

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

In the Matter of)	
)	
AST&Science LLC)	Call Sign S3065
)	
Petition for Declaratory Ruling Granting Access)	SAT-PDR-20200413-00034
to the U.S. Market for a Non-U.S.-Licensed)	SAT-APL-20200727-00088
Non-Geostationary Orbit Satellite Constellation)	SAT-APL-20201028-00126

PETITION TO DENY OF CTIA

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Dated: November 2, 2020

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PETITION TO DENY OF CTIA

I. INTRODUCTION AND SUMMARY.

CTIA¹ hereby files this Petition to Deny the above-captioned Petition for Declaratory Ruling filed by AST&Science (“AST” or “SpaceMobile”) seeking market access for a constellation of low-earth orbit (“LEO”) non-geostationary orbit (“NGSO”) spacecraft.² As the trade association representing the U.S. wireless communications industry, CTIA has standing to file this petition. Among other things, CTIA’s members hold exclusive-use licenses for frequencies in and adjacent to the frequencies included in AST’s Petition and planned operations. And, given the national implications of the application, the issues of concern are germane to CTIA’s purpose as an industry spectrum advocate.

AST’s original Petition for Declaratory Ruling submitted in April 2020 requests that the

¹ CTIA – The Wireless Association® (“CTIA”) (www.ctia.org) represents the U.S. wireless communications industry and the companies throughout the mobile ecosystem that enable Americans to lead a 21st century connected life. The association’s members include wireless carriers, device manufacturers, suppliers as well as apps and content companies. CTIA vigorously advocates at all levels of government for policies that foster continued wireless innovation and investment. The association also coordinates the industry’s voluntary best practices, hosts educational events that promote the wireless industry and co-produces the industry’s leading wireless tradeshow. CTIA was founded in 1984 and is based in Washington, D.C.

² Petition for Declaratory Ruling, IBFS File No. SAT-PDR-20200413-00034 (filed Apr. 9, 2020) (“AST Petition”).

International Bureau (“IB”) grant U.S. market access for its planned SpaceMobile constellation of LEO NGSO spacecraft.³ AST states that it plans to use its constellation of 243 spacecraft in sixteen orbital planes at an altitude of 700 km to provide fixed-satellite service (“FSS”) and mobile-satellite service (“MSS”) to fixed and mobile devices employing LTE broadband communications architecture.⁴ AST requests market access for this foreign-licensed satellite space system as it would operate under filings made by Papua New Guinea with the International Telecommunication Union (“ITU”).⁵

On July 27, 2020, AST amended the Petition for Declaratory Ruling to have the following frequencies associated with its constellation for services to handsets:

- AST receive (uplink) on 1710-1780 MHz, 1850-1910 MHz, and 2305-2320 MHz;
- AST transmit (downlink) on 1930-1990 MHz, 2110-2180 MHz, and 2345-2360 MHz;
- Gateway links (downlink) on 37.5-42.5 GHz; and
- Gateway links (uplink) on 45.5-47 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz.⁶

To support these operations, AST sought waivers of Sections 2.106, 25.157, 25.112(a)(3), 25.155(b), and 25.156(d)(4) of the Commission’s rules.⁷

Subsequently, on October 28, 2020, AST filed another amendment to its Petition for Declaratory Ruling stating that it is no longer requesting authority to operate in the spectrum

³ *See id.* at 1.

⁴ *See id.* at 3.

⁵ *See id.* at 4.

⁶ Amendment to Petition for Declaratory Ruling, IBFS File No. SAT-APL-20200727-00088 (filed July 27, 2020) (noting “it would initially seek FCC authority to provide service to handsets on mid-band frequencies authorized for services under Parts 24 and/or 27 of the Commission’s rules”) (“AST July Amendment”).

⁷ *See* AST Petition at 8, 11, 14-15.

exclusively allocated to terrestrial services, and that its use of Part 24 and Part 27 spectrum would be “done pursuant to lease agreements with terrestrial licensees that will permit AST to access a terrestrial licensee’s spectrum.”⁸ AST’s amendment also asserts that any application or notification, as applicable, seeking Commission approval or acceptance of a future leasing arrangement will be filed to reflect lease agreements for SpaceMobile operations.⁹ The amendment further provides that AST is no longer seeking changes to the U.S. Table of Frequency Allocations, and as such, it has withdrawn the waiver request as it relates to terrestrial frequencies and that the SpaceMobile satellite system will not operate in the WCS frequency band.¹⁰

CTIA requests denial of the amended Petition for Declaratory Ruling as AST has failed to demonstrate that its planned operations will protect terrestrial mobile systems, which providers have invested more than \$286 billion to deploy over the past decade, in addition to billions of dollars invested in the exclusive-use licenses under which they operate.¹¹ Moreover, as noted above, AST suggests it will use terrestrial mobile spectrum under a lease agreement to provide satellite services.¹² This request should be denied as the Commission’s secondary market rules do not allow a lessee to use spectrum for services that are not authorized for use by the underlying licensee. Additionally, the Commission must ensure that AST’s use of high-band spectrum is consistent with the sharing framework established by the Commission, and any

⁸ Amendment to Petition for Declaratory Ruling, IBFS File No. SAT-APL-20201028-00126, at 1 (filed Oct. 28, 2020) (“AST October Amendment”).

⁹ *Id.*

¹⁰ *Id.*

¹¹ *2020 Annual Survey Highlights*, CTIA, at 3, 7 (Aug. 25 2020), <https://api.ctia.org/wp-content/uploads/2020/08/2020-Annual-Survey-final.pdf>.

¹² *See* AST October Amendment at 1.

proposed operations that are inconsistent with the Table of Frequency Allocations should be subject to the Commission’s rulemaking procedures rather than waiver requests.

Finally, AST’s current Petition for Declaratory Ruling and application, as described herein, is defective with respect to the completeness of answers to questions, informational showings, and internal inconsistencies. Under Section 25.112(a) of the Commission’s rules, such an application should have been deemed unacceptable for filing and returned to the applicant with a brief statement identifying the omissions/discrepancies.¹³ In the alternative, should AST withdraw its application to correct deficiencies, Section 25.112(d) provides that the application would be dismissed without prejudice.¹⁴

II. USE OF TERRESTRIAL MOBILE SPECTRUM FOR SATELLITE SERVICES IS NOT PERMITTED UNDER THE COMMISSION’S RULES.

A. The Secondary Market Rules Restrict Lessees from Using Licensed Spectrum for Services Not Authorized by the Underlying License.

CTIA appreciates AST’s most recent amendment to its satellite application, stating that it no longer seeks authority to use terrestrial mobile spectrum for its satellite services as part of its market access request.¹⁵ In the amendment, AST states that it will operate its satellite system using leases of Part 24 and Part 27 terrestrial mobile spectrum from those licensees.¹⁶ However, as described below, the Commission’s secondary market rules do not allow a lease agreement to

¹³ 47 C.F.R. § 25.112(a).

¹⁴ 47 C.F.R. § 25.112(d).

¹⁵ See AST October Amendment at 1 (“By this amendment, AST requests authority to operate in the U.S. in the V-band (as detailed in its PDR and associated filings). AST is not requesting authority to operate in the spectrum allocated to terrestrial services, as all the provision of service to handsets on frequencies authorized for service to terrestrial users, such as mid-band frequencies governed by Parts 24 and/or 27 of the Federal Communications Commission’s (“Commission” or “FCC”) rules, will be done pursuant to lease agreements with terrestrial licensees that will permit AST to access a terrestrial licensee’s spectrum.”).

¹⁶ *Id.*

circumvent the use restrictions associated with the license rights provided to the licensee.

Accordingly, CTIA urges the Bureau to deny the amended Petition for Declaratory Ruling as it is in direct conflict with the Commission's rules governing spectrum leases.

The Commission's secondary market rules are found in Sections 1.9010-1.9080.¹⁷ Under the modified amendment, CTIA presumes that AST would enter into a long-term *de facto* transfer leasing arrangement with a terrestrial mobile licensee.¹⁸ However, Section 1.9030(d)(3) notes that “[t]o the extent that the licensee is restricted from using the licensed spectrum to offer particular services under its license authorization, the use restrictions apply to the spectrum lessee as well.”¹⁹ In establishing the Secondary Markets framework, the Commission made clear that spectrum leases must not be utilized to avoid underlying license use restrictions: “[W]e do not intend for the secondary markets initiative to be used as a means to undermine the service rules and general policies applicable to particular licenses.”²⁰ The Commission further noted that: “At the heart of the Commission's concerns and obligations is the need to protect the public and spectrum users from harmful interference caused by authorized and unauthorized users. We see no reason to apply, nor is there record to support, a distinct set of interference rules for spectrum lessees.”²¹

¹⁷ 47 C.F.R. §§ 1.9010-1.9080.

¹⁸ *See* 47 C.F.R. § 1.9030.

¹⁹ 47 C.F.R. § 1.9030(d)(3). Moreover, there are similar use restrictions should AST consider a spectrum manager lease arrangement. *See* 47 C.F.R. § 1.9020(d)(3). The same is true for a short-term *de facto* transfer lease. *See* 47 C.F.R. § 1.9035(d)(1).

²⁰ *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 20,604, 20,648 ¶ 91 (rel. Oct. 6, 2003) (“*Secondary Markets Order*”).

²¹ *Id.*

In this case, Part 24 and Part 27 license authorizations only have allocations for fixed and mobile terrestrial operations.²² There are no provisions for any satellite use of these spectrum bands. Thus, under the current rules a lease of Part 24 and Part 27 spectrum can *only* be used to provide terrestrial fixed or mobile services, not satellite services. Any utilization of terrestrial mobile spectrum for satellite services would be in direct conflict with the Commission’s rules governing Part 24 and Part 27 licensees and violate the intent the Commission established for spectrum leases—to not “undermine the service rules and general policies applicable to particular licenses” and to avoid “a distinct set of interference rules for spectrum lessees.”²³ Therefore, CTIA urges the Bureau to deny the AST Petition for Declaratory Ruling as inconsistent with the Commission’s rules and policies for spectrum leases.

B. Any Use of Terrestrial Mobile Spectrum for Satellite Services Would Require a Rulemaking Proceeding.

As noted above, the use of Part 24 and Part 27 terrestrial mobile spectrum is limited to fixed and mobile terrestrial use, not satellite use, under Section 2.106.²⁴ Any proposed varying use of this spectrum would require a petition for rulemaking seeking changes to the Table of Frequency Allocations and would be subject to notice and comment rulemaking procedures prior to any action on the AST request.

The Commission has stated that non-conforming uses will only be permitted when there is “little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized

²² See 47 C.F.R. § 2.106.

²³ *Secondary Markets Order* at 20,648 ¶ 91.

²⁴ See 47 C.F.R. § 2.106.

services.”²⁵ For example, when an NGSO FSS party sought authority to operate co-frequency with many terrestrial system bands, the Commission required a petition for rulemaking.²⁶ Similarly, in the reverse scenario where a satellite allocation was targeted for terrestrial fixed and mobile services, the Commission again went through a rulemaking process to allow for this change in use of the spectrum license.²⁷ Here, the Commission should require AST to file a petition for rulemaking seeking changes to the Table of Frequency Allocations for the terrestrial mobile spectrum bands it desires to access for its satellite system prior to any action on its market access request. At that point, the full Commission would have the opportunity, along with all affected stakeholders, to weigh the desirability of permitting AST access to exclusive-use, licensed terrestrial spectrum and whether AST has verified that satellite use of the spectrum would protect primary licensees from harmful interference.

²⁵ *Fugro-Change, Inc.*, Order and Authorization, 10 FCC Rcd 2860 ¶ 2 (rel. Mar. 16, 1995) (“In general, use of the radiocommunication frequencies in the United States must be in accordance with the Table of Frequency Allocations contained in Section 2.106 of the Commission's rules. We have, however, permitted non-conforming uses when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services.”).

²⁶ See *Application of Skybridge L.L.C. for Authority to Launch and Operate the Skybridge System and Its Requested Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operations of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku Band and to Establish Technical Rules Governing NGSO FSS Operations in this Band*, Public Notice, DA 98-833 (rel. May 1, 1998) (noting on February 28, 1997, Skybridge L.L.C. filed a license application with the Commission to operate a non-geostationary orbit Fixed Satellite Service system on various frequencies within the Ku band, and subsequently on July 3, 1997, Skybridge filed a Petition for Rulemaking to permit such NGSO FSS operations).

²⁷ *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, et al.*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102, 16,110-11 ¶ 11 (rel. Dec. 17, 2012) (“*AWS-4 Report and Order*”).

III. AST’S REQUEST TO UTILIZE THE V-BAND MUST COMPLY WITH THE UMFUS SHARING FRAMEWORK IMPLEMENTED BY THE COMMISSION AND BE SUBJECT TO RULEMAKING.

A. Use of UMFUS Spectrum Bands Should Be Subject to the Sharing Framework Established by the Commission.

Access to high-band spectrum for terrestrial mobile operations is an important part of the United States’ overall 5G strategy. The Commission adopted a carefully balanced set of rules allowing for limited fixed earth station siting within the Upper Microwave Flexible Use Service (“UMFUS”) bands under very stringent limits to allow some flexibility to satellite interests without unduly impeding 5G deployment.²⁸ These requirements are codified in Section 25.136 of the Commission’s rules and require earth stations to coordinate their location and placement with an UMFUS licensee prior to implementation, limit the amount of earth stations in an UMFUS license area, and otherwise ensure that terrestrial licensees are protected from interference.²⁹ Any AST earth station use of V-Band spectrum that is subject to the UMFUS sharing framework (including the 37.5-40 GHz, 47.2-48.2 GHz, and 50.4-51.4 GHz bands currently) must comply with the procedures specified in Section 25.136 for earth station siting prior to authorization, which AST had not accomplished. Further, the Commission should not

²⁸ See, e.g., *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Second Report and Order and Order on Reconsideration, 32 FCC Rcd 10,988, 11,025 ¶ 132 (rel. Nov. 22, 2017); *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Third Report and Order, 33 FCC Rcd 5576, 5585 ¶ 22 (rel. June 8, 2018); *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Fifth Report and Order, 34 FCC Rcd 2556, 2560 ¶ 11 (rel. Apr. 15, 2019).

²⁹ See 47 C.F.R. § 25.136; see also CTIA Comments in Opposition, IB Docket No. 17-172, at 9 (filed Aug. 21, 2020); Letter from Jennifer L. Oberhausen, Director, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, IB Docket No. 18-314, at 4 (filed Aug. 13, 2020).

grant authorizations in the 42-42.5 GHz band, which is likely to be made available for UMFUS use in the near future.³⁰

B. AST's Requests for Waiver Do Not Meet the Legal Thresholds for Grant and Instead Should Be Subject to a Rulemaking Proceeding.

AST additionally seeks access to use V-Band frequencies for gateway links in bands not allocated to the MSS, which would require rule changes prior to authorization. Specifically:

- *37.5-40 GHz.* The Table of Frequency Allocations does not contain an MSS allocation for the band, yet AST appears to cite to an FSS allocation as a basis for its market access.³¹
- *42-42.5 GHz.* AST requests a waiver of the Commission's rules and the Table of Frequency Allocations to the extent necessary to allow for non-conforming use of the 42-42.5 GHz band.³²
- *45.5-47 GHz.* AST also seeks a waiver of the Part 25 rules and the Table of Frequency Allocations to operate on a non-conforming basis in the 45.5-47 GHz band. AST states that it will operate under this waiver on a non-interference, non-protected basis to other users in the band.³³
- *47.2-50.2 GHz.* The Table of Frequency Allocations has no MSS allocation for the band, yet AST appears to cite to FSS allocations as a basis for its market access.³⁴

AST has failed to provide a compelling basis for the relief requested nor discussed why an MSS space constellation would be eligible to use spectrum in the 37 and 47 GHz bands under the FSS allocation. The waiver requests provided by AST have failed to meet the requirement to show that the underlying purpose of the rule would be frustrated by the application of the rule,

³⁰ See *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, 33 FCC Rcd 5576, 5596 ¶ 48 (rel. June 8, 2018) (seeking comment on how the 42 GHz band could be used to provide commercial wireless broadband service including possible opportunities for unlicensed and/or shared use of the 42 GHz band consistent with the MOBILE NOW Act).

³¹ AST Petition at 7.

³² *Id.*

³³ *Id.* at 7-8.

³⁴ *Id.* at 8.

that the waiver would be in the public interest, or that application of the rule would be inequitable, unduly burdensome, or that AST has no reasonable alternative to the waiver requested.³⁵ For each request, AST merely notes that AST plans to operate under the waiver on a non-interference, non-protected basis.³⁶ This explanation falls short of meeting the Commission's standard for waiver requests for a rule that is intended to ensure providers are protected from harmful interference.

Additionally, a variance from the Table of Frequency Allocations to use the spectrum for MSS rather than the allocated use should require a rulemaking process to implement. MSS allocations are separate from FSS and other satellite allocations to ensure that interference is not caused among disparate uses. UMFUS licensees recently paid billions of dollars for spectrum licenses based on an understanding of the regulatory environment at the time of auction. Any decision to permit new entrants within the bands or in adjacent spectrum should be subject to rulemaking, rather than Bureau-level waivers of existing Commission rules. Therefore, AST should instead submit a petition for rulemaking seeking changes to the Table of Frequency Allocations to allow for use of the V-Band spectrum bands that do not have MSS allocations.

IV. AST'S TECHNICAL SHOWINGS RAISE QUESTIONS REGARDING INTERFERENCE AND COMPLIANCE WITH COMMISSION RULES.

While the short filing period and recently-filed amendment have not provided interested stakeholders an adequate opportunity to fully examine the technical aspects of AST's Petition, review of AST's proposed use of the 37.5-40 GHz band appears to exceed the power flux density ("PFD") limits for the band.³⁷ Section 25.208(r) of the Commission's rules provides the PFD

³⁵ See 47 C.F.R. § 1.925.

³⁶ See AST Petition at 7-8.

³⁷ See AST Petition Attach. A: Technical Statement at 7.

limits for NGSO use of the 37.5-40 GHz band.³⁸ In the table below, CTIA calculated those values for varying angles of arrival and compared them to the maximum PFD levels that AST indicates it meets for transmitting Beams QDNL and QDNR:

Angle of arrival (in degrees)	0 and 5	5 and 10		10 and 15		15 and 20		20 and 25		25 and 90
Angle of arrival (in degrees)	0-5	5.1	9.9	10.1	13.8	15.1	15.4	20.1	24.9	25-90
AST Max PFD (dBW/m ² /1 MHz) from Schedule S	-116.2	-114.7	-114.7	-113.3	-113.3	-112.1	-112.1	-110.9	-110.9	-105.0
FCC §25.208 (r)(1) PFD limit (dBW/m ² /1 MHz)	-132	-131.9	-128.3	-128.2	-125.4	-124.4	-124.2	-120.7	-117.1	-117.0
AST PFD exceedance (dB)	15.8	17.2	13.6	14.9	12.1	12.3	12.1	9.8	6.2	12.0

AST has certified in its Schedule S filing that it will comply with the Section 25.208 PFD limits; however, CTIA’s analysis indicates that the PFD levels for Beams QDNL and QDNR as provided in Schedule S, which overlap with UMFUS operations, would greatly exceed the maximum allowable limits in Section 25.208(r).³⁹ Accordingly, the Commission should seek clarification from AST concerning its PFD levels and how it is complying with the Commission’s PFD limits, both in this band and all of the frequencies subject to its Petition.

V. CONCLUSION.

For the foregoing reasons, the Commission should deny the AST Petition for Declaratory Ruling and application. In addition, the Commission should subject AST’s request for V-Band operations to proper rulemaking procedures and ensure any future uses are consistent with the UMFUS sharing framework. Granting the AST Petition for Declaratory Ruling as drafted would jeopardize the substantial investments made by wireless providers and the Commission to develop and deploy critical next-generation 5G services.

³⁸ 47 C.F.R. § 25.208(r).

³⁹ See Schedule S Technical Report, IBFS File No. SATAPL2020072700088 (filed July 27, 2020).

Respectfully submitted,

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November 2, 2020

CERTIFICATE OF SERVICE

I certify that on November 2, 2020, a copy of the foregoing Petition to Deny of CTIA was served by electronic mail⁴⁰ on the following:

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⁴⁰ Pursuant to Section 1.47(d) of the FCC's rules, the party to be served may agree to accept service in an alternative form. *See* 47 C.F.R. § 1.47(d). AST has agreed to service by electronic mail of this Petition to Deny.

AFFIDAVIT

Pursuant to 47 C.F.R. § 25.154, I hereby certify that I am the qualified person responsible for preparation of the information contained in this filing, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the information submitted in this filing, and that it is complete and accurate to the best of my knowledge and belief.

Respectfully submitted,

/s/ Jennifer L. Oberhausen

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