanket authority, listing the technical parameters of those individual facilities that do not meet our rule requirements to prevent delay in the grant of applications for conforming facilities filed concurrently.⁶⁴¹

⁶³³ See, e.g., MSV Comments at 29 ("Individual applications and prior Commission approval should be required only if construction and operation of the facility would have a significant environmental effect.").

⁶³⁴ 47 C.F.R. § 1.1301 *et seq*

⁶³⁵ 47 C.F.R. § 1.1303

⁶³⁶ See, e.g., 47 C.F.R. §§ 17.1-17.58

⁶³⁷ See App. B (47 C.F.R. §§ 25.147(a)(4)-(5)).

⁶³⁸ As a result, authorization for ATC will run in parallel with the MSS satellite system license and will expire upon expiration of the space-station license, unless renewed.

⁶¹⁴ See 47 C.F.R. Part 1, Subpart I

⁶⁴⁰ See 47 C.F.R. § 25.151(c)(1).

⁶⁴¹ MSV notes that it has already applied to launch and operate a next-generation MSS system that included a request to operate ancillary terrestrial base stations. MSV Comments at 29 (citing *Application of Motient Services* (continued....))

241. We decline to impose site-by-site licensing for MSS base stations. This alternative to geographic area licensing of MSS ATC base stations would force MSS licensees and the Commission to spend considerable time and resources to assemble information that would hold little or no practical value in resolving coordination disputes that may arise.⁶⁴² While we **must** review and license ATC base stations individually in certain narrow circumstances to address public interest concerns, adopting an all-inclusive requirement for the individual licensing of every ATC base station does not serve the public interest and, in fact, would impose significant costs on the licensees and the Commission with little benefit to the public. Where, as here, the Commission has adopted technical limitations on adjacent-band and co-channel interference, individual licensing of transmission facilities neither decreases the likelihood of interference, nor accelerates resolution of a coordination dispute.⁶⁴³ Indeed, the Commission has the authority to require the MSS licensee to terminate the base station's operations immediately, wherever located, and may impose sanctions on the licensee, including monetary forfeitures or license revocation, if appropriate.⁶⁴⁴ In the past, moreover, the Commission has expedited licensing procedures in cases such as this one where administrative delays associated with traditional licensing schemes might prove "seriously detrimental" to provision of the proposed service.⁶⁴⁵ In sum, the significant cost of individual licensing to the licensees and the Commission outweighs the limited benefits that might exist under these alternative regimes.

2. Foreign-Licensed MSS Providers

242. In 1997, to implement the World Trade Organization (WTO) Agreement on Basic Telecommunications (WTO Basic Telecom Agreement),⁶⁴⁶ the Commission adopted the *DISCO II Order*, establishing procedures to evaluate applications by satellite systems licensed by other WTO-member countries to access the U.S. market.⁶⁴⁷ Under the terms of the WTO Basic Telecom Agreement, seventy-eight WTO Members made binding commitments to open their markets to foreign competition in satellite services.⁶⁴⁸ The United States, in particular, committed to open its satellite market to foreign systems

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Inc. and Mobile Satellite Ventures Subsidiary LLC. File No. SAT-AMD-10010302-00019 (March 2, 2001)). To the extent that MSV has already paid the appropriate fee, MSV need only amend its pending application to conform its proposal to our requirements.

⁶⁴² See, e.g., MSV Comments at 29 ("Requiring individual licensing of these [ATC base station] facilities will be burdensome and unnecessary."); Constellation Comments at 30 ("individual licensing would place a heavy, unnecessary administrative burden on the Commission and MSS operators").

⁶⁴³ MSV Comments at 29.

⁶⁴⁴ 47 C.F.R. §§ 1.80-1.95.

⁶⁴⁵ See *Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, Report and Order, 13 FCC Rcd 19112, 19146, ¶ 61 (1998) (adopting a certification procedure for ITFS and MDS that "dramatically expedite[s] the licensing process").

⁶⁴⁶ The WTO Basic Telecom Agreement was incorporated into the General Agreement on Trade in Services (GATS) by the Fourth Protocol to the GATS (April 30, 1996), 36 I.L.M. 336 (1997) (GATS Fourth Protocol).

⁶⁴⁷ See *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Service in the United States*, Report and Order, 12 FCC Rcd 24094 (1997) (*DISCO II Order*).

⁶⁴⁸ GATS Fourth Protocol, 36 I.L.M. at 363; see also *DISCO II*, 12 FCC Rcd at 24102, ¶ 19. The United States made market access commitments for fixed and mobile satellite services. It did not make market access commitments for Direct-to-Home (DTH) Service, Direct Broadcast Satellite Service (DBS), and Digital Audio Radio Service (DARS), and took an exemption from most-favored nation (MFN) treatment for these services as well. See GATS Fourth Protocol, 36 I.L.M. at 359. Generally, GATS requires WTO member countries to afford (continued....)

licensed by WTO-member countries to provide fixed and mobile satellite services (excluding direct-to-home fixed satellite service). In its *DISCO II Order* implementing the WTO Basic Telecom Agreement, the Commission concluded that providing opportunities for non-U.S.-licensed satellites to deliver services in the United States would bring U.S. consumers the benefits of enhanced competition.⁶⁴⁹ The Commission also found that this policy would promote greater opportunities for U.S. companies to enter previously closed foreign markets and stimulate a more competitive global satellite-services market.⁶⁵⁰ In *DISCO II*, the Commission said that requests to serve the U.S. market would be granted provided they are found to be in the public interest. In making this determination the Commission said that it would take into account factors such as competition in the United States, spectrum availability, eligibility requirements, technical requirements, and national security, law enforcement, foreign policy and trade issues.⁶⁵¹

243. In our *Flexibility Notice*, we sought comment on authorizing foreign-licensed MSS providers to operate MSS ATCs within the United States by issuing or modifying existing declaratory orders, consistent with our existing *DISCO II* procedure.⁶⁵² We noted that, under *DISCO II*, foreign-licensed MSS systems may file a Letter of Intent (LOI) requesting that the Commission reserve spectrum so that a non-U.S.-licensed satellite system under development will have access to spectrum when it is completed. Such reserved spectrum is eventually licensed for use by the system's earth stations operating in the United States.⁶⁵³ As an alternative to modifying a foreign-licensed MSS provider's declaratory order, we proposed to require foreign-licensed operators that provide MSS service in the United States, and wish to supplement their MSS signals using an ATC, to file an appropriate earth station application.⁶⁵⁴ This earth station application would merely demonstrate that the foreign-licensed MSS space segment operator meets our minimum eligibility criteria, including the minimum coverage requirements, applicable to U.S.-licensed MSS operators.⁶⁵⁵

244. TMI, a foreign-licensed MSS provider and one of the few commenters to address in detail the issue of how best to accommodate ATC in foreign-licensed MSS systems under our rules,

(Continued from previous page)

most-favored nation (MFN) treatment to all other WTO member nations. "With respect to any measure covered by this Agreement, each Member shall accord immediately and unconditionally to services and service suppliers of any other Member treatment no less favorable than that it accords to like services and service suppliers of any other country." GATS Article II, paragraph 1. Member nations are permitted to take "MFN exemptions," however, under certain circumstances specified in an annex to GATS. See GATS Annex on Article II Exemptions.

⁶⁴⁹ *DISCO II Order*, 12 FCC Rcd at 24097, ¶ 4

⁶⁵⁰ *Id.* at 24099, ¶ 10

⁶⁵¹ *Id.* at 24100, ¶ 15

⁶⁵² *Flexibility Notice*, 16 FCC Rcd at 15554, ¶ 51. Under the *DISCO II* procedure, foreign-licensed MSS systems may file an LOI requesting that the Commission reserve spectrum so that the non-US-licensed satellite system may provide service in the United States through future-licensed earth stations that may or may not be ultimately licensed to the MSS provider. The LOI procedure was developed as part of the U.S. implementation of its market access commitments in the WTO Basic Telecom Agreement to avoid the need to issue separate (and duplicative) U.S. licenses for those space stations under the jurisdiction of another licensing and coordinating administration. The Commission explained that it adopted this procedural framework in order to avoid issues of national comity and international coordination responsibilities for space stations. *DISCO II Order*, 12 FCC Rcd at 24174, ¶ 188.

⁶⁵³ Two foreign-licensed LOI filers participated in the initial 3 GHz MSS processing round: JCO and TMI

⁶⁵⁴ *Flexibility Notice*, 16 FCC Rcd at 15554, ¶ 51

⁶⁵⁵ *Id.*

proposes that “an MSS entity that has already been granted an LOI to provide satellite services should be authorized to provide terrestrial services merely upon filing a letter request seeking an appropriate modification of its existing LOI.”⁶⁵⁶ According to TMI, this procedure will achieve the type of parity between U.S.- and foreign-licensed MSS operators that the WTO Basic Telecom Agreement requires. While TMI suggests that a “radio frequency plan should not be required with the modification request because the technical rules adopted for the MSS should be sufficient to address any interference problem,”⁶⁵⁷ TMI concedes that some form of U.S. radio station license may be necessary to govern operation of the ancillary radio transmitters located on U.S. territory. TMI suggests that the Commission require foreign-licensed MSS operators granted access to serve the United States under an LOI to file an application to use terrestrial facilities in conjunction with their foreign-licensed MSS system.” According to TMI, this application “should be processed in the same manner as [an] application for blanket earth station licenses.”⁶⁵⁹

245. We agree in part with TMI’s proposal for licensing ATC facilities operators by foreign-licensed MSS providers. As with the U.S.-licensed MSS entities, we shall permit an MSS operator that has been granted an LOI to provide satellite services to the United States to file an application to modify its LOI authorization to use ATC in conjunction with its foreign-licensed MSS system, once operational. The application for ATC authority will be addressed either in conjunction with an application for Title III earth station authorization. or if such an authorization has already been granted, it may be filed as a minor modification to the earth station authorization under the same procedures described above for modification of U.S.-based MSS licensees’ authorization. We believe that this approach achieves parity between U.S.- and foreign-licensed MSS operators.

3. MSS ATC Handset Earth Station Licensing

246. MSS operators providing service to the United States, including foreign-licensed MSS systems, are required to obtain blanket authorizations for mobile handset earth stations.⁶⁶⁰ Blanket licensing allows a satellite operator to apply for authorization that permits the licensee to operate a specified number and type of qualified earth stations, rather than seeking an individual license for earth stations.⁶⁶¹ The technical characteristics of earth stations are reviewed in this process. In comparison, for terrestrial CMRS authorizations, handsets are reviewed pursuant to the certification rules contained in Part 2, Subpart J of our rules.⁶⁶² These rules require the applicant to submit a technical report on the equipment and to provide detailed information about the device, such as its manufacturer, operating

⁶⁵⁶ TMI Comments at 4.

⁶⁵⁷ *Id.*

⁶⁵⁸ *Id.* at 4-5; *accord* Constellation Comments at 30

⁶⁵⁹ TMI Comments at 5

⁶⁶⁰ *See, e.g.*, 41 C.F.R. § 25.115(d); *TMI Communications and Company, L.P. for Blanket Authorization to Operate up to 100,000 Mobile Satellite Earth Terminals (METs) through Canadian-licensed satellite MSAT-1 at 106.5 degrees W.L. in frequency bands 1631.5-1660.5 MHz; (transmit) and 1530-1559 MHz (receive) throughout the Continental United States, United States Territories, Alaska, and Hawaii*, Order and Authorization. 15 FCC Rcd 18117 (Sat. Div., Int’l Bur. 2000); *Iridium U.S., L.P.*, Order and Authorization. 11 FCC Rcd 20474 (Int’l Bur. 1996).

⁶⁶¹ *See, e.g.* 18 GHz Order. 15 FCC Rcd at 13471, ¶ 87

⁶⁶² 47 C.F.R. § 2.1031 *et seq.*

mechanisms, and frequency usage.” In the *Flexibility Notice*, we sought comment on a requirement that handsets designed to operate using MSS ancillary terrestrial facilities be reviewed pursuant to our certification rules contained in Part 2, Subpart J of our rules.⁶⁶⁴ In the *Flexibility Notice*, we stated that “[t]he use of equipment certification procedures for [MSS ATC] handsets would be consistent with procedures to authorize other handsets used for cellular-type service and would ensure that they satisfy any technical and safety requirements to protect co-channel and adjacent channel operations and end

247. Most commenters that addressed the proper method of certifying MSS ATC end-user equipment support our proposal to review MSS ATC handsets under Part 2, Subpart J of our rules.⁶⁶⁶ At least one MSS operator, however, suggested that the requirements may prove unnecessarily restrictive for MSS ATC. According to Constellation, the Commission need not adopt “an additional set of technical standards derived from conditions in the PCS bands when the current technical standards on MSS transceivers already address all potential interference cases in the MSS bands.”⁶⁶⁷ With a few exceptions, Constellation claims that “the only rule revisions . . . necessary [are those that] . . . clarify that the existing technical standards on MSS user transceivers apply to handsets whether transmitting to satellites or to terrestrial base stations.”⁶⁶⁸ WCA, however, questions Constellation’s proposal to adopt only those rules that clarify that the same rules apply to handsets whether they are transmitting to the satellite or to the base station. Indeed, WCA opposes adopting our existing equipment-certification procedures on grounds that the existing requirements are too likely to lead to harmful interference to other operators in adjacent bands.” According to WCA, therefore, the Commission should require MSS ATC proponents to file detailed plans and technical analyses prior to authorizing MSS ATC to ensure that MSS ATC operations

^{b61} See 47 C.F.R. § 2.1033.

⁶⁶⁴ *Flexibility Notice*, 16 FCC Rcd at 15555.153 (citing 47 C.F.R. § 2.1031 *et seq.*)

^{bb5} *Flexibility Notice*, 16 FCC Rcd at 15555, ¶ 53.

⁶⁶⁶ See, e.g., ICO Comments at 48. MSV also supports requiring handsets to comply with Part 2, Subpart J of our rules, provided that MSS operators are not required to obtain a prior earth station authorization for every mobile services terminal. According to MSV, the Commission should adopt either an equipment-approval process, or a separate licensing process for MSS ATC terminals: MSS ATC providers should operate under either, but not both, of these regimes. MSV Comments at 30.

⁶⁶⁷ Constellation Comments at 35. Constellation claims that, because MSS ATC handsets “will transmit to terrestrial repeaters at lower powers than when transmitting to satellites,” these handsets “will cause no higher levels of interference than that permitted by handsets transmitting to MSS satellites.” Constellation Comments at 13. “Since the current satellite mode standards adequately protect other services.” Constellation claims that “there is no need to apply more stringent limits on handsets when operating with terrestrial repeaters.” Constellation Comments at 13 n.21.

⁶⁶⁸ *Id.* at 35-36. In a footnote, Constellation adds the caveat that “in the case where MSS downlink bands are used for ancillary terrestrial [Time Division Duplex] handset transmissions, the requirements of the corresponding MSS uplink band should be applied to these operations.” Constellation Comments at 36 n.78. Constellation adds that in the Big LEO and 2 GHz MSS bands, the current Commission rules governing equipment certification procedures and safety and distress communications “should be applied to user transceivers when operating with terrestrial base stations, and has proposed minor amendments to the relevant rule sections to clarify this requirement with respect to user transceivers.” Constellation Comments at 36.

⁶⁶⁹ WCA “is dubious that if MSS spectrum is opened for terrestrial use, the minimal MSS handset rules can provide adequate protection against interference to nearby MDS and ITFS operations” WCA Reply at 6

will not adversely affect services in adjacent bands, such as MDS and ITFS.⁶⁷⁰

248. Given our decision today that MSS licensees must provide an integrated offering of both the satellitedelivered service and the terrestrially delivered service to every customer," we revise section 25.115(d) of our rules to clarify that, in addition to MSS operators requiring blanket authorization for METs operating with the satellite. MSS operators choosing to also operate ATC networks must also receive equipment certification pursuant to Part 2. Subpart J of our rules for all end user equipment. Therefore, if an MSS ATC provider or its distributors offer a single MET to the public that communicates with the satellite and the ATC network, the MET would require the blanket authorization and certification. If an MSS ATC provider or its distributors offer a MET that has separable pans. any pan that communicates with the satellite would require traditional blanket authorization and certification. and the separable handset designed to operate using only MSS ancillary terrestrial facilities would require certification.⁶⁷² The use of certification procedures for these handsets is consistent with procedures to authorize other handsets used for cellular-type service and will ensure that they satisfy our technical and safety requirements to protect co-channel and adjacent channel operations and end users.

4. Construction Prior to MSS Operation

249. In the *Flexibility Notice*, we also sought comment on when authorized MSS licensees may begin construction of ATC facilities. Specifically, we asked whether we should permit construction of terrestrial facilities prior to obtaining an earth station license, at the MSS provider's own risk.'" Many parties agree with our initial observation that "[p]ermitting advance construction and testing of terrestrial components would enable MSS operators to turn on their terrestrial service as soon as they have met their satellite coverage...requirement."⁶⁷⁴ MSV, for example, "urges the Commission to allow construction and testing of terrestrial facilities at the MSS operator's own risk to ensure that integrated terrestrial operations commence at the earliest possible date.'" Similarly, Constellation notes that construction of ATC base stations is a "time-consuming undenaking that requires substantial long lead time planning, site acquisition, design and manufacturing, installation. . . . testing" and similar activities.⁶⁷⁶ Constellation also notes that delays in MSS ATC operations not only reduce the overall value of the MSS system and prevent the licensee from earning revenues and profits from the sale of its services to the public, but also prevent consumers from enjoying services that they might otherwise have acquired.'" We agree.

250. While forcing licensees to delay construction would impose costs not only on licensees but also on consumers, authorizing early construction of authorized ATC facilities would result in little or no adverse effects either to consumers, producers or other Commission licensees. We believe that early demonstration of integrated systems will be beneficial to successful commercial introduction of services.

⁶⁷⁰ *Id.* at 8-9; see also Inmarsat Comments at 9-16.

⁶⁷¹ See *supra* § 111(C) (commercial bundling discussion).

⁶⁷² ICO Comments at 17

⁶⁷³ *Flexibility Notice*, 16 FCC Red at 15551, ¶ 45; *id.* at 15555, ¶ 52

⁶⁷⁴ See Celsat Reply at 14; MSV Comments at 30; ICO Comments at 46; Constellation Comments at 29

⁶⁷⁵ MSV Comments at ii-iii.

⁶⁷⁶ Constellation Comments at 29

⁶⁷⁷ See, e.g., *id.* ("[s]ignificant delays in availability of a fully integrated system would delay customer ramp-up and have adverse financial impact on MSS operators").

Therefore, after an ATC authorization has been issued, at the MSS licensee's own risk and subject to the conditions specified in this Order, we will permit construction of ATC facilities after physical construction has begun on the MSS system's satellites, but prior to commencement of the provision of MSS services. For similar reasons, consistent with the rules and procedures adopted in this Order, we authorize MSS satellite operators to test ATC prior to commercial operation of their MSS systems. Specifically, during the process of constructing ATC facilities, the MSS operator, having obtained ATC authorization as described above may, without further authority from the Commission, conduct equipment tests for the purpose of making such adjustments and measurements as may be necessary to assure compliance with the terms of its ATC authorization, the technical provisions of the application, the rules and regulations and the applicable engineering standards.⁶⁷⁸ We prohibit, however, commercial operation of ATCs before or until the MSS system is commercially operating as specified in this Order,⁶⁷⁹ and such commercial operation of ATCs will result in enforcement action, including license revocation and/or the imposition of a monetary forfeiture.

H. Administrative Procedures

251. A few commenters question the decision-making sequence with respect to our decision to adopt this notice and our decisions in other related proceedings. Cingular and Verizon Wireless argue that the Commission cannot lawfully consider the issues raised in this docket until the Commission "fully and finally" resolves pending issues involving our licensing of 2 GHz MSS providers and denial of a petition for rulemaking seeking reallocation of 70 megahertz of 2 GHz MSS spectrum for terrestrial use.⁶⁸⁰ According to these parties' joint comments, reasoned decision making does not permit the Commission to consider a change in the nature of the MSS band plan without first resolving whether the premises underlying the original allocation continue to be valid.⁶⁸¹

252. Similarly, in an *ex parte* presentation, Iridium requests that the Commission defer acting on whether to allow MSS providers operating in the Big LEO band to provide ATC until the Commission "rectifies the spectrum inequity between Big LEO operators that has arisen due to the failure of several of the original licensees."⁶⁸² According to Iridium, competitive concerns and sound spectrum management dictate that the Commission decide on a new Big LEO band plan before adopting ATC, because Iridium would not be able to provide ATC over its portion of the Big LEO band, while Globalstar would be capable of providing ATC.⁶⁸³ Iridium then sets forth proposals that would allocate to itself 11.5 megahertz of spectrum among the 1615.35-1626.5 MHz and 2495-2500 MHz bands.⁶⁸⁴ In that regard,

⁶⁷⁸ See App. B. (47 C.F.R. § 25.143(j)).

⁶⁷⁹ See *supra* § III(C)(4) (discussing commercial availability of MSS prior to initializing ATC)

⁶⁸⁰ Cingular/Verizon Comments at 16

⁶⁸¹ *Id.* at ii ("Reasoned decisionmaking does not allow a fundamental change in the nature of the MSS band plan without first resolving whether the premises underlying the original allocation still make any sense.")

⁶⁸² Letter from Richard E. Wiley, Counsel to Iridium Satellite LLC to Marlene H. Dortch, Secretary, Federal Communications Commission at 1 (Dec. 3, 2002) (Iridium Deferral Letter).

⁶⁸³ Iridium Deferral Letter at 6-9

⁶⁸⁴ *Id.* at 9-12; see also Letter from Jennifer D. Hindin, Counsel, Iridium Satellite LLC to Marlene M. Dortch, Secretary, Federal Communications Commission, IB Docket No. 01-185 at 2-5 (filed Dec. 11, 2002) (Iridium Dec 11, 2002 *Ex Parte* Letter).

Iridium has also filed a petition for rulemaking asking that we revise our current rules to allow Iridium (a TDMA system) to operate in 5.85 megahertz of spectrum in the 1615.5-1621.35 MHz portion of the Big LEO band, currently the upper segment of the CDMA service uplink band.⁶⁸⁵ We seek comment on the proposal in the Iridium Petition, and other options related to the Big LEO band, *infra*, in the *Notice of Proposed Rulemaking*.

253. Below we find the claims of Cingular/Verizon and Iridium to be without merit. We have full discretion to resolve the issues in this rulemaking without first acting on the other matters that these parties discuss.

1. Further Delay Unwarranted in the 2 GHz MSS Bands

254. By way of background, on May 18, 2001, CTIA filed a petition for rulemaking asking that all 70 megahertz of 2 GHz MSS spectrum be reallocated for terrestrial use and auctioned.⁶⁸⁶ CTIA argued that the premise behind the Commission's 70 megahertz allocation to 2 GHz MSS systems, the creation of a satellite service that would cover rural areas, was no longer realistic in light of statements made by ICO and MSV in support of their request for spectrum flexibility.⁶⁸⁷ In its petition, CTIA requested that the Commission defer licensing 2 GHz MSS systems until the Commission reaffirmed the viability of these systems.⁶⁸⁸ On July 17, 2001, the International Bureau granted the MSS applications.⁶⁸⁹ The Bureau also stated that the Commission would commence the instant proceeding to consider flexibility for MSS licensees.⁶⁹⁰

255. Cingular, Verizon Wireless and AT&T Wireless filed a joint application for review of the license grants on August 16, 2001.⁶⁹¹ This application for review argued, among other things, that the International Bureau engaged in unreasoned decision making by granting the licenses before resolving questions concerning viability of MSS raised by the CTIA petition for rulemaking. In August 2001, the Commission denied in part the CTIA petition for rulemaking insofar as it requested reallocation of more than 14 megahertz of 2 GHz MSS spectrum.⁶⁹² On October 15, 2001, CTIA filed a petition for

⁶⁸⁵ *Amendment of Parts 2.106, 25.143, and 25.202 of the Commission's Rules to Require Operation of LEO MSS Systems Using TDMA/FDMA Techniques in the 1615.5-1626.5 MHz Frequency Bands*, Petition for Rulemaking, Iridium Satellite LLC, at 1 (filed July 26, 2002) (*Iridium Petition*).

⁶⁸⁶ Petition for Rulemaking of the Cellular Telecommunications & Internet Association (filed May 18, 2001) (CTIA Petition for Rulemaking). Several commenters, including CTIA, have made the same request in the instant proceeding. *See, e.g.*, CTIA Nov. 26 *Ex Parte* Letter at 1; CTIA Nov. 20 *Ex Parte* Letter at 8; CTIA Nov. 19 *Ex Parte* Letter at 8; Cingular/Sprint May 13, *Ex Parte* Letter at 15-16.

⁶⁸⁷ CTIA Petition for Rulemaking at 2

⁶⁸⁸ *Id.* at 3-4

⁶⁸⁹ *E.g.*, *ICO Services*, 16 FCC Rcd at 13788-9, ¶¶ 30-31

⁶⁹⁰ *Id.* at 13788, ¶ 30

⁶⁹¹ Application for Review of AT&T Wireless Services, Inc., Cellco Partnership d/b/a Verizon Wireless, and Cingular Wireless LLC, DA 01-1631, (filed Aug. 16, 2001) (*Licensing Application for Review*).

⁶⁹² *Advanced Services Further Notice*, 16 FCC Rcd at 16055, ¶ 23

reconsideration of the denial of its petition for rulemaking.⁶⁹³ CTIA's reconsideration petition will be addressed by the Commission in a separate proceeding.⁶⁹⁴

256. Cingular and Verizon Wireless now claim that the Commission cannot properly consider whether to grant flexibility to 2 GHz MSS providers to integrate terrestrial components into their networks in their assigned spectrum until the Commission first resolves the application for review relating to the grant of the 2 GHz MSS licenses and CTIA's petition for reconsideration of the denial of its petition for rulemaking.⁶⁹⁵ According to Cingular and Verizon Wireless, "to take up flexible use. before the validity of earlier actions has been resolved, is arbitrary and capricious decisionmaking."⁶⁹⁶

257. We conclude that Cingular and Verizon Wireless's unreasoned decision making arguments are without merit, and that we have full discretion to resolve the issues in this rulemaking without first acting on the CTIA petition for reconsideration or the application for review. The courts have repeatedly held that the Commission and other administrative agencies have extensive latitude in managing their dockets, particularly when the agency explains why it chooses to act on some issues and defer others, as was the case in the Commission actions about which Cingular and Verizon Wireless complain.⁶⁹⁷ As the D.C. Circuit held, an agency need not "make progress on every front before it can make progress on any front."⁶⁹⁸ Simply put, we have broad discretion to manage the order in which we dispose of issues before us. We will address the merits of Cingular, Verizon Wireless and AT&T Wireless's joint application for review in a separate order.⁶⁹⁹

258. We also conclude that reasoned decision making does not require us to defer action in this proceeding pending resolution of the application for review or the CTIA petition for reconsideration. While captioning their proposals differently, Cingular and Verizon Wireless essentially argue for us to stay the instant proceeding pending resolution of their and CTIA's appeals. As we have previously held, such requests, no matter how captioned, are subject to the Commission's traditional test for such extraordinary relief.⁷⁰⁰ Cingular and Verizon Wireless's comments do not satisfy the legal requirements

⁶⁹³ See *Introduction of New Advanced Mobile and Fixed Terrestrial Services; Use of Frequencies Below 3 GHz, Petition for Rulemaking of the Cellular Telecommunications & Internet Association Concerning Reallocation of 2 GHz Spectrum for Terrestrial Wireless Use*, Petition for Reconsideration, ET Docket Nos. 00-258 and 95-18; IB Docket No. 99-81 at 1 (filed Oct. 15, 2001).

⁶⁹⁴ See *AWS Third Report and Order*, ET Docket No. 00-258, FCC 03-16

⁶⁹⁵ Cingular/Verizon Comments at ii

⁶⁹⁶ *Id.*

⁶⁹⁷ See, e.g., *Western Union Int'l Inc. v. FCC*, 673 F.2d 539, 543-44 (D.C. Cir. 1982)

⁶⁹⁸ *Personal Watercraft Industry Ass'n v. Dept. of Commerce*, 48 F.3d 540, 544 (D.C. Cir. 1993)

⁶⁹⁹ See *Boeing Company, Celsat America, Inc., Constellation Communications Holdings, Inc., Globalstar LP., ICO Services Limited, Iridium L.L.C., Mobile Communications Holdings, Inc., TMI Communications and Company, LP.* Report and Order, IB Docket No. 99-81 (2 GHz License Deferral and Application for Rulemaking).

⁷⁰⁰ See, e.g., *Deferral of Licensing of MTA Commercial Broadband PCS*, PP Docket No. 93-253, ET Docket No. 92-100, Memorandum Opinion and Order, 11 FCC Rcd 17052 (1996). We require a party seeking to stay a Commission proceeding to demonstrate that: (1) it has a substantial likelihood of succeeding on the merits; (2) it would suffer irreparable harm absent a stay; (3) grant of a stay would not harm others; and (4) the stay would be in the public interest. *Cumulus Licensing Corp. and Clear Channel Broadcasting Licensees, Inc.*, 16 FCC Rcd 1052. (continued....)

that would justify issuance of a stay. First, Cingular and Verizon Wireless have not presented any arguments or evidence that they are likely to succeed on the merits. Similarly, Cingular and Verizon Wireless have not demonstrated that they will be irreparably harmed in the absence of a stay.” Instead, Cingular and Verizon provide general arguments that competing demands for spectrum for advanced wireless services require that the Commission reallocate for 3G services more than the 10-14 MHz of 2 GHz MSS spectrum currently being considered for reallocation.⁷⁰² These arguments simply do not show that our failure to stay this proceeding will cause immediate, substantial harm to Cingular or Verizon Wireless. Rather Cingular and Verizon Wireless offer conjecture about events that may or may not occur in the future. Finally, a stay in this proceeding disservices the public interest by delaying the introduction of new competition and services contemplated by this order. Stay of this proceeding would also set a precedent that pending proceedings could be easily stayed by the filing of a petition for rulemaking, or a subsequent reconsideration process if such a petition is denied, even when the legal requirements for a stay have not been met. The Commission cannot permit its processes to be paralyzed by filings that make no attempt to meet the high burden of a stay. For these reasons we conclude that we need not resolve the application for review or CTIA’s petition for reconsideration any more “fully and finally” than we have here and in the 2 GHz MSS licensing orders prior to granting flexibility to 2 GHz MSS operators.

2. Further Delay Unwarranted in the Big LEO Bands

259. We also decline Iridium’s request to defer deciding whether to allow MSS providers operating in the Big LEO band to provide ATC until we address Iridium’s petition to adjust frequency assignments in the Big LEO band. As a practical matter, our decisions to permit Globalstar to implement MSS ATCs in the 1610-1615.5 MHz and 2492.5-2498.0 MHz bands, along with our requirement that base stations be tunable across the entire 2483.5-2500 MHz band, do not prejudice our consideration of potential revision to the Big LEO band plan regarding those frequencies Iridium has suggested for its use (1.5 megahertz of spectrum among the 1615.35-1626.5 MHz and 2495-2500 MHz bands). Moreover, we find that Iridium has not met the traditional test for us to defer resolution of this proceeding. Iridium has not demonstrated that it has a substantial likelihood of success on the merits. Rather, Iridium has demonstrated merely that conditions are sufficiently different from those present at the time the Commission adopted the Big LEO band plan to justify consideration, which we address in the *Notice* portion of this item. As noted above, our decision today in no way limits Iridium’s ability to obtain the rights it seeks. Further, Iridium has failed to demonstrate that failure to stay this proceeding will cause immediate, substantial harm to Iridium. It is well established that financial losses are not sufficiently irreparable to meet the traditional test. Finally, we find that stay of this proceeding would not serve the public interest of allowing all parties to move forward. In this case, we find that grant of a stay would have the anticompetitive and undesirable effect of preventing one Big LEO MSS licensee from achieving immediate expanded use of its assigned spectrum (with such use resulting in operational and other benefits), simply because it chose a technology that permits implementation of the services immediately, as compared to its competitor. Iridium would have us withhold services from the public because they can only be provided by a competitor. We find no basis for such a result. Therefore, we do not defer action on ATC in the Big LEO bands pending resolution of the issues raised in the Iridium Petition.

(Continued from previous page) _____

1058, ¶ 20 (2001); *Washington Metropolitan Area Transit Comm. v. Holiday Tours, Inc.*, 559 F.2d 841, 842-43 (D.C. Cir. 1977)

⁷⁰¹ An injury qualifies as “irreparable harm” only if it is “both certain and great; it must be actual and not theoretical.” *Id.* at 674. Therefore, to demonstrate irreparable harm, Cingular and Verizon must provide “proof indicating that the harm [it alleges] is certain to occur in the near future.” *Id.*

⁷⁰² Cingular/Verizon Comments at 20-22

260. Finally, we deny Iridium's *ex parte* request for access to any part of the Big LEO service downlink band (2483.5-2500 MHz) at this time.⁷⁰³ Based on Iridium's current authorization, it does not appear that its satellite system is designed or authorized to operate in the Big LEO service downlink band.⁷⁰⁴ Though Iridium does not provide any technical information about the type of system or service that it would offer in the Big LEO service downlink band, it appears from Iridium's *ex parte* filings that it seeks authority to provide an ATC-only service in those bands. Since ATC, by definition, uses the same spectrum as, and is ancillary to, an operational licensed satellite service, the issue of whether Iridium could provide ATC in bands that it is not licensed for is not ripe for discussion in this Order. Iridium is free to comment and provide additional information on the type of service it seeks to offer in response to the *Notice of Proposed Rulemaking* initiated below.

IV. NOTICE OF PROPOSED RULEMAKING

261. In this section, we initiate IB Docket No. 02-364 to seek comment on proposals for reassigning or reallocating a portion of spectrum in the Big LEO MSS frequency bands. At the time that the Commission developed the Big LEO spectrum sharing plan, it explained that it might be appropriate to re-visit the plan in the future. Since then, two systems deployed and have begun to operate, while several other systems have either surrendered their license or failed to meet the terms of their license. These changes, as well as changing traffic patterns and consumer demands, suggest that it is now appropriate to re-examine the Big LEO spectrum plan. In addition, Iridium, one of the Big LEO operators, has requested access to additional spectrum in the Big LEO band.⁷⁰⁵ As described below, we seek comment on the original spectrum-sharing plan, Iridium's proposal, and other possible uses of the spectrum.

A. Background

262. In 1994, the Commission adopted the Big LEO spectrum sharing plan.⁷⁰⁶ At that time, there were five applicants for Big LEO licenses: Motorola Satellite Communications, Inc., pursuing the Iridium system, Loral/Qualcomm Partnership, L.P., pursuing the Globalstar system, TRW, Inc., pursuing the Odyssey system, Mobile Communications Holdings, Inc. (MCHI), pursuing the Ellipso system, and Constellation Communications, Inc. (Constellation), pursuing the Aries system. Iridium and Globalstar both launched and are operating global Big LEO MSS systems. In 1998, TRW surrendered the Odyssey system authorization.⁷⁰⁷ The Commission has cancelled the licenses for Constellation's and MCHI's

⁷⁰³ Iridium Deferral Letter at 10

⁷⁰⁴ *Motorola Satellite Communications, Inc.*, Order and Authorization, 10 FCC Rcd 2268 (Int'l Bur. 1995), *erratum*, 10 FCC Rcd 3925, *recon. denied*, Memorandum Opinion and Order, 11 FCC Rcd 18502 (1996) (*Iridium License*) (authorizing Iridium to construct an MSS system capable of operating in the 1616-1626.5 MHz frequency band).

⁷⁰⁵ Iridium Petition *supra* n.7.

⁷⁰⁶ *Big LEO Order*, 9 FCC Rcd at 5954-59, ¶¶ 43-53

⁷⁰⁷ See Public Notice, Report No. SPB-114, File Nos. 65-SAT-P/LA-98; SAT-LOA-19971222-00230 at 3 (Jan. 15, 1998) (reporting letter from counsel for TRW, Inc. to Secretary of the Commission surrendering Big LEO authorization)

systems.⁷⁰⁸

263. Under the Big LEO spectrum sharing plan, the Commission found that up to four CDMA Big LEO MSS systems (Globalstar, Aries, Ellipso and Odyssey) could share 11.35 megahertz of service uplink spectrum in the 1610-1621.35 MHz band and 16.5 megahertz of service downlink spectrum in the 2483.5-2500 MHz band. The 16.5 megahertz service downlink spectrum in the 2483.5-2500 MHz band was reserved for assignment to CDMA systems. The Commission also found that one TDMA system (Iridium) could operate bi-directionally in 5.15 megahertz of spectrum in the 1621.35-1626.5 MHz band. In the *Big LEO Order*, the Commission said that it would consider reducing the 11.35 megahertz of spectrum allocated for sharing among CDMA systems in the Big LEO service uplink band to 8.25 megahertz if only one CDMA system were implemented.⁷⁰⁹ This adjustment would make 3.15 megahertz available for re-assignment. The Commission stated that it would decide in the context of a future rulemaking proceeding whether to re-assign the spectrum to the TDMA system or to make it available to a new entrant.⁷¹⁰

264. Based on recent filings, Globalstar has stated that it is operating in nine of a total of 13 CDMA channels in the Big LEO service uplink spectrum." Globalstar explains that each of the CDMA channels is 1.23 megahertz wide. A small amount of spectrum is used to provide frequency clearance between the channels and at the ends of the CDMA band for a total of approximately 11.35 megahertz in use by Globalstar." Iridium currently uses the 5.15 megahertz of spectrum assigned to it in the 1621.35-1626.5 MHz band for both service up and down links." Due to the fact that no other CDMA system has deployed, Globalstar has exclusive use of 16.5 megahertz of spectrum in the Big LEO CDMA service downlink band at 2483.5-2500 MHz.

B. Big LEO CDMA Spectrum Proposals

265. As the Commission said in the *Big LEO Order*, at some point in the future it might be appropriate to re-examine the Big LEO spectrum sharing plan in a rulemaking based on the circumstances at the time and make additional findings to refine the use of the band to better serve the public interest.⁷¹⁴

⁷⁰⁸ *Constellation Communications Holdings, Inc.*, Memorandum Opinion and Order, 17 FCC Rcd 22584 (Int'l Bur. 2002), *petition for recon. pending*; *Mobile Communications Holdings, Inc.*, Memorandum Opinion and Order, 16 FCC Rcd 11766 (Int'l Bur. 2001), *petition for recon. denied*, Memorandum Opinion and Order, 17 FCC Rcd 11898 (Int'l Bur. 2002), *app. for review pending*.

⁷⁰⁹ *Big LEO Order*, 9 FCC Rcd at 5959-60, ¶ 54

⁷¹⁰ *Id.* at 5959-60, ¶¶ 54-55

⁷¹¹ Letter from Timothy J. Cooney, Counsel to Globalstar, to Magalie Roman Salas, Secretary, FCC, ET-Docket 98-142 (May 14, 2001), *available at* <http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id=document=6512567466> (last visited, Jan. 9, 2003)

⁷¹² Based on the information provided in Globalstar's filing, Commission staff has roughly calculated that Globalstar's channelization plan is as follows: 1.23 megahertz service uplink channels each, small frequency clearance between the service channels of 0.01 megahertz and adjacent user frequency clearance of 0.195 megahertz on either end of the CDMA band

⁷¹³ The International Bureau dismissed as moot Globalstar's request for Iridium's spectrum, as Iridium is still operational. *See* Letter from Jennifer Gilson, Chief, Satellite Policy Branch, to William Wallace, Counsel to Globalstar (Nov. 29, 2001)

⁷¹⁴ *Big LEO Order*, 9 FCC Rcd at 5959-61, ¶¶ 51-57

We have received a Petition for Rulemaking from the sole TDMA licensee, Iridium, seeking additional spectrum for use in the CDMA portion of the Big LEO band.⁷¹⁵ In addition, the Commission also left open the possibility of providing an opportunity for additional MSS entry in the Big LEO spectrum.⁷¹⁶ We believe that it is appropriate to seek comment on both the possible reassignment and possible reallocation of any returned spectrum for possible use by other services.

266. Iridium seeks reassignment of 5.85 megahertz of spectrum in the 1615.5-1621.35 MHz portion of the Big LEO band, which is currently the upper segment of the CDMA service uplink band.” Iridium states that it has growing demands for spectrum in the United States, has reached near-peak capacity use on its system at times in various regions of the world and that, based on projections and potential global events, it will need additional Big LEO spectrum in the near term.⁷¹⁸ Because only one CDMA Big LEO system has deployed, it is now appropriate to consider making at least 3.1 megahertz of additional spectrum available to Iridium. We will base our final judgment on the record established in this proceeding; however, we shorten the normal comment cycle for this *Notice* to expedite the decision-making process. Specifically, we will require comments on this *Notice* to be filed within 30 days of publication of this rulemaking in the Federal Register and reply comments to be filed within 15 days thereafter. We are taking this action to ensure that we will be in a position to act swiftly on Iridium’s petition and resolve the Big LEO spectrum sharing plan issues. We acknowledge and encourage Iridium’s proposal for the parties to develop cooperatively a mutually acceptable spectrum sharing plan, which could be presented to the Commission for consideration and public comment before the conclusion of the accelerated pleading cycle.⁷¹⁹ The presentation of a common proposal would facilitate prompt resolution of the issues; however, regardless of whether parties can reach agreement, we tentatively conclude that a rebalancing of the Big LEO band will serve the public interest and intend to proceed expeditiously on considering the appropriate amount of spectrum that each Big LEO MSS licensee should receive. We expect to complete action on this Notice prior to authorization of any ATC services in the Big LEO band.” In the event we are not able to do so, it may be necessary and in the public interest to specifically impose conditions on a grant of ATC authority that would preserve a full range of options concerning the Big LEO band plan and that would permit grant to Iridium of interim access to additional spectrum pending resolution of the further notice.

267. While Iridium provides anecdotal evidence of its potential need for additional spectrum,

⁷¹⁵ Iridium Petition *supra* n.7.

⁷¹⁶ *Big LEO Order*, 9 FCC Rcd at 5960, ¶ 55

⁷¹⁷ Iridium also seeks amendment of sections 2.106, 25.143, and 25.202 of the Commission’s rules to facilitate its proposed change in the Big LEO assignments.

⁷¹⁸ See Letter from Richard E. Wiley, Counsel to Iridium Satellite, LLC, to Michael K. Powell, Chairman, FCC (Jan. 13, 2003) (Iridium Jan. 13, 2003 *Ex Parte* Letter).

⁷¹⁹ See Letter from Richard E. Wiley, Counsel to Iridium Satellite, LLC, to Marlene H. Dortch, Secretary, FCC (Dec. 18, 2002), available at <http://svartifoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513398434> (last visited, Jan. 9, 2003) (Iridium Dec. 18, 2002 *Ex Parte* Letter).

⁷²⁰ As a practical matter, there will be a period of time before any MSS operator will be in a position to deploy ATC. As described in the Report portion of this document, MSS operators will be required to submit and obtain Commission approval of ATC based on information demonstrating compliance with our gating criteria, a request for modification to the space station license to include ATC and a request for certification of handsets before commencing ATC services.

we seek detailed comment regarding its actual current spectrum use and substantiated projections of its future spectrum requirements. Specifically, we seek additional information on the number of customers Iridium can support using its current spectrum, the demand of Iridium customers for spectrum in the United States versus other regions of the world. We also seek comment concerning how many subscribers Iridium plans to support and what type of services it plans to offer as a function of Iridium's projected spectrum requirements. In addition, we seek comment on the public interest rationale for re-assigning 5.85 megahertz of spectrum rather than the 3.1 megahertz that the Commission contemplated when it originally discussed modifying the band sharing plan.

268. We also seek technical information on Iridium's current and projected spectrum use. We seek comment on how efficiently Iridium is using its current spectrum and, if we were to make more Big LEO spectrum available, exactly how much additional spectrum would be appropriate. For instance, has Iridium been able to develop more efficient spectrum use as a result of its experience operating a global MSS system? Has Iridium been able to modify its system to take advantage of any technical developments in spectrum use since the launch of its system? We note that even though Iridium's Big LEO system is authorized to operate in the 1621.35-1626.5 MHz band, the system is capable of operating across the 1616-1626.5 MHz band.⁷²¹ If authorized to use Big LEO spectrum down to 1615.35 MHz, as requested by Iridium, we seek comment on how Iridium would use the 1615.35-1616 MHz portion of the band given it was not authorized to construct a system capable of operating in that portion of the band. In addition, we seek comment on the type of system that Iridium would deploy in any additional spectrum. For instance, would Iridium use additional spectrum for CDMA or TDMA based services? If Iridium were to use CDMA technology, would there be any sharing opportunities with Globalstar or a new entrant, satellite or terrestrial?

269. In addition, we seek comment on how Globalstar is using its assigned spectrum. Is Globalstar using its entire assigned spectrum? If not, what portion of the Big LEO service bands is Globalstar using to provide service and why? What are Globalstar's projected spectrum needs in the future? In addition, we seek comment on how much spectrum Globalstar is using in the service downlink band, 2483.5-2500 MHz. Does Globalstar have a need for more spectrum in the service downlink than in the service uplink? Would it serve the public interest to allow Globalstar to use the entire downlink spectrum or should the Commission pair the uplink and downlink spectrum assignments? If Globalstar does not use or is not permitted to use the entire Big LEO service downlink spectrum, what should the Commission do with any unused spectrum? Commenters should provide a cost-benefit analysis of any proposals for the use of this spectrum.

270. More generally, we seek comment on whether changes to the Big LEO spectrum sharing plan would have any effect on GLONASS, the Russian Global Navigation Satellite System, and radioastronomy service (RAS) operations in the band.⁷²² We seek comment on whether there may be any opportunities for sharing between the Iridium and Globalstar systems. Does Iridium have any plans to depart from its current spectrum use architecture to one that would require separate uplink and downlink spectrum? We also seek comment on how the U.S. Big LEO spectrum sharing plan fits with international band plans for Big LEO operations and what impact changes to the U.S. plan would have on plans in other regions.

⁷²¹ *Iridium Bip LEO License*, 10 FCC Rcd at 2268, ¶ 3, id. at 2272, ¶¶ 24-15.

⁷²² In the Big LEO service rulemaking, the Commission considered and found it unnecessary to adopt protections for the GLONASS system. *Big LEO Memorandum Opinion & Order*, 11 FCC Rcd at 12865, ¶ 14. The Commission also established a plan for protecting RAS. *Big LEO Order*, 9 FCC Rcd at 5976-83, ¶¶ 100-121.

271. We also seek comment on the possibility of making any returned spectrum, including service downlink spectrum in the 2483.5-2500 MHz band, available in a second Big LEO processing round. We seek comment on whether there is a need for additional spectrum for new MSS systems in the Big LEO band and the level of interest in participating in a second Big LEO processing round. If we were to have a second round for Big LEO applicants, we seek comment on the type of criteria that we should use for entry. For instance, should applicants who have held Big LEO licenses in the past be eligible to participate in a second processing round? Should we continue our practice of not applying financial standards in cases where mutual exclusivity can be resolved? How much spectrum would need to be made available to provide sufficient incentive for applicants to participate in a second Big LEO processing round? Are the current Big LEO processing rules sufficient to handle a second processing round or would we need to conduct a rulemaking to develop appropriate rules for second round applicants and licensees? Should the Commission consider the possibility of permitting government use of the Big LEO spectrum to support a non-commercial Big LEO system? We seek comment on this alternative and any other relevant information that commenters believe may be helpful to the Commission.

272. Finally, we seek comment on the possibility of re-allocating any returned Big LEO spectrum. Under the plan adopted in this Order, spectrum in the 2483.5-2492.5 MHz and 2498-2500 MHz bands could be available for other uses. For instance, we seek comment on allowing unlicensed devices to operate in any returned spectrum.” Currently, we restrict the operation of unlicensed devices in the 2483.5-2500 MHz band to avoid interference to MSS.⁷²⁴ We also seek comment on allocating these bands for site-based or critical infrastructure licensees.” Alternatively, we seek comment on pairing spectrum in the 2483.5-2492.5 MHz band with an equal amount of spectrum in the Big LEO service uplink band at 1610-1626.5 MHz. For example, could we pair five megahertz in each band for a total of ten megahertz to create additional spectrum for assignment to a terrestrial CMRS licensee? Commenters should provide a technical rationale for how much spectrum would need to be made available to provide enough spectrum to support a viable service and provide support for the types of services that could make use of the spectrum. Commenters should also provide technical information addressing interference and other concerns that could be raised by the incumbent MSS licensees and other users of the spectrum, e.g., radioastronomy, and adjacent spectrum users.

273. We seek comment on all of these alternatives and any other relevant proposals that commenters may raise during the course of the comment cycle in this rulemaking. In light of our decision today in the Report and Order section of this document to adopt rules to permit implementation of MSS ATCs in the Big LEO bands, we will permit ATCs in those portions of the Big LEO bands without prejudice to the outcome of this *Notice of Proposed Rulemaking*.⁷²⁶ We also seek comment on implementation of ATC in the portion of the Big LEO bands beyond those portions authorized for ATC today. Specifically, whether there are any advantages or disadvantages to allowing CDMA or TDMA systems to deploy ATC in particular parts of the unresolved portions of the Big LEO service up and

⁷²³ 47 C.F.R. § 15.247 (permitting frequency hopping and direct sequence spread spectrum intentional radiators, including for the 2400-2483.5 MHz band, meeting enumerated criteria).

⁷²⁴ See *id.* § 15.205

⁷²⁵ See Critical Infrastructure Assurance Office, *About CIAO*, available at <<http://www.ciao.gov/publicaffairs/about.html>> (last visited, Jan. 6, 2002) (describing services)

⁷²⁶ See *supra* § III(D) (clarifying that Iridium will be permitted to operate ATC in the 1621.35-1626.5 MHz band and Globalstar will be permitted to operate ATC in 1610-1615.5 MHz and 2492.5-2498 MHz Big LEO MSS band, prior to completion of this rulemaking and subject to the ATC authorization procedures that we adopt today).

downlink spectrum. Commenters should provide information on any other technical or regulatory aspects of ATC implementation that should be considered beyond the record already established in this proceeding.

C. Comment Dates

274. Pursuant to sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments on the Notice of Proposed Rulemaking in IB Docket No. 02-364 on or before 30 days after Federal Register publication and reply comments on or before 45 days after Federal Register publication. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies.⁷²⁷ All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

275. Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/e-file/ecfs.html>. Generally, only one copy of an electronic submission must be filed. In completing the transmittal screen, commenters should include their full names, Postal Service mailing addresses, and the applicable docket number, IB Docket No. 02-364. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an e-mail to ecfs@fcc.gov, and should include the following words in the body of the message: "get form<your e-mail address>". A sample form and directions will be sent in reply.

276. Parties who choose to file by paper must file an original and four copies of each filing. If parties want each Commissioner to receive a personal copy of their filing, they must file an original plus nine copies. Paper filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). The Commission's contractor, Vistrionix, Inc., will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, N.E., Suite 110, Washington, D.C. 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building. Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capital Heights, MD 20743. U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12th Street, S.W., Washington, D.C. 20054.

277. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center, 445 12th Street, S.W., Washington, D.C. Comments are also available on the ECFS, at http://gulfoss2.fcc.gov/cgi-bin/websql/prod/ecfs/comsrch_v2.htm.

V. PROCEDURAL MATTERS

278. *Final Regularon Flexibility Analysis.* The Final Regulatory Flexibility Analysis for this Report and Order, pursuant to the Regulatory Flexibility Act, 5 U.S.C. § 604, is contained in Appendix D.

279. *Final Paperwork Reduction Act Analysis.* The requirements adopted in this Rulemaking have been analyzed with respect to the Paperwork Reduction Act of 1995 (the 1995 Act) and found to impose new or modified information collection requirements on the public. Implementation of any new or modified requirements will be subject to approval by the Office of Management and Budget (OMB) as

⁷²⁷ See *Electronic Filing of Documents in Rulemaking Proceedings*, Memorandum Opinion and Order on Reconsideration, 13 FCC Rcd 21517 (1998); Report and Order, 13 FCC Rcd 11322 (1998).

prescribed by the 1995 Act's emergency processing provisions. OMB approval is requested to be granted no later than 30 days from the date of publication of this Rulemaking in the Federal Register. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public to comment on the information collections contained in this Report and Order, as required by the Act 1995. Public comments are due 21 days from date of publication of this Report and Order in the Federal Register. Comments should address: (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

280. Written comments by the public on the new or modified information collection requirements are due 21 days after publication of this Rulemaking in the Federal Register. Comments on the information collections contained herein should be submitted to Judy Boley, Federal Communications Commission, 445 Twelfth Street, S.W., Room 1-C804, Washington, D.C. 20554, or over the Internet to jboley@fcc.gov and to Edward C. Springer, OMB Desk Officer, Room 10236 NEOB, 725 17th Street, N.W., Washington, D.C. 20503 or via the Internet to edward.springer@omb.eop.gov. For additional information on the information collection requirements, contact Judy Boley at (202) 418-0214 or via the Internet at the above address.

281. For further information concerning this proceeding, contact Breck Blalock at (202) 418-8191/bblalock@fcc.gov or Trey Hanbury at (202) 418-0766/ghanbury@fcc.gov. International Bureau, Federal Communications Commission, Washington, DC 20554.

VI. ORDERING CLAUSES

282. IT IS ORDERED that, pursuant to sections 4(i), 7, 302, 303(c), 303(e), 303(f) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. sections 154(i), 157, 302, 303(c), 303(e), 303(f) and 303(r), this Report and Order and Notice of Proposed Rulemaking IS ADOPTED and that Part 25 of the Commission's Rules IS AMENDED, as specified in Appendix B, effective 30 days after publication in the Federal Register.

283. IT IS FURTHER ORDERED that the Petition for Rulemaking filed by Iridium Satellite LLC IS GRANTED in part to the extent described above and IS DENIED in all other respects.

284. IT IS FURTHER ORDERED that the Regulatory Flexibility Analysis, as required by section 604 of the Regulatory Flexibility Act and as set forth in Appendix D, IS ADOPTED.

285. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION


Marlene H. Dortch
Secretary

APPENDIX A: LIST OF COMMENTING PARTIES**Comments (due October 22, 2001):**

Aerospace and Flight Test Radio
 Coordinating Counsel
 American Petroleum Institute
 Andrew R. Funk (late-filed)
 Association for Maximum Service
 Television, Inc. and National
 Association of Broadcasters
 AT&T Wireless Services, Inc.
 Aviation Industry Parties
 Boeing Company
 Cellular Telecommunications and Internet
 Association
 Celsat America, Inc.
 Cingular Wireless and Verizon Wireless
 Comtech Mobile Datacom Corp.
 Constellation Communications Holdings,
 Inc.
 David A. Montanaro
 Globalstar, L.P. and L/Q Licensee, Inc.
 Inmarsat Ventures PLC
 Iridium Satellite LLC
 KITComm Satellite Communications Ltd.
 Loral Space and Communications Ltd.
 Mobile Communications Holdings, Inc.
 Mobile Satellite Users Association
 Modent Services Inc., TMI Communications
 and Company, L.P., and Mobile Satellite
 New ICO Global Communications
 Progress and Freedom Foundation
 Rural Cellular Association
 Skytower, Inc.
 Society of Broadcast Engineers, Inc.
 Stratos Mobile Networks (USA) LLC and
 Marinesat Communications Network,
 Inc.
 Telenor Broadband Services AS
 Telephone and Data Systems, Inc.
 Telecommunications Industry Association—
 Wireless Communications Division
 TMI Communications and Company, L.P.
 Unofficial Bondholders Committee of
 Globalstar, L.P.
 Ventures Subsidiary LLC
 Wireless Communications Association
 International, Inc.

Reply Comments (due November 13, 2001):

2 GHz Broadcast Group
 Association for Maximum Service
 Television, Inc. and National
 Association of Broadcasters
 AT&T Wireless Services, Inc.
 Boeing Company
 Catholic Television Network
 Cellular Telecommunications and Internet
 Association
 Celsat America, Inc.
 Cingular Wireless and Verizon Wireless
 Comtech Mobile Datacom Corp.
 Constellation Communications Holdings,
 Inc.
 Globalstar, L.P. and L/Q Licensee, Inc.
 Inmarsat Ventures PLC
 Meredith Corporation
 Motient Services Inc., TMI Communications
 and Company, L.P., and Mobile Satellite
 Ventures Subsidiary LLC
 National ITFS Association
 New ICO Global Communications
 Rural Telecommunications Group
 Society of Broadcast Engineers, Inc.
 Stratos Mobile Networks (USA) LLC and
 Marinesat Communications Network,
 Inc.
 Telephone and Data Systems, Inc.
 TRW Inc.
 Unofficial Bondholders Committee of
 Globalstar, L.P.
 Voicestream Wireless Corp.
 Walt Disney Company
 Wireless Communications Association
 International, Inc.

Supplemental Comments (due March 22, 2002):

AT&T Wireless Services, Inc.
 Boeing Company
 Cellular Telecommunications and Internet
 Association
 Celsat America, Inc.
 Constellation Communications Holdings,
 Inc.
 Globalstar, L.P.
 ICO Global Communications

Iridium Satellite LLC
 Inmarsat Ventures PLC
 Mobile Satellite Ventures Subsidiary LLC
 Verizon Wireless

Ex Parte Commenters

Ashoka Innovators for the Public
 AT&T Wireless Services, Inc.
 AT&T Wireless Services, Inc., Cingular
 Wireless LLC, and Verizon Wireless
 Bell South Corporation, Nucentrix
 Broadband Networks, Inc., Sprint
 Corporation, WorldCom, Inc., and
 Wireless Communications Association
 International, Inc.
 Boeing Company
 Catholic Television Network and the
 National ITFS Association
 Cellular Telecommunications and Internet
 Association
 Cellular Telecommunications and Internet
 Association and AT&T Wireless
 Services, Inc.
 Celsat America, Inc.
 Central Texas Communications, Inc., Leaco
 Rural Telephone Cooperative, Inc. and
 Adams Telecommunications
 Cingular Wireless LLC
 Constellation Communications Holdings,
 Inc., Mobile Communications Holdings,
 Inc. and ICO Global Communications
 Holdings Limited
 Globalstar, L.P.
 ICO Global Communications (Holdings)
 Ltd.
 Informal Noteholders Committee of
 Globalstar, L.P.
 Inmarsat Ventures PLC
 Iridium Satellite LLC
 International Telecommunications Union
 Mobile Satellite Ventures Subsidiary LLC
 Mobile Satellite Ventures Subsidiary LLC
 and U.S. GPS Industry Council
 Mobile Communications Holdings
 Nelson Mandela
 Nextel Communications, Inc.
 Official Committee of Unsecured Creditors
 of Globalstar, L.P.
 Official Creditors Committee of Globalstar,
 L.P.
 Qualcomm Inc.

Representative John Murtha
 Representative John Thune, et al.
 Satellite, L.L.C.
 Senator Max Cleland
 Senator John Edwards
 Senator Ted Stevens
 Senators Ernest Hollings, Ted Stevens, John
 D. Rockefeller IV, and Byron L. Dorgan
 Sioux Valley Wireless, SkyCable TV of
 Madison, and W.A.T.C.H. TV
 Society of Broadcast Engineers, Inc.
 Sprint Corporation and Cingular Wireless
 LLC
 Sprint Corporation, Worldcom, Inc., and
 Wireless Communications Association
 International, Inc.
 TMI Communications and Company, L.P.
 T-Mobile USA
 Verizon Communications
 TMI Communications and Company, L.P.
 and TerreStar Networks, Inc.
 U.S. GPS Industry Council
 Wireless Communications Association
 International
 WorldNet Telecommunications, Inc.

Appendix B: Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 2 and 25 as follows:

PART 2 -- FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Section 2.106, the Table of Frequency Allocations, is amended to read as follows:

- a. Revise pages 43, 44, 45, 46, 48, 49, and 52.
- b. In the list of United States (US) Footnotes, add footnote US380.

§ 2.106 Table of Frequency Allocations.

The revisions and additions read as follows:

* * * * *

International Table		United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government
1429-1452 FIXED MOBILE except aeronautical Mobile	1429-1452 FIXED MOBILE 5.343		1429.5-1432	<i>See previous page</i>
			5.341 US352	1430-1432 FIXED (telemetry) LAND MOBILE (telemetry) FIXED-SATELLITE (space-to-Earth) US368
			1432-1435	5.341 US350 US352
			5.341 US361	1432-1435 FIXED MOBILE except aeronautical mobile
5.341 5.342	5.341			5.341 US361
1452-1492 FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 5.347 BROADCASTING- SATELLITE 5.345 5.347	1452-1492 FIXED MOBILE 5 343 BROADCASTING 5.345 5 347 BROADCASTING-SATELLITE 5.345 5.347		1435-1525 MOBILE (aeronautical telemetry)	
5.341 5.342	5.341 5.344			Aviation (87)
1492-1525 FIXED MOBILE except aeronautical mobile	1492-1525 FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348A	1492-1525 FIXED MOBILE		
5.341 5.342	5.341 5.344 5.348	5.341 5.348A	5.341 US78	
1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349	1525-1530 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Fixed Mobile 5 343	1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Mobile 5 349	1525-1530 MOBILE-SATELLITE (space-to-Earth) US380 MOBILE (aeronautical telemetry)	Satellite Communications (25) Aviation (87)
5.341 5.342 5.350 5.351 5.352A 5.354	5.341 5.351 5.354	5.341 5.351 5.352A 5.354	5.341 5.351 US78	

<p>1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space- to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile</p> <p>5.341 5.342 5.351 5.354</p>	<p>1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343</p> <p>5.341 5.351 5.354</p>	<p>1530-1535 MOBILE-SATELLITE (space-to-Earth) US360 MARITIME MOBILE-SATELLITE (space-to-Earth) Mobile (aeronautical telemetry)</p> <p>5.341 5.351 US78 US315</p>	
<p>1535-1559 MOBILE-SATELLITE (space-to-Earth) 5.351A</p>		<p>1535.1544 MOBILE-SATELLITE (space-to-Earth) US380 MARITIME MOBILE-SATELLITE (space-to-Earth)</p> <p>5.341 5.351 US315</p>	<p>Satellite Communications (25) Maritime (80)</p>
<p>5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A</p>		<p>1544-1545 MOBILE-SATELLITE (space-to-Earth)</p> <p>5.341 5.356</p> <p>1545-1549.5 AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth) Mobile-satellite (space-to-Earth) US380</p> <p>5.341 5.351 US308 US309</p> <p>1549.5-1558.5 AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US380</p> <p>5.341 5.351 US308 US309</p> <p>1558.5-1559 AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth)</p> <p>5.341 5.351 US308 US309 US380</p>	<p>Aviation (87)</p>
<p>1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE () (to-space) 5.329A</p> <p>5.341 5.362B 5.362C 5.363</p>		<p>1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)</p> <p>5.341 US208 US260</p>	<p>Note: The NTIA Manual (footnote G126) states that differential GPS stations may be authorized in the 1559- 1610MHz band, but the FCC has not yet addressed this footnote.</p>

International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space) 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) US319 US380 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE(Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.372 US208		Satellite Communications (25) Aviation (87)
1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space) 5.149 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) US319 US380 RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to space) 5.149 5.341 5.364 5.366 5.367 5.368 5.372 US208		
1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.341 5.355 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space) Mobile-satellite (space-to- Earth) 5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to- Earth) Radiodetermination- satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) US319 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) 5.341 5.364 5.365 5.366 5.367 5.368 5.372 US208 US380		

<p>1626.5-1660 MOBILE-SATELLITE (Earth-to-space) 5.351A</p>	<p>626.5-1645.5 MOBILE-SATELLITE (Earth-to-space) US380 MARITIME MOBILE-SATELLITE (Earth-to-space)</p>	<p>satellite Communications (25) Maritime (80)</p>
<p>5.341 5.351 US315</p>	<p>645.5-1646.5 MOBILE-SATELLITE (Earth-to-space)</p>	
<p>5.341 5.375</p>	<p>1646.5-1651 AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) Mobile-satellite (Earth-to-space) US380</p>	<p>aviation (87)</p>
<p>5.341 5.351 US308 US309</p>	<p>1651-1660 MOBILE-SATELLITE (Earth-to-space) US380 AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space)</p>	
<p>5.341 5.351 US308 US309</p>	<p>1660-1660.5 AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) RADIO ASTRONOMY</p>	
<p>1660-1660.5 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY</p>	<p>5.149 5.341 5.351 US308 US309 US380</p>	
<p>5.149 5.341 5.351 5.354 5.362A 5.376A</p>	<p>1660.5-1668.4 RADIO ASTRONOMY US74 SPACE RESEARCH (passive)</p>	
<p>1660.5-1668.4 RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile</p>	<p>5.341 US246</p>	
<p>5.149 5.341 5.379 5.379A</p>	<p>1668.4-1670 METEOROLOGICAL AIDS (radiosonde) RADIO ASTRONOMY US74</p>	
<p>1668.4-1670 METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY</p>	<p>5.149 5.341 US99</p>	
<p>5.149 5.341</p>		

			1755-1850 FIXED MOBILE Ci42	1755-1850	
1930-1970 FIXED MOBILE 5 388A 5.388	1930-1970 FIXED MOBILE 5 388A Mobile-satellite (Earth-to-space) 5.388	1930-1970 FIXED MOBILE 5 388A 5.388	1850-2025	1850-2000 FIXED MOBILE NG177	RF Devices (15) Personal Communications (24) Fixed Microwave (101)
MOBILE 5.388A 5.388 1980-2010 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5 351A				2000-2020 MOBILE-SATELLITE (Earth-to-space) US380	Satellite Communications (25)
2010-2025 FIXED MOBILE 5.388A 5.388	2010-2025 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.388 5.389C 5.389D 5.389E 5.390	2010-2025 FIXED MOBILE 5.388A 5.388		NG156 2020-2025 FIXED MOBILE NG177	
2025-21 10 SPACE OPERATION (Earth-lo-space) (space-lo-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-lo-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earih-lo-space) (space-lo-space) 5.392				2025-21 10 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION- SATELLITE (Earth-to- space) (space-lo-space) SPACE RESEARCH (Earth- lo-space) (space-lo-space) 5.391 5.392 US90 US222 US346 US347	2025-21 10 FIXED NG23 NG118 MOBILE 5.391 5.392 US90 US222 US346 us347

International Table					FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
2110-2120 FIXED MOBILE 5.388A SPACE RESEARCH (deep space) (Earth-to-space)			110-2120	2110.2155 FIXED NG23 MOBILE	Domestic Public Fixed (21) Public Mobile (22) Fixed Microwave (101)
2120-2160 FIXED MOBILE 5.388A	2120-2160 FIXED MOBILE 5.388A Mobile-satellite (space-to-Earth)	2120-2170 FIXED MOBILE 5.388A	IS252 120-2200	US252 2155-2160 FIXED NG23	Domestic Public Fixed (21) Fixed Microwave (101)
5.388	5.388				
2160-2170 FIXED MOBILE 5.388A	2160-2170 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)			2160-2180 FIXED NG23 NG153 MOBILE	Domestic Public Fixed (21) Public Mobile (22) Fixed Microwave (101)
5.388 5.392A	5.388 5.389C 5.389D 5.389E 5.390	i.388			
FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A				NG178 2180-2200 MOBILE-SATELLITE (space-to-Earth) US380	Satellite Communications (25)
5.388 5.389A 5.389F 5.392A					
2200-2290 SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space)			2200-2290 SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED (line-of-sight only)	2200-2290	