

FCC FACT SHEET*
Unleashing Unlicensed Spectrum for Direct-to-Device
Notice of Proposed Rulemaking – ET Docket No. 26-169

Background: Unlicensed devices are used by businesses and consumers for a wide variety of important purposes, including Wi-Fi and Bluetooth transmitters that can enable wireless connectivity. However, as Americans increasingly demand ubiquitous connectivity, many places still lack reliable terrestrial infrastructure to satisfy this demand. The Commission has taken steps to address this issue by allowing direct-to-device communications between satellites and terrestrial devices operating on a licensed basis under part 25 of our rules. The massive interest and surge in investments in direct-to-device communication services demonstrate a compelling need for more spectrum resources to support these services. Permitting satellite communications in the bands available for part 15 unlicensed devices could provide an opportunity to mitigate this spectrum shortfall. It would foster innovation by allowing industry stakeholders to develop new services that seamlessly integrate devices across terrestrial and satellite platforms and provide consumers with another option for direct-to-device satellite communication services.

What the Notice of Proposed Rulemaking Would Do:

- Propose to add frequency allocations for Earth-to-space operations in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands that are currently available for use by unlicensed devices under Part 15 of the rules.
- Propose to permit Earth-to-space transmissions in these bands at levels that comply with the part 15 technical rules, generally up to 36 dBm (4 watts) EIRP.
- Seek comment on whether the Commission should allow space-to-Earth operations in the 5725-5850 MHz band or other bands, and if so, what allocation changes, technical rules and other requirements would be necessary to enable efficient sharing of spectrum among users and prevent harmful interference to authorized services.
- Seek comment on the appropriate licensing framework for any new types of satellite operations.
- Propose to clarify that the operation of intentional and unintentional radiators that comply with the part 15 requirements is permissible within the shielded environment of a spacecraft, but remains subject to any other requirements for equipment used in space.
- Seek comment on what rule changes could facilitate communications in extravehicular activities and between spacecraft or other space-based devices to support developing space industries.
- Seek comment on the effect of unintentional emissions generated by satellites or other spacecraft on satellites and ground-based receivers.

* This document is being released as part of a “permit-but-disclose” proceeding. Any presentations or views on the subject expressed to the Commission or its staff, including by email, must be filed in ET Docket No. 26-169, which may be accessed via the Electronic Comment Filing System (<https://www.fcc.gov/ecfs/>). Before filing, participants should familiarize themselves with the Commission’s *ex parte* rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission’s meeting. *See* 47 CFR § 1.1200 *et seq.*

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

In the Matter of)
)
Unleashing Unlicensed Spectrum for Direct-to-) ET Docket No. 26-169
Device)

NOTICE OF PROPOSED RULEMAKING*

Adopted: [] Released: []

Comment Date: [30 days from publication in the Federal Register]
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By the Commission:

TABLE OF CONTENTS

Heading	Paragraph #
I. INTRODUCTION.....	1
II. BACKGROUND.....	5
III. DISCUSSION	9
A. Legal Authority.....	10
B. Earth-to-Space and Space-to-Earth Operations	12
1. Allocation Matters.....	14
2. Licensing Framework.....	25
3. Technical and Service Rules	37
4. Equipment Authorization	49
5. International Issues.....	52
6. National Security Issues	56
C. Within Spacecraft.....	59
D. Extravehicular Activity (EVA) and Communications Between Spacecraft	63
E. Unintentional Radiators	67
F. Costs and Benefits	69
IV. PROCEDURAL MATTERS.....	72
V. ORDERING CLAUSES.....	78

* This document has been circulated for tentative consideration by the Commission at its August 6, 2026 open meeting. The issues referenced in this document and the Commission’s ultimate resolutions of those issues remain under consideration and subject to change. This document does not constitute any official action by the Commission. However, the Chairman has determined that, in the interest of promoting the public’s ability to understand the nature and scope of issues under consideration, the public interest would be served by making this document publicly available. The Commission’s ex parte rules apply and presentations are subject to “permit-but-disclose” ex parte rules. See, e.g., 47 CFR §§ 1.1206, 1.1200(a). Participants in this proceeding should familiarize themselves with the Commission’s ex parte rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission’s meeting. See 47 CFR §§ 1.1200(a), 1.1203.

Appendix A – Proposed Rules

Appendix B – Initial Regulatory Flexibility Analysis

I. INTRODUCTION

1. Direct-to-device (D2D) technology has undergone a transformative wave of investment and innovation in recent years, with American companies leading the way yet again. Since the Commission adopted its pioneering framework to enable Supplemental Coverage from Space,¹ consumers have benefitted from the ubiquitous—and often lifesaving—connectivity that D2D provides in areas with inadequate cellular coverage. And as advances in D2D technology occur at a faster clip each day, innovators and entrepreneurs have adopted diverging theses on the likelihood of intermodal convergence and the need for predictable D2D spectrum access. Some analysts project more than \$100 billion in revenues across all D2D and IoT segments by 2034.² Predictions like these have translated into frothy dealmaking over the last 18 months, as more than \$40 billion has coursed through the American space economy for D2D. In 2025, SpaceX acquired 65 megahertz of D2D spectrum from EchoStar for \$19.6 billion.³ AST announced a \$550 million agreement to use L-band spectrum currently leased to Ligado.⁴ And most recently, Amazon and RocketLab struck separate deals collectively totaling nearly \$20 billion to acquire Globalstar and Iridium respectively, including their D2D spectrum portfolios.⁵ To enable this healthy market discovery, the Space Bureau recently issued long-awaited legal clarity to reaffirm American innovators' exclusively-held D2D spectrum rights.⁶

2. The Commission intends to allow the current wave of D2D experimentation and dynamism to unfold, consistent with the principles of technological neutrality and regulatory humility. So, today we take the next step to secure America's leadership in D2D by exploring proposals that would allow devices operating in more than 225 megahertz of spectrum available for unlicensed devices to communicate with satellites authorized to provide service in the United States.⁷

¹ *Single Network Future: Supplemental Coverage from Space*, Report and Order and Further Notice of Proposed Rulemaking, 39 FCC Rcd 2622 (2024) (*SCS Order*).

² Novaspace, *Direct-to-Device Connectivity: A \$100 Billion Market Transformation* (Dec. 18, 2025), <https://nova.space/press-release/direct-to-device-connectivity-a-100-billion-market-transformation/>.

³ *Applications of Spectrum Business Trust 2025-1, Space Exploration Technologies Corp., and EchoStar Corporation for Consent to Assign Spectrum and Earth Station Licenses*, GN Docket No. 25-302; Memorandum Opinion and Order, DA 26-471 (WTB & SB May 12, 2026).

⁴ Ligado Networks Subsidiary LLC, Debtor-in-Possession, ICFS File No.: SAT-MOD-20251206-00374 (filed Dec. 8, 2025).

⁵ Amazon, *Amazon to Acquire Globalstar and Expand Amazon Leo Satellite Network* (Apr. 14, 2026), <https://www.aboutamazon.com/news/company-news/amazon-globalstar-apple>; Globalstar, *Amazon to Acquire Globalstar and Expand Amazon Leo Satellite Network* (Apr. 14, 2026), <https://investors.globalstar.com/news-releases/news-release-details/amazon-acquire-globalstar-and-expand-amazon-leo-satellite/>; Rocket Lab, *Rocket Lab to Acquire Iridium in Historic Deal, Creating a Fully Vertically Integrated Space Powerhouse Primed for Growth* (June 29, 2026), <https://investors.rocketlabcorp.com/news-releases/news-release-details/rocket-lab-acquire-iridium-historic-deal-creating-fully>.

⁶ *Space Exploration Holdings LLC et. al.*, SB Docket No. 25-173, Order, DA 26-398 (SB Apr. 23, 2026)

⁷ In recent years the Commission has licensed many satellites operating in non-geostationary orbits to provide data services that are suitable for several of these applications. See e.g. *Space Exploration Holdings, LLC, Request for Orbital Deployment and Operating Authority for the SpaceX Gen2 NGSO Satellite System*, Order and Authorization, 37 FCC Rcd 14882 (2022); Order and Authorization, DA-26-36 (SB 2026); *Kuiper Systems, LLC, Application for Authority to Deploy and Operate a Ka-band Non-Geostationary Satellite Orbit System*, Order and Authorization, 35 FCC Rcd 8324 (2020); *Kuiper Systems, LLC*, ICFS File Nos. SAT-LOA-20211104-00145 and SAT-AMD-20250311-00068 (granted Feb. 10, 2026). In the Supplemental Coverage from Space (SCS) proceeding, the Commission authorized satellites to operate in spectrum licensed for terrestrial wireless networks to enable direct communication

(continued....)

3. Unlicensed spectrum seems especially promising to support the capacity requirements and complement other bands for D2D services. Devices operating under the part 15 rules are widely used by businesses and consumers and include Wi-Fi and Bluetooth transmitters for wireless local area connectivity, medical imaging devices, wireless microphones, automobile and garage door opener remote controls, and IoT sensors. By eliminating the burden and cost to obtain a Commission spectrum license, our part 15 rules have spurred innovation in new devices and applications that successfully coexist with other licensed and unlicensed services. Unlocking unlicensed bands for D2D promises to open up new services that seamlessly integrate devices across terrestrial and satellite platforms and provide consumers with another option for connectivity.

4. In this Notice of Proposed Rulemaking (Notice), we examine potential reforms to enable devices operating in some of the part 15 bands to communicate with FCC-authorized satellites, whether on an uplink or downlink basis. We also propose to clarify that using equipment authorized under the part 15 rules is permitted within FCC-authorized spacecraft. By maintaining the non-interference principles that have made part 15 successful, we anticipate that spectrum efficiency can be balanced against robust protections for incumbent services, all while maintaining the light-touch rules that have made unlicensed spectrum a sandbox for permissionless entry and experimentation.

II. BACKGROUND

5. Part 15 of the Commission's rules contains technical specifications, administrative requirements, and other conditions relating to the marketing of radio frequency (RF) devices that may be operated without an individual license.⁸ Part 15 contains technical regulations for two broad categories of radio frequency devices: (1) intentional radiators, which intentionally generate and emit RF energy by radiation or induction, and (2) unintentional radiators, which intentionally generate RF energy for use within the device or send signals by conduction to associated equipment via connecting wiring, but which are not intended to emit RF energy by radiation or induction.⁹

6. Intentional radiators may operate on an unlicensed basis under part 15 in almost any frequency band at very low power levels, with the exception of designated restricted bands where only spurious emissions are permitted.¹⁰ The restricted bands are designated to protect sensitive radio services, such as those that protect safety-of-life or those that use very low received signal levels, such as satellite downlinks or radio astronomy.¹¹ The power levels permitted under part 15 in most frequency bands are suitable for communication only over very short ranges, such as a few meters, or with low data rates.¹² In addition, part 15 specifies a number of frequency bands where intentional radiators may operate at significantly higher power levels, subject to technical requirements to protect authorized services from

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between smartphones and satellites, but limited this to frequencies at or below 2 GHz due to interference concerns and noted that the Commission's part 25 licensing process provides an opportunity to address concerns related to protecting radio astronomy. We note that the WCS band was excluded from consideration in the *SCS Order* due to concerns about interference to radio astronomy observations contributing to S/X Celestial Reference Frame observations. *SCS Order*, 39 FCC Rcd at 2636, 2715, paras. 34, 211.

⁸ 47 CFR § 15.1(a).

⁹ 47 CFR pt. 15, subpts. B, C, D, E, F, H; *id.* § 15.3(o), (z). Part 15 defines an additional category of device, called an incidental radiator, that generates RF energy during the course of its operation, although the device is not intentionally designed to generate or emit RF energy. *Id.* § 15.3(n).

¹⁰ 47 CFR §§ 15.209(a), 15.205(a).

¹¹ *Review of Part 15 and other Parts of the Commission's Rules*, ET Docket No. 01-278, Second Report and Order and Memorandum Opinion and Order, 18 FCC Rcd 14741, 14742 (2003).

¹² The general radiated emission limits under part 15 are specified in section 15.209(a). 47 CFR § 15.209(a). In addition, ultra-wideband part 15 devices may operate in certain frequency bands with power levels ranging from -75.3 dBm/MHz to -41.3 dBm/MHz. *Id.* §§ 15.509-519.

harmful interference, including the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands.¹³ These bands, unlike other bands where unlicensed devices can operate at higher power, do not have airborne restrictions or satellite allocations, with the exception of the 5830-5850 MHz band, which contains an amateur satellite downlink allocation.¹⁴ Unlicensed devices may generally transmit with up to 4 watts (36 dBm) EIRP in these three bands.¹⁵ By taking advantage of this higher power, unlicensed devices can provide high data rate connectivity over substantial distances. These higher power part 15 bands are the home to vast numbers of consumer devices that successfully coexist without the need for licensing or frequency coordination.

7. Because unintentional radiators do not intentionally emit radiation, they do not have the same constraint as intentional radiators to avoid restricted frequency bands. In general, they must comply with radiated emission limits at frequencies of 30 MHz and above.¹⁶ Regardless of the type of device, e.g., intentional or unintentional radiator, part 15 device operations are subject to the conditions that they do not cause harmful interference to authorized services and must accept any interference that occurs.¹⁷ The operator of a radiofrequency device is required to cease operating it upon notification by a Commission representative that the device is causing harmful interference, and operation may not resume until the condition causing the harmful interference has been corrected.¹⁸

8. Part 15 devices must generally be authorized under either the certification or the Suppliers Declaration of Conformity (SDoC) procedure prior to importation and marketing.¹⁹ Most intentional radiators require authorization under the certification procedure, and most unintentional radiators may take advantage of the SDoC procedure, but may also use the certification procedure.²⁰ Devices authorized under the certification procedure must be tested by an FCC-recognized accredited testing laboratory to demonstrate that they comply with the FCC rules.²¹

¹³ 47 CFR §§ 15.247, 15.407.

¹⁴ 47 CFR § 2.106.

¹⁵ 47 CFR §§ 15.247, 15.407(a)(3). These rules permit transmissions with up to 1 watt (30 dBm) conducted power and an antenna gain of 6 dBi (a factor of 4) with no reduction in conducted power, which produces an EIRP of 4 watts (36 dBm). In certain bands higher EIRP levels may be employed. *See e.g., id.* § 15.247(c)(1)(ii) (permitting fixed point-to-point links operating in the 5725-5850 MHz band to employ transmitting antennas with directional gain greater than 6 dBi without reducing conducted power).

¹⁶ 47 CFR § 15.109(a)-(b).

¹⁷ 47 CFR § 15.5(b).

¹⁸ 47 CFR § 15.5(c). The FCC Enforcement Bureau is responsible for ensuring that regulated entities comply with the FCC regulations, including those concerning harmful interference. *See FCC, Enforcement* <https://www.fcc.gov/enforcement> (last visited July 14, 2026).

¹⁹ 47 U.S.C. § 302a(b) (“No person shall manufacture, import, sell, offer for sale, or ship devices . . . which fail to comply with regulations promulgated pursuant to this section.”); 47 CFR §§ 15.101(a), 15.201(a)-(b), *see id.* §§ 2.803 (defining *marketing* as including “sale or lease, or offering for sale or lease, including advertising for sale or lease, or importation, shipment, or distribution for the purpose of selling or leasing or offering for sale or lease,” and generally prohibiting marketing absent FCC authorization), 2.906, 2.907, subpt. K (governing importation of devices).

²⁰ Section 15.101(a) permits most unintentional radiators to be authorized under either the certification or SDoC procedure. 47 CFR § 15.101(a). By contrast, section 15.201(a) and (c) permit certain intentional radiators to be authorized under the SDoC procedure rather than the certification procedure that applies to other intentional radiators. *Id.* § 15.201(a), (c).

²¹ *See* 47 CFR § 2.948(a).

III. DISCUSSION

9. In this Notice, we explore making frequency bands commonly used by devices operating under the part 15 unlicensed rules available for space-based communication applications. Specifically, we propose and seek comment on rule modifications to enable devices operating consistent with the part 15 technical rules to communicate with satellites in the Earth-to-space and space-to-Earth directions that are United States-licensed or non-United States-licensed and have been granted market access by the Commission, as well as on the appropriate regulatory model and technical requirements necessary to prevent harmful interference to authorized services and adverse impacts on terrestrial part 15 devices.²² We also propose to clarify that the use of equipment authorized under the part 15 rules is permitted on board spacecraft, subject to any other applicable restrictions, such as those of federal agencies and international treaties.²³ Additionally, we seek comment on other scenarios and types of applications in which devices operated under the part 15 rules could be used in space, including the specific frequency bands that would be suitable for their operation, and whether the current part 15 requirements would be appropriate for these applications.

A. Legal Authority

10. The Commission has maintained rules governing non-licensed operation of certain types of RF devices, such as receivers and low power transmitters, for more than 80 years.²⁴ Such devices must adhere to the specifications found in part 15 of the Commission's rules, which do not explicitly address whether part 15 devices may be operated in space.

11. Under the Communications Act of 1934, as amended (the Act), the Commission has broad jurisdiction over "all interstate and foreign communication by wire or radio and all interstate and

²² The definition of "harmful interference" applies with respect to interference caused to radionavigation, safety and radiocommunication services. 47 CFR § 2.1. Part 15 is not a service in that it is not allocated in the Table of Frequency Allocations, so the term "harmful interference" does not apply to interference received by part 15 devices. Thus we use the term "harmful interference" only with regard to interference caused by part 15 devices to authorized services. While we aim to establish regulations that will allow existing part 15 devices such as Wi-Fi and Bluetooth are able to share spectrum with new satellite applications, we do not intend to establish protection rights for part 15 devices. Rather, our concern is with avoiding adverse impacts on the operation of part 15 devices, by which we mean that terrestrial part 15 devices will continue to have an opportunity for spectrum access but are not guaranteed to always be able to operate without interference. See 47 CFR § 90.353(d) (requiring licensed multilateration location and monitoring service (LMS) system licensees to demonstrate through field tests that their systems do not cause unacceptable levels of interference to part 15 devices) and *Modification of Parts 2 and 15 of the Commission's Rules for Unlicensed Devices and Equipment Approval*, ET Docket No. 03-201, Memorandum Opinion and Order and Further Notice of Proposed Rule Making, 22 FCC Rcd. 11383, 11390-91 (2007) (in which the Commission proposed rules to ensure continued spectrum access for part 15 devices without establishing protection rights for them).

²³ The Commission has at times used the terms "space station," "satellite," and "spacecraft" interchangeably despite each term having different definitions in the rules. The Commission's rules define "space station" as "[a] station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere." 47 CFR §§ 2.1(c), 25.103. This is consistent with terminology used by the International Telecommunication Union (ITU). ITU Radio Regulations (R.R.) 1.64. The Commission's rules define "satellite" as "[a] body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body." 47 CFR § 2.1(c). In this Notice, we refer only to artificial satellites. The Commission's rules define "spacecraft" as "[a] man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere." *Id.* §§ 2.1, 25.103. These terms are used interchangeably in this Notice, but we observe that "satellite" and "spacecraft" are more broadly defined than "space station" in certain respects.

²⁴ The first rules governing non-licensed operation of radio frequency devices were established in 1938. See *Proposed Rules and Regulations Governing the Operation of Low Power Radio Frequency Devices*, Docket No. 5335, 3 Fed. Reg. 2999 (Dec. 14, 1938).

foreign transmissions of energy by radio, which originates and/or is received within the United States, and to all persons engaged within the United States in such communication or such transmission of energy by radio.”²⁵ Furthermore, the Commission is charged with regulating radio spectrum across the United States in a manner that serves the public interest.²⁶ Section 301 of the Act provides the Commission with jurisdiction over radio-communication stations, including those operating “upon any . . . mobile stations within the jurisdiction of the United States.”²⁷ The Commission has long held that its jurisdiction under these provisions is not affected when such radio activity involves a station, instrumentality, apparatus, or facility that happens to be in space.²⁸ Indeed, the FCC has long exercised jurisdiction over apparatus used for radiocommunications in space under part 25 of our rules governing satellite communications.²⁹ Accordingly, the Commission has jurisdiction over apparatus otherwise regulated under part 15 of our rules when such apparatus are operating in, or intended to be operated in, space.

B. Earth-to-Space and Space-to-Earth Operations

12. The recent growth in the satellite, space, and AI industries is significantly increasing demand for spectrum to support new applications in space and between Earth and space, including traditional communications links, D2D services, as well as nascent applications, such as in-space servicing, assembly, and manufacturing (ISAM).³⁰ The Space Bureau recently approved an application that uses satellite uplinks in the 2400-2483.5 MHz frequency band that is heavily used by part 15 devices, noting that these bands would only be used from specific gateway locations for these uplinks.³¹ It previously approved other applications for satellites to receive signals from terrestrial devices operating in frequency bands available under the part 15 rules, but for infrequent use from a single United States location.³² In the interest of making more intensive and efficient use of spectrum to satisfy growing industry needs, including D2D communication services, we seek comment on allowing new types of satellite operations under part 25, both downlinks (space-to-Earth) and uplinks (Earth-to-space), in the bands where the part 15 rules permit higher power operation. The approach on which we seek comment is somewhat similar to what is being done in Europe, where a frequency band used for short range (unlicensed) devices is being used on a limited basis for communications between short range

²⁵ 47 U.S.C. § 152(a).

²⁶ 47 U.S.C. §§ 301, 303; *see also* *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969).

²⁷ 47 U.S.C. § 301(f). Under the Act, a mobile station is defined as “a radio-communication station capable of being moved and which ordinarily does move.” *Id.* § 153(34). “Radio communication” is defined as “the transmission by radio of writing, signs, signals, pictures, and sounds of all kinds, including all instrumentalities, facilities, apparatus, and services (among other things, the receipt, forwarding, and delivery of communications) incidental to such transmission.” *Id.* § 153(40).

²⁸ *Establishment of Domestic Communication-Satellite Facilities by Nongovernmental Entities*, Report and Order, 22 FCC 2d 86, 128-33, Appx. C-Memorandum on Legal Issues (1970); *see also* *Calif. Interstate Tel. Co. v. FCC*, 328 F.2d 556 (D.C. Cir. 1964).

²⁹ *See generally* 47 CFR § 25.101, *et seq.* Under our part 25 rules, apparatus that operate, or are intended to operate, beyond a major portion of the Earth’s atmosphere require an authorization from the FCC. *See* 47 CFR § 25.102(a).

³⁰ *Space Innovation; Facilitating Capabilities for In-space Servicing, Assembly, and Manufacturing*, IB Docket Nos. 22-271 and 22-272, Notice of Proposed Rulemaking, 39 FCC Rcd 1864 (2024) (*ISAM NPRM*).

³¹ Hubble Network, Inc., ICFS File No. SAT-LOA-20241125-00268 (granted Feb. 13, 2026) (Hubble Grant); Spire Global, Inc., ICFS File No. SAT-MOD-20250408-00094 (granted Feb. 13, 2026) (Spire Grant).

³² For example, Loft Orbital Solutions, Inc was granted two waivers for satellites to receive frequencies in bands available under part 15 for which there is no satellite allocation. One permitted reception in the 902-906 MHz band. *See* SAT-LOA-20190807-00063, granted Oct. 8, 2020, Call Sign S3052. The other permitted reception in the 2400-2483.5 MHz band, but for infrequent use from a single United States location. *See* SAT-LOA-20200907-00105, granted on May 24, 2021, Call Sign S3072.

(unlicensed) devices and satellites.³³ We also seek comment on how we could reduce unnecessary regulatory barriers to permit new types of satellite applications to operate under the part 15 framework.

13. Unlicensed access points operating under part 15 have become ubiquitous within buildings to provide connectivity to portable devices, such as smartphones, laptops, smartwatches, and IoT devices.³⁴ Unlicensed access points are also often deployed to provide connectivity in outdoor locations and can have an outdoor range of a kilometer or more.³⁵ However, in rural or remote locations, coverage by these unlicensed access points is often nonexistent. These areas also often lack terrestrial coverage from wireless carriers. Permitting Earth-to-space and space-to-Earth communications with space stations authorized under part 25 using devices operating consistent with the existing part 15 technical rules would allow consumer-grade equipment—such as smartphones, laptops, and IoT sensors—additional connectivity options where there is no terrestrial coverage. This concept mirrors the Commission’s actions in providing for Supplemental Coverage from Space (SCS), in which satellites provide service on a secondary basis in spectrum bands that are licensed to terrestrial wireless carriers (600 MHz, 700 MHz, 800 MHz, Broadband PCS, and AWS-H Block), but without imposing additional licensing burdens on end-user equipment.³⁶ By leveraging the existing bands where higher power unlicensed device usage is permitted under part 15 (e.g., 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz), but which do not have airborne restrictions or satellite allocations, satellites could receive signals from devices operating under the current part 15 limits and transmit to these devices using similar signal levels. Under the framework we envision where satellite uplinks and downlinks in these bands would be concentrated in rural, underserved, or unserved areas, we believe that any change to the terrestrial radio environment would be at a level low enough so as to not increase the potential for harmful interference to authorized services or adversely impact terrestrial-based part 15 devices’ ability to successfully communicate. This would enable billions of existing devices that comply with the part 15 unlicensed rules using protocols such as Wi-Fi and Bluetooth to connect to satellites using existing communication protocols. Allowing part 15 devices to connect with satellites in these bands on a non-interference basis would promote effective and efficient spectrum utilization. We therefore propose and seek comment on satellite use of these three bands (i.e., 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz) and seek comment on whether there are any other bands that we should consider. Our goal is to develop a record of how to enable such operations without adversely impacting other users in these bands, and a framework that might be used to authorize them.

1. Allocation Matters

14. While the part 15 rules contain requirements for devices that can be operated without an individual license, part 15 is not a radio service. Thus, there are no allocations in the Table of Frequency Allocations for devices operating under our part 15 rules.³⁷ Rather, part 15 devices operate on a non-

³³ CEPT, ECC Report 357 - Regulatory analyses of satellite use in the band 862-870 MHz to communicate with terrestrial SRD at 2 (2024), <https://docdb.cept.org/download/4514>; CEPT, ECC Decision (25)02 - Low power devices communicating with satellites (LPD-S) within the frequency range 862-870 MHz at 6 (2025) <https://docdb.cept.org/download/4784> (ECC Decision (25)02).

³⁴ See, e.g., *Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 3852, 3853 (2020).

³⁵ See WISPzone, *How Far Can a WiFi Antenna Communicate?* (July 7, 2025), <https://www.wispzone.com/blogs/news/how-far-can-a-wifi-antenna-communicate>.

³⁶ *Single Network Future: Supplemental Coverage from Space; Space Innovation*, GN Docket No. 23-65, IB Docket No. 22-271, Report and Order and Further Notice of Proposed Rulemaking, 39 FCC Rcd 2622, 2634-35, para. 28 (2024) (*SCS Report and Order and FNPRM*).

³⁷ 47 CFR § 2.106.

interference basis, meaning that they cannot cause interference to authorized services and must accept any interference received.³⁸

15. The part 15 rules do not prohibit using terrestrial-based equipment to transmit to satellites, but they also do not contain any provisions that explicitly permit this type of operation. Similarly, part 15 does not prohibit operation from satellites in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands, but for various reasons, e.g., power limitations, satellite licensing requirements, and international regulations, no parties are operating satellite links under the part 15 rules.³⁹ In addition, the technical parameters governing part 15 devices were devised assuming terrestrial operations, not operations in space or to devices in space. We seek comment on possible rule changes that would support satellite services in these three frequency bands, as well as other frequency bands where the part 15 rules permit higher power operations. In this Section III.B.1, we consider the cases of Earth-to-space and space-to-Earth operations and what changes might be necessary to the Table of Frequency Allocations to accommodate both types of operation.

16. *Earth-to-space.* Recently, parties have developed systems that use transmitters operating in accordance with part 15 of the rules for transmissions from Earth-to-space. Specifically, Hubble Network, Inc. (Hubble) was granted a satellite license to receive signals from 100 milliwatt (20 dBm) terrestrial devices operating in the 2482.710675-2483.424 MHz portion of the 2400-2483.5 MHz band with technical parameters consistent with part 15 Bluetooth Low Energy device operations.⁴⁰ Because there is no allocation for satellite operation in the 2400-2483.5 MHz band and Hubble's operations were licensed as earth stations under the part 25 rules, a waiver of the Table of Frequency Allocations was required.⁴¹ This waiver was granted for infrequent use from a single United States location.

17. We believe that streamlining the rules to permit satellites to receive signals from terrestrial devices operating under the part 15 technical rules in certain bands would benefit the public by facilitating the development of new and innovative wireless communication products and services, such as those developed by Hubble. As discussed below in the section on licensing requirements, we are seeking comment on several alternatives for authorizing terrestrial devices operating consistent with the part 15 rules to transmit in the Earth-to-space direction, including licensing them by rule to communicate with FCC-licensed satellites or non-US-licensed satellites that have been granted market access by the Commission, or by licensing them as earth stations under part 25 of our rules.

18. Because satellite earth station and space station licenses require a satellite frequency allocation for each frequency band in which they operate, it is currently necessary to grant a waiver of the Table of Frequency Allocations for each license application that requests operation in any other band, including those available for higher powered part 15 operations, as was done for Hubble. A simpler long-term approach would be to modify the Table of Frequency Allocations to include satellite (Earth-to-space) frequency allocations in bands where we would permit such uplinks to operate. Accordingly, to provide the ability for earth and space stations to obtain operating authority (either on a licensed or unlicensed basis) in a more streamlined manner without the need for a waiver, we propose to add a new footnote to the Table of Frequency Allocations that will allow Earth-to-space operations in the 2400-2483.5 MHz band. Additionally, to make more spectrum available for uplink purposes, we propose to add satellite uplink allocations via this new footnote in two other bands available for higher power part 15

³⁸ 47 CFR § 15.5(b).

³⁹ Part 15 does prohibit satellite downlink operations in certain frequency bands. *See, e.g.*, 47 CFR §§ 15.250(c) (5925-7250 MHz), 15.255(a) (57-71 GHz), 15.257(b) (92-95 GHz), 15.258(a) (116-123 GHz, 174.8-182 GHz, 185-190 GHz, 244-246 GHz), 15.521(a) (all Ultra-Wideband devices).

⁴⁰ *See* Hubble Grant and Spire Grant, *supra* note 26. Unlicensed devices may as a general matter operate in this band with up to 1 watt conducted power and an antenna gain of 6 dBi, i.e., 4 watts (36 dBm) EIRP. 47 CFR § 15.247(b).

⁴¹ *See supra* note 26, Hubble Grant condition 12 and Spire Grant at condition 1.

operations—the 902-928 MHz and 5725-5850 MHz bands.⁴² We limit our proposal to these three bands because part 15 devices are generally permitted to operate with power levels up to 4 watts (36 dBm) EIRP in these bands, which makes it potentially feasible to transmit to satellites.⁴³ These bands, unlike other bands where higher power operation is permitted, also currently have no satellite uplink or downlink allocations, with the exception of the 5830-5850 MHz band.⁴⁴ We further propose that devices licensed to operate under these allocations would be on a non-interference basis to other authorized services in the bands, the same requirement that applies to part 15 unlicensed device operations for these bands whether transmitting between terrestrial stations or to a satellite.⁴⁵ That is, they may not cause harmful interference to authorized services and must accept any interference received, including from devices operating under part 15 of the rules and ISM equipment.⁴⁶ Further, as discussed in the technical requirements section below, we propose no change to the current part 15 power limit for devices transmitting to satellites whether the devices operate on a licensed or unlicensed basis, thus there will be no change to the interference environment as a result of this proposal.

19. We seek comment on this proposal. Is it necessary to add an allocation for satellite operations in the Earth-to-space direction to any or all of these bands, and if so, in which bands or portions of these bands? What type of satellite service allocations should be added, e.g., FSS, MSS, or other? Do commenters agree or disagree with our proposal that all satellite operations in the proposed bands would be on a non-interference basis; even if licensed? Commenters that advocate for a different allocation status—primary or secondary—should provide justification for their position, including analysis for how such communication links would operate vis-à-vis other links, both licensed and unlicensed, and what effect a higher allocation status might have on existing part 15 operations. What is the appropriate method for adding an allocation? We propose to add a footnote allocation, but seek comment on whether a direct table allocation would be a better regulatory approach. How much operational and technical detail should be in any added footnote? What other factors should we consider in deciding what changes are appropriate? We seek comment on these questions.

20. *Space-to-Earth.* Space-to-Earth transmissions can have a larger area of impact than terrestrial transmissions because the space-to-Earth signal can cover a much wider area than terrestrial-based equipment due to the higher altitudes of satellites compared with terrestrial devices. However, given the proper technical and operating parameters, it may be possible that frequency bands available for higher-power operation under the part 15 rules could be used for satellite downlink operations while co-existing with authorized services and terrestrial part 15 users, similar to what was recently permitted in Europe.⁴⁷ In that case, the Electronic Communications Committee (ECC) of the European Conference of Postal and Telecommunications Administrations released a decision document describing the conditions under which low power devices operating in the 862-870 MHz band may be authorized to communicate with satellites, and satellites may may be authorized to communicate with terrestrial devices in this

⁴² 47 CFR §§ 15.247, 15.407.

⁴³ *Id.* §§ 15.247, 15.407.

⁴⁴ 47 CFR § 2.106.

⁴⁵ See 47 CFR § 15.5(b). Authorized services operate in the bands where we propose to establish new satellite uplink allocations. For example, the Location and Monitoring Service (LMS) and Amateur Radio Service operate in portions of the 902-928 MHz band. 47 CFR § 2.106.

⁴⁶ Industrial, Scientific and Medical (ISM) equipment uses RF energy for non-communication purposes such as heating, lighting and medical imaging. See 47 CFR § 18.107(c). Examples of ISM applications include microwave ovens, ultrasonic cleaning equipment, magnetic resonance imaging (MRI) devices, and wireless power transfer equipment. *Id.* § 18.107.

⁴⁷ ECC Decision (25)02.

band.⁴⁸ Since numerous unlicensed devices share spectrum on a non-interference basis, we believe that any satellite downlink operations in the bands available under the part 15 rules should also be on a non-interference basis, consistent with these rules and our proposal above for satellite uplinks.⁴⁹ Under this approach, we would establish technical rules for satellite operations (e.g., PFD limits, beamwidth limits, or other technical requirements) designed to minimize the potential for adverse impacts on terrestrial part 15 devices as discussed in more detail in the technical requirements section below.

21. We seek comment on whether the U-NII-3 band (5725-5850 MHz) could be used for satellite downlink operations because it has no existing satellite uplink or downlink allocations except as noted above.⁵⁰ We seek comment on this particular band because the higher frequency and correspondingly shorter wavelengths, as compared to other bands without satellite allocations, i.e., the 902-928 MHz and 2400-2483.5 MHz bands, would allow for the use of smaller, more directional satellite antennas that could help limit the satellite beam footprint on Earth. However, we recognize that other frequency bands could be useful for satellite downlinks as well and seek comment below on whether there are other frequency bands that could be used for this purpose.

22. If we were to allow space-to-Earth satellite operations in the U-NII-3 band, what type of amendments to the Table of Frequency Allocations would be necessary? Would FSS and/or MSS allocations in the space-to-Earth direction be appropriate? We seek comment on whether operation, including licensed operation, under a satellite allocation in this band would be on the same non-interference basis as part 15 devices, as we proposed above for the Earth-to-space links. Are there alternatives that we should consider? Could we make allocation changes through a new footnote, which could clearly state what services devices would have to protect, e.g., that satellite downlink operations are on a non-interference basis to other services and users that share the band with part 15 devices? Should we also include an allocation for inter-satellite links, and if so, what allocation changes would be necessary to accommodate that use? What other factors should we consider? Alternatively, could such operations be conducted on a purely part 15 unlicensed basis? If so, how could we address foreign operators and compliance with other requirements such as ITU filings and orbital debris showings? If we were to authorize inter-satellite links, should they be authorized under the same mechanism as the space-to-Earth links or is a different mechanism needed?

23. *Other frequency bands.* While we propose and seek comment on making more spectrum available for new types of satellite operations in certain frequency bands where higher-power unlicensed part 15 operations are permitted, we recognize that these bands contain a finite amount of spectrum. Over time, as satellite use increases, these bands may not have enough spectrum to accommodate future satellite applications. We therefore seek comment on any additional frequency bands that could be used to accommodate expanded satellite operations under an operational and technical framework consistent with part 15 technical rules.

24. Are there any other bands that are used by unlicensed devices where we could add satellite allocations, either uplinks, downlinks, or both? For example, should we add satellite downlink allocations in the 902-928 MHz and 2400-2483.5 MHz bands? What would be the advantages and disadvantages of satellite downlink allocations in those bands as opposed to the U-NII-3 (5725-5850 MHz band)? Are there any other U-NII bands, i.e., in the 5 GHz and 6 GHz bands, where we could possibly add either satellite uplink or downlink allocations?⁵¹ We note that other U-NII bands contain

⁴⁸ *Id.* at 3-5. These requirements include a power flux density (PFD) limit within the band 862-870 MHz of -142 dB(W/m²) in a 4 kHz bandwidth on the surface of the Earth to avoid interference with terrestrial applications. The 862-870 MHz band is not available in the United States for higher power operation under part 15 of the rules (i.e., greater than the section 15.209 limits).

⁴⁹ 47 CFR § 15.5(b).

⁵⁰ 47 CFR § 2.106.

⁵¹ 47 CFR § 15.407.

satellite allocations as well as other services that must be protected, so parties that suggest the use of additional frequency bands should provide an analysis of how communications with satellites could operate in those bands without causing harmful interference to authorized services or adversely affecting the operation of terrestrial part 15 devices. Similarly, if we were to authorize inter-satellite links, what other bands might be appropriate for such transmissions under the framework we are proposing here?

2. Licensing Framework

25. We seek comment on whether devices designed consistent with existing part 15 technical requirements intending to operate under the allocations proposed above need to do so under a licensed approach and what would be an appropriate licensing framework. Specifically, we seek comment below on whether to modify our rules to permit equipment certified under our part 15 rules to communicate with certain categories of satellites through a “license by rule” framework under part 25 of our rules governing satellite communications.⁵² We also seek comment on whether to use a streamlined licensing approach for such equipment under our part 25 rules governing earth station blanket licensing. For an apparatus that is intended to transmit and/or receive radiocommunications in space, we seek comment on using our existing part 25 rules to license such operations, as well as on potential alternatives. We discuss these potential licensing frameworks in detail below.

26. *Background.* As previously observed,⁵³ section 301 of the Act requires a license from the FCC for radiocommunication stations, including “any mobile station within the jurisdiction of the United States.”⁵⁴ A device operating pursuant to part 15 of our rules is also a “station” under our rules, which define a station as “[o]ne or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a radiocommunication service, or the radio astronomy service.”⁵⁵ Although the Commission has long authorized users to operate radiocommunication stations under part 15 of its rules based on equipment certification rather than station licensing, devices either communicating with stations in space or communicating with stations on Earth from space themselves appear to fall within the definitions of “earth station” or “space station” under our rules⁵⁶ and are required to be authorized under part 25 as satellite communications,⁵⁷ which generally requires a license from the Commission.⁵⁸

⁵² See 47 CFR § 25.101 *et seq.* We note that the Commission is currently undertaking a rulemaking proceeding in which it proposed to overhaul its licensing rules for space and earth stations and to replace part 25 with a new rule part—part 100—that would create a “licensing assembly line” to process applications. See *Space Modernization for the 21st Century*, SB Docket No. 25-306, Notice of Proposed Rulemaking, FCC 25-69 (Oct. 29, 2025) (*Space Modernization NPRM*). For the purpose of this Notice, we use the term “part 25” to mean the part of our rules that governs satellite communications.

⁵³ See *supra* Section III.A.

⁵⁴ 47 U.S.C. § 301(f).

⁵⁵ 47 CFR § 2.1(c); see also 47 U.S.C. § 153(42) (defining the term “station” as “a station equipped to engage in radio communication or radio transmission of energy”).

⁵⁶ *Id.* §§ 2.1, 25.103. An “earth station” is defined as “[a] station located either on the earth’s surface or within the major portion of earth’s atmosphere and intended for communication: (1) With one or more space stations; or (2) With one or more stations of the same kind by means of one or more reflecting satellites or other objects in space.” *Id.* § 2.1(c); accord *id.* § 25.103. A “space station” is defined as “[a] station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth’s atmosphere.” *Id.* §§ 2.1(c), 25.103.

⁵⁷ See 47 CFR § 25.102(a) (“No person shall use or operate apparatus for the transmission of energy or communications or signals by space or earth stations except under, and in accordance with, an appropriate authorization granted by the Federal Communications Commission.”).

⁵⁸ See *id.*

27. The Commission has excepted certain categories of stations authorized under part 25 from having to obtain individual station licenses. For example, the Commission does not require licenses for receive-only earth stations communicating with U.S.-licensed space stations in the Fixed-Satellite Service (FSS), but instead permits voluntary registration of such stations in order to protect them from harmful interference in frequency bands shared co-equally with terrestrial fixed service.⁵⁹ The Commission also permits a large number of technically-identical stations to be authorized under certain circumstances as part of a single “blanket license” that permits those stations to deploy anywhere within the geographic area specified in the license without site-specific coordination.⁶⁰ In addition, under its Supplemental Coverage from Space (SCS) framework adopted in 2024, the Commission adopted a “license by rule” framework that permits terrestrial wireless equipment that meets the equipment certification requirements in other parts of the Commission’s rules (e.g., part 24 or part 27) to communicate with satellites as a satellite earth station under part 25 of our rules, but without requiring an individual earth station license for the equipment.⁶¹

a. User Equipment

28. We seek comment on whether to modify our part 25 rules to permit devices certified under our part 15 regulatory framework to communicate with certain categories of satellites on a licensed-by-rule basis. This “license by rule” framework would be similar to the approach taken for SCS, under which equipment meeting the equipment certification requirements under other parts of the Commission’s rules are permitted to communicate with United States-licensed space stations or non-United States-licensed space stations that have received a grant of United States market access as satellite earth stations under part 25. Under this “license by rule” framework, a device operating consistent with the part 15 rules and within certain bands (e.g., 902-928 MHz, 2400-2483.5 MHz, or 5725-5850 MHz) would be also licensed as an earth station by rule without the need to file and receive approval for a part 25 earth station application for additional authority, provided that the device is operating within the technical parameters of its equipment authorization.⁶² As noted above, our intent in seeking to permit devices that meet part 15 technical parameters to communicate with satellites is to expand such devices’ reach and scope without changing their regulatory status regarding harmful interference. Thus, all such devices would operate on a non-interference basis. We seek comment on this possible regulatory framework.

29. We also seek comment on whether, as an alternative to the “license by rule” framework, it would be appropriate to adopt a blanket license framework under part 25 for devices certified under our part 15 regulatory framework and operating in one of the designated bands to communicate with satellites. If so, we seek comment on what application and operational requirements should govern such blanket licenses. What information about the devices would be required to be provided in an application for such a blanket earth station license? Would the information provided need to be the same as currently required for earth station applications under part 25, or would a streamlined “light touch” approach be appropriate? What informational requirements under our current or proposed rules governing earth

⁵⁹ 47 CFR § 25.115(b)(1). Receive-only earth stations may also receive transmissions from non-United States-licensed space stations that have been duly approved for United States market access under the FCC rules. *Id.* § 25.115(b)(9)(ii); *see also id.* § 25.137 (Requests for United States market access through non-United States-licensed space stations).

⁶⁰ *See* 47 CFR §§ 25.114(a)(2) (permitting blanket authority for a constellation of non-geostationary orbit space stations), 25.115(c) (permitting blanket authority to operate geostationary FSS earth stations).

⁶¹ *See id.* § 25.125(c), (e) (requiring each SCS earth station used to provide SCS to meet equipment authorization requirements, including the requirements of at least one of part 22, 24, or 27 of the Commission’s rules); *see also Single Network Future: Supplemental Coverage from Space; Space Innovation*, GN Docket No. 23-65, IB Docket No. 22-271, Report and Order and Further Notice of Proposed Rulemaking, 39 FCC Rcd 2622, 2659-60, 2717, paras. 87, 217 (2024) (SCS R&O).

⁶² *Cf.* SCS R&O, 39 FCC Rcd at 2659, para. 87.

station applications is unnecessary under such a “light touch” approach to blanket licensing of earth stations? Who would be the license holder for the user equipment, and would such a license holder be required to have operational control over the devices, which is an essential characteristic of a licensee?⁶³ Should there be a numerical limit on the number of user equipment devices that could be applied for under a single blanket earth station license? What would be the appropriate geographic area for deployment of user equipment? What are the comparative benefits and costs of each approach (i.e., license by rule versus blanket licensing)? Finally, as with the license-by-rule approach, devices operating under a blanket license approach would similarly be required to operate on a non-interference basis. We seek comment on these questions. We also seek comment on whether any other alternative regulatory frameworks would be appropriate for permitting certified part 15 devices to communicate with certain categories of satellites.

30. We also seek comment on whether any build-out requirements would be necessary under the proposed framework. Because devices operating in the designated bands would operate on a non-interference basis and would not preclude use of the bands by other potential spectrum users, it may not be necessary to apply to any blanket license the build out requirements of section 25.133 of our rules.⁶⁴ We seek comment on such an approach. Alternatively, we seek comment on whether we should apply a similar build-out period to ensure prompt use by the public. Commenters advocating an alternative approach should provide their thoughts on how we would apply build-out requirements for part 15-compliant devices functioning as earth stations. We seek comment on these questions.

b. Satellites

31. We seek comment on using the part 25 licensing regime to authorize space stations to transmit and receive in frequency bands where part 15 unlicensed devices are permitted to operate at higher power levels. This licensing regime could follow the general framework for authorizing space stations to provide SCS.⁶⁵ We seek comment on allowing applicants to apply for an initial geostationary-orbit (GSO) or NGSO space station authorization, or to modify an existing authorization, to include a space station operating in specific bands consistent with our proposals to update the Table of Frequency Allocations by including satellite allocations where none exist today. Relatedly, this would include space stations included in a petition for declaratory ruling to obtain United States market access for a non-United States-licensed space station.⁶⁶ Further, consistent with the approach taken here, we propose that any such operations would be on an unprotected, non-interference basis, consistent with part 15 operations.⁶⁷ We also expect that in most, if not all, instances satellites will not operate exclusively using these designated frequency bands, but rather they will operate primarily using frequencies allocated for the provision of other satellite services, such as FSS, mobile-satellite service (MSS), or Space Operation Service.⁶⁸ As such, operations under our proposed framework would, similar to SCS, provide satellite operators and consumers with capacity where none may otherwise be available for devices designed for

⁶³ For example, the licensee of a space or earth stations is responsible for control of the transmitting station, including being responsible for the proper operation of the station. *See* 47 CFR § 25.271.

⁶⁴ 47 CFR § 25.133(a) (requiring an earth station or a network of blanket-licensed earth stations to be brought into operation within 12 months after initial licensing, or six months after the bringing into operation of the non-geostationary-orbit systems with which the earth station or earth station network was authorized to communicate, unless a different build-out period is determined by the Commission need apply).

⁶⁵ *See generally SCS Report and Order and FNPRM; see also* 47 CFR § 25.125.

⁶⁶ *See* 47 CFR § 25.137.

⁶⁷ *See* 47 CFR § 15.5(b).

⁶⁸ Space Operation Service is defined under our rules as “[a] radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry, and space telecommand.” 47 CFR § 2.1(c).

part 15 operations. We seek comment on these views and whether satellite operators would plan on taking advantage of this low cost connectivity alternative. Alternatively, we seek comment on whether it is possible to authorize any space station operations—for example, receive-only operations that downlink using frequency bands separately licensed by the FCC—through a license-by-rule provision, analogous to the framework envisioned for terrestrial devices above, without an individual license for the space station. Would such a license-by-rule framework for space station operations in bands used by unlicensed devices be applicable to requests for United States market access by non-US-licensed space stations in such bands? Would the Commission still be able to obtain information about orbital debris mitigation plans of the applicant, as required by our rules?⁶⁹

32. We also seek comment on what processing and service rules should be applied to space stations operating in the designated frequency bands. If such stations are required to operate on an unprotected, non-interference basis, we seek comment on whether such stations could be authorized outside of our processing frameworks for GSO-like and NSGO-like space stations, since neither first-come, first-served nor processing round procedures appear necessary to establish priority vis-à-vis other space station licensees.⁷⁰ Proposed operations of the satellite in traditional satellite frequency bands, however, would still be subject to first-come, first-served or processing round requirements, as applicable. We seek comment on these processing frameworks. We also seek comment on whether we should adopt or modify any service rules in part 25 to take into account space stations communicating with devices certified under part 15. For example, although section 25.289 of our rules protects GSO systems from NSGO systems,⁷¹ the Commission has pointed out that this provision only applies to FSS and Broadcasting-Satellite Service (BSS) operations and does not apply to satellite operations in MSS bands.⁷² Accordingly, because the operations we propose would be on an unprotected, non-interference basis, we do not expect that any such provisions would apply. We seek comment on this approach to satellite licensing and on any alternative processing and service rules for space stations operating in the designated frequency bands.

33. We also seek comment on what technical information must be supplied as part of an application to operate a space station in the designated frequency bands. Because we expect that these new frequency bands would be included in addition to traditional satellite bands, which would need to go through normal processing procedures, we do not believe that any extra information beyond listing the

⁶⁹ For a discussion of the supervisory obligations under the Outer Space Treaty and ITU Radio Regulations, *see infra* paras. 51-56. Applicants for space station licenses are required to submit information required for coordination and notification of frequency assignment filings pursuant to the ITU Radio Regulations. 47 CFR § 25.111(b). Orbital debris mitigation requirements for communication satellites are contained in sections 25.114(d)(14) and 25.283 of the Commission's rules, as well as sections 25.122 and 25.123 for space stations processed under the streamlined processes for small satellites and small spacecraft. 47 CFR §§ 25.114(d)(14), 25.122, 25.123, and 25.283.

⁷⁰ Our current part 25 rules for authorizing new "NGSO-like" systems typically involve a processing round procedure where applicants for licenses or petitions for United States market access are considered in groups based on frequencies requested and filing date. *See* 47 CFR §§ 25.137, 25.157 [cite the specific paragraphs for these two rules that discuss the processing round procedures]; *see also id.* § 25.157(a) (defining the term "NGSO-like satellite operation" as: "(1) Operation of any NSGO satellite system; and (2) Operation of a GSO MSS satellite to communicate with earth stations with non-directional antennas"). Likewise, license applications for "GSO-like" satellite operation are placed in a queue and considered in the order they are filed, under a first-come, first-served licensing process. *Id.* § 25.158(b); *see also id.* § 25.158(a)(1) (defining the term "GSO-like satellite operation" as "operation of a GSO satellite to communicate with earth stations with directional antennas, including operation of GSO satellites to provide MSS feeder links").

⁷¹ 47 CFR § 25.289.

⁷² *SCS R&O*, 39 FCC Rcd at 2687, para. 151 (observing that "the non-directional antennas involved in MSS make it difficult for NSGO and GSO systems to share the same spectrum").

bands and associated power levels and emissions are necessary, as any other requirements, such as orbital debris mitigation plans, should already be accounted for as part of any space station application to operate in traditional satellite bands.⁷³ We seek comment on this view. However, should any satellite operator intend to launch a satellite that operates solely in the designated frequency bands, then we believe full satellite-relevant information, as required under part 25, such as a plan for orbital debris mitigation, an ITU satellite network filing, and a brief description of the coverage areas that will be served, would be necessary.⁷⁴ We seek comment on this view. What information would need to be provided to demonstrate compliance with the technical and service rules discussed below, and in what format should that information be provided? We seek comment on these questions.

34. In addition, we seek comment on whether any certifications need to be provided by an applicant as part of its application to operate in any of the designated frequency bands? Is it sufficient for the applicant to certify that the space station operations in the designated frequency bands will comport with any technical parameters that the Commission adopts for such operations? In addition, is it sufficient for applicants to certify compliance with any technical and service rules adopted as part of this proceeding, or is a demonstration of compliance necessary? We seek comment on these questions.

35. We also seek comment on allowing the satellite operator to choose its regulatory status as either a common carrier or non-common carrier, as is allowed under our part 25 rules and our SCS framework.⁷⁵ Similar to our view regarding technical information, because we expect that the proposed operations would be ancillary to traditional satellite frequency bands, we believe that minimal conditions need be placed on satellites pursuant to such operation. For example, such operation would automatically be extended for whatever license terms, including renewals and extensions, as approved for any other frequency bands on the satellite. However, if any satellite operator intends to launch a satellite that operates only in the designated bands, then we would need to separately impose such requirements. In such cases, we seek comment on subjecting those space stations to our existing part 25 license term rules,⁷⁶ as well as our part 25 rules governing renewals or extensions of license terms.⁷⁷ Similarly, in such cases, we seek comment on whether the Commission's rules governing milestones and bonds for space stations should be applicable.⁷⁸ Should any performance requirements be imposed to ensure that spectrum is intensely and efficiently used.⁷⁹ Should milestones on when GSO and NGSO space stations must be launched and operated be imposed,⁸⁰ and should the requirement to post a surety bond within a certain time period after grant of the license be imposed.⁸¹ We seek comment on these issues.

⁷³ See 47 CFR § 25.114.

⁷⁴ See *SCS R&O*, 39 FCC Rcd at 2649, para. 62.

⁷⁵ 47 CFR § 25.114(c)(11) (requiring applicants for a space station authorization to state whether the space station is to be operated on a common-carrier basis); *SCS R&O*, 39 FCC Rcd at 2684, para. 142.

⁷⁶ Under section 25.121(a), with some exceptions, licenses for facilities governed by part 25 are issued for a period of 15 years. 47 CFR § 25.121(a)(1); see also *id.* § 25.121(b).

⁷⁷ Pursuant to section 25.121 of the Commission's rules, an application for a space station system replacement authorization for NGSO satellites must "be filed no earlier than 12 months, and no later than 30 days, before the expiration date of the license." 47 CFR § 25.121(e).

⁷⁸ See 47 CFR §§ 25.165 & 25.165. The Commission has sought comment on proposals to modernize these milestone and bond requirements. See *Space Modernization for the 21st Century*, Notice of Proposed Rulemaking, FCC 25-69, SB Docket No. 25-306 (rel. Oct. 29, 2025) (*Space Modernization NPRM*).

⁷⁹ Cf. 47 U.S.C. § 309(j)(3)(D) (stating that an objective in the design of competitive bidding systems for spectrum licenses is the "efficient and intensive use of the electromagnetic spectrum").

⁸⁰ Section 25.164 of the Commission's rules describes the milestones applicable to recipients of licenses for an NGSO satellite system and requires the launch of 50 percent of the maximum number of space stations authorized for service and operation of the stations no later than six years after grant of the authorization, with the launch and

(continued....)

36. Finally, we seek comment on an alternative approach and ask whether it is feasible to create a framework for space stations authorized to communicate with devices certified under our part 15 regulatory framework similar to our “Permitted Space Station List.” Under such a framework, a list could be maintained on the FCC website identifying all satellites authorized to include a space station offering communication links in any of the designated frequency bands.⁸² Similarly, we also seek comment on whether a viable approach would be to adopt a rule that would permit any user equipment certified to part 15 requirements and licensed by rule to communicate with satellites on this list without further authorization from the Commission.

3. Technical and Service Rules

37. In this Section III.B.3, we propose to amend our rules to permit devices to communicate with satellites in the Earth-to-space direction in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands under the same technical requirements that apply to part 15 intentional radiators.⁸³ In addition, we seek comment on the general types of technical requirements that would be required for satellite communications to devices in the space-to-Earth direction in the 5725-5850 MHz band or any other frequency bands available where part 15 rules permit higher power.

a. Earth-to-Space

38. We propose to allow terrestrial devices certified as compliant with the part 15 technical requirements that operate in the 902-928 MHz, 2400-2483.5 MHz, and/or 5725-5850 MHz bands to communicate with satellites in the Earth-to-space direction.⁸⁴ These rules protect authorized services from harmful interference and have enabled effective spectrum sharing between billions of unlicensed devices. We propose no increase in the maximum permissible power or antenna gain, and no changes to any of the other technical rules (e.g., bandwidth, OOB) that apply to unlicensed devices in these bands. We therefore tentatively conclude that permitting transmissions to satellites from devices compliant with the part 15 technical requirements will not present an increased harmful interference risk to authorized services, or adversely affect spectrum sharing among the various types of unlicensed uses that already operate in those bands, including Wi-Fi, Bluetooth, and wireless broadband services such as those provided by wireless internet service providers (WISPs).

39. We seek comment on this proposal and tentative conclusion. Would allowing devices operating under the part 15 technical rules to transmit from Earth-to-space increase the likelihood of

(Continued from previous page) _____

operation of the remaining stations occurring no later than nine years after grant. *See* 47 CFR § 25.164(b)(1)-(2). Similarly, section 25.164 states that licensees for a GSO space station must launch and operate it in accordance with its station authorization no later than five years after the grant of the license. *Id.* § 25.164(a).

⁸¹ *See id.* § 25.165.

⁸² The Permitted Space Station List is defined as “[a] list of all United States-licensed geostationary-orbit space stations providing Fixed-Satellite Service in the conventional C band, the conventional Ku band, or the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands, as well as non-United States-licensed geostationary-orbit space stations approved for United States market access to provide Fixed-Satellite Service in the conventional C band, conventional Ku band, or 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands.” 47 CFR § 25.103.”

⁸³ 47 CFR §§ 15.247, 15.407.

⁸⁴ Frequency hopping and digitally modulated systems are generally permitted to operate with a conducted output power of up to 1 watt and may use an antenna with a directional gain of up to 6 dBi, which produces an EIRP of up to 4 Watts (36 dBm). 47 CFR §§ 15.247(b), 15.407(a)(3)(i). In the event the maximum directional gain of a device’s antenna exceeds 6 dBi, the conducted output power must be reduced by the same amount in dB that the directional gain exceeds 6 dBi, which ensures that the EIRP will not exceed 4 watts. *Id.* §§ 15.247(c), 15.407(a)(3)(i). However, systems used for fixed point-to-point operations in the 2400-2483.5 MHz and 5725-5850 MHz bands may operate above 4 watts EIRP. *Id.*

harmful interference to authorized services or adversely affect spectrum sharing by unlicensed devices? Commenters should provide specific examples and analysis to support their position. In particular, we seek comment on whether this proposed change could impact radio astronomy observations, which are carried out in specific remote, low population density areas and currently use spectrum on an opportunistic basis? What would be the impact of expanded use of the 2400-2483.5 MHz band on S/X Celestial Reference Frame observations?⁸⁵ Are there technical measures that could address concerns about radio astronomy, such as requiring devices to incorporate a geofencing system to facilitate compatibility with radio astronomy receive sites? Are the current part 15 technical requirements suitable for communications with satellites in the Earth-to-space direction in these bands? If we were to allow Earth-to-space transmissions in any frequency bands besides the three discussed above, would the current part 15 technical requirements be suitable in those bands? Should the requirements for frequency hopping and digital modulation techniques apply to devices transmitting to satellites in these bands, and if not, what requirements should apply?⁸⁶ Are the current out-of-band emission limits adequate?⁸⁷ How would part 15 devices determine whether they are communicating with another terrestrial device or a satellite? Would permitting communication with satellites encourage increased usage of devices at the highest permissible power level?⁸⁸ Would this affect frequency reuse by part 15 operation and what would be the overall impact to the wide range of part 15 devices sharing these bands? Do we need to place any limitations on the operation of devices transmitting to space from high altitudes to avoid changing the interference environment, such as prohibiting operation on aircraft or unmanned aircraft systems?⁸⁹ We seek comment on these questions.

40. While we propose no changes to the part 15 technical requirements for devices used to communicate with satellites in the Earth-to-space direction, we recognize that there are certain tradeoffs regarding device design, simplicity, and performance for satellite communications. The current part 15 technical requirements could potentially limit or preclude certain types of satellite-based services, e.g., those that require high throughput such as video transmissions, or where satellites orbit at higher altitudes above the Earth. If there is a need to enhance communication performance to enable, for example, better uplink throughput, what changes should we consider? In such a context, should we permit higher power levels than 4 watts (36 dBm) EIRP? Should we have specific antenna requirements such as gain and directivity limits in both the horizontal and vertical planes? Since it does not appear necessary for a device that transmits to satellites passing overhead to radiate full power at all angles above the horizon, is there a need to place limits on the radiated power at lower angles above the horizon to enable more efficient use of the spectrum? If so, what antenna gain or power limits, and at what angles above the horizon, are necessary, and would such limits be practical for non-fixed devices? Could requiring devices to direct more of their energy upward potentially impact aviation or other transportation operations? Should we place any additional requirements on such devices to avoid adversely affecting spectrum sharing between unlicensed devices? How could such devices be designed such that they are able to use additional power or different antennas for satellite communications, but revert to current part 15 limits for communicating with other terrestrial-based part 15 devices? In all cases, we propose that such operations are on an unprotected, non-interference basis. We seek comment on these questions.

⁸⁵ See Int'l VLBI Serv. for Geodesy & Astrometry, *About IVS, Committees: Celestial Reference Frame Committee* <https://ivscc.gsfc.nasa.gov/about/com/crfr/index.html> (last visited July 14, 2026).

⁸⁶ 47 CFR §§ 15.247(a), (e)-(h), 15.407(a)(3)(i).

⁸⁷ 47 CFR §§ 15.247(d), 15.407(b)(4).

⁸⁸ Unlicensed devices may operate at less than the maximum output power permitted in the rules to conserve battery power or because higher power is simply not necessary in many applications.

⁸⁹ See, e.g., 47 CFR § 15.407(d)(1)(iv)-(v) which prohibits the operation of 6 GHz U-NII devices on aircraft and unmanned aircraft systems.

b. Space-to-Earth

41. We seek comment on the types of technical parameters that would be necessary to facilitate the sharing of spectrum between space stations communicating in the space-to-Earth direction and terrestrial operations, both licensed and unlicensed, when communicating in the designated bands (e.g., the 5725-5850 MHz or other bands contemplated above) with devices that operate consistent with part 15 technical rules. Satellite downlink communications present unique characteristics that are not fully addressed by the existing part 15 rules. For instance, terrestrial devices are generally designed to receive communications from a horizontal direction with a relatively smaller footprint. Because satellites illuminate larger geographical areas than terrestrial devices, sharing between satellite downlink and terrestrial devices involves additional sharing considerations. We therefore seek comment on a number of issues to develop a record on how to enable space-to-Earth operations without causing harmful interference to authorized services or adversely affecting part 15 device operations. To develop a complete record on these issues, we seek comment with regard to all of the frequency bands contemplated above for Earth-to-space operations.

42. *Terrestrial part 15 device coexistence with satellite operations.* As evidenced by their prevalence in all facets of our lives, terrestrial devices operating under the part 15 rules provide many benefits to businesses and for personal use. Our intent here is to provide more opportunities for connectivity without adversely affecting their use and ask commenters to provide analysis and data regarding the best way to achieve such coexistence. As noted above, we propose to develop rules that would enable terrestrial part 15 devices to coexist with new satellite services without adverse impacts. Satellite operators could implement various methods to enable coexistence, including limiting the maximum PFD on the ground, limiting the size of the satellite beam on Earth, adhering to aggregate emission limits, and other technical limits or requirements, such as using a contention-based protocol (e.g., listen-before-talk) requirement. Each of these methods is discussed in greater detail below. In considering the potential impact of satellite operations on terrestrial part 15 devices, parties should consider two important points. First, many part 15 devices are used indoors where satellite signals are significantly attenuated by buildings, so the likelihood of adverse impacts on them from new satellite operations appears low.⁹⁰ Second, in densely populated areas there are likely to be multiple communication services available through either licensed or unlicensed access and in many cases buildings and other structures will block signals from reaching the ground, so new satellite services are unlikely to be competitive or cost effective in those areas. Thus, we expect that any new satellite services in frequency bands proposed here would be used primarily outside of densely populated areas.

43. *Power Flux Density and Antenna Beam Limits.* Power flux density (PFD) limits are often used as a mechanism to facilitate spectrum sharing between satellite downlink and terrestrial services.⁹¹ These limits restrict the signal power a satellite is permitted to project onto the Earth's surface per unit area and bandwidth.⁹² Under part 15 of our rules, all unlicensed devices operate on non-interference basis, meaning that these devices may not cause harmful interference and must accept any interference received, including interference that may cause undesired operations.⁹³ We seek comment on how this non-interference status should shape the formulation of PFD limits for satellite downlinks transmitting in the designated frequency bands.

⁹⁰ Ericsson reports that humans spend approximately 90% of their time indoors, which results in up to 80% of all data traffic being generated and consumed in indoor environments. See Ericsson, *5 Ways Indoor 5G Will Change Your Life (and Mine)* (July 26, 2023), <https://www.ericsson.com/en/blog/2023/7/5-ways-indoor-5g-will-change-life>.

⁹¹ 47 CFR § 25.208.

⁹² *Id.* PFD limits are expressed in terms of watts per square meter (W/m²) over a given bandwidth, e.g., 4 kHz or 1 MHz.

⁹³ 47 CFR § 15.5(b).

44. What PFD limits would be necessary to maintain the continued operational utility of the part 15 ecosystem while protecting authorized users in the designated bands? For example, would PFD limits similar to those in part 25 be appropriate?⁹⁴ Would these limits be sufficient to protect the incumbent federal radiolocation operations in the 5725-5850 MHz band?⁹⁵ Could we require PFD limits similar to those that the ECC specifies for space-to-Earth transmissions in the 862-870 MHz band?⁹⁶ Would those limits be appropriate, considering that they were designed for a lower frequency range with a smaller amount of available spectrum and to protect different incumbent spectrum users? Given that the PFD on the ground varies as a function of angle above the horizon (elevation angle), and considering that the antenna gain of terrestrial devices also exhibits angular dependencies, should the PFD limit be expressed as a function of elevation angle?⁹⁷ Would a PFD limit that is low enough to prevent harmful interference to authorized users and enable coexistence with terrestrial users be sufficient to close a link with targeted terrestrial devices, and if so, with what expected data rates? How many devices would be within a satellite downlink spot beam and how will desired communications with targeted devices impact other operators in the band? What would be the impact on frequency reuse in the band of operation and how would equipment operating under a listen-before-talk protocol be affected by satellite signals? What would be the impact on sharing protocols that have been implemented in part 15 equipment that was designed to accommodate low power short range terrestrial operations? Given that terrestrial receivers typically have antenna nulls directed toward space, could this factor allow for higher PFD limits? Should the Commission mandate specific operational requirements for satellite transmissions, such as a minimum elevation angle of operation? If the Commission were to adopt PFD limits, should those limits be codified in part 25 as with other satellite operations or in part 15? Is there an advantage to using either rule part?

45. As the PFD is related to a specific antenna beam or combination of beams, we also seek comment on whether the on-the-ground footprint for any given beam should be limited. Because a satellite beam illuminates much more area than a terrestrial-based antenna, we seek comment on whether we should set a maximum limit either for single entry or aggregate PFD levels from the satellite. Such a requirement could help protect terrestrial unlicensed operations from any adverse impact by limiting the level of in-band noise received by unlicensed devices. Commenters in favor of such limits should provide details both on the size and technical justification for any requested limits. Similarly, we seek comment on whether such satellite transmissions should be restricted to certain geographic areas. For example, because we believe that such operations would extend the reach of devices certified to part 15 limits to areas with little or no terrestrial infrastructure, should only those areas be served by satellites operating in the designated bands? If so, how would we determine those areas (e.g., by population density)? We seek comment on these issues.

46. *Aggregate Emission Limits.* We seek comment on how we could address issues arising from multiple satellite constellations operated by different operators. In our recently adopted framework governing SCS, we established limits in certain frequency bands on the aggregate field strength at the Earth's surface produced by all visible beams and satellites within a single constellation.⁹⁸ We note that SCS involves communications in bands that are fully licensed, while we are focusing on other options such as a licensed-by-rule approach, which may result in the need for differing requirements due to factors such as the number of satellite operators and constellation sizes. Is there a need for an aggregate

⁹⁴ 47 CFR § 25.208.

⁹⁵ Patrick Space Force Base, Florida; Vandenburg Space Force Base, California.

⁹⁶ ECC Decision (25)(02) at 5. This document specifies a PFD limit of -142 dB(W/m²) in a 4 kHz band on the surface of the Earth in the 862-870 MHz band. Outside of this band, it specifies a PFD limit of -146 dB(W/m²) in a 1 MHz band on the surface of the Earth.

⁹⁷ 47 CFR § 25.208(c).

⁹⁸ 47 CFR § 25.208(w).

field strength or PFD limit to maintain the continued operational utility of the part 15 ecosystem and protect authorized users in the designated bands? If so, what should that limit be and what specific technical factors should determine it? Should there be any limit on the number of beams allowed to illuminate the same geographical area simultaneously, and what factors should be included in an aggregate calculation? Should an aggregate limit apply to each satellite system individually or to the combined energy of all satellite systems? If a limit applies collectively, how should the calculation account for multiple independent operators? How could compliance with a limit be enforced, and would this require a real-time coordination mechanism?

47. *Out-of-Band Emission (OOBE) Limits.* We seek comment on what OOBE limits would be necessary for devices operated in space-to-Earth applications in the designated bands. Should devices be required to meet the existing part 15 OOBE limits, which specify a limit of -27 dBm/MHz EIRP at 75 MHz above or below the edge of the 5725-5850 MHz band, with higher levels permitted closer to the band edge?⁹⁹ Alternatively, should we establish a limit consistent with the part 25 rules which require specific levels of attenuation below the mean output power of the transmitter at specific frequency separations from the assigned frequency of operation?¹⁰⁰ Should we establish OOBE limits in terms of PFD, and if so, how could a PFD limit be derived from the current part 15 or part 25 limit? What factors should we consider in determining the appropriate emission limit? We also seek comment on whether there is a need to establish an aggregate OOBE limit as we did for SCS, e.g., a PFD limit of -120 dBW/m²/MHz at 1.5 meters above ground level?¹⁰¹ In seeking comment on this issue, we note that SCS is a fully licensed service, whereas in this proceeding we have been focusing on other options such as a licensed-by-rule approach. Parties that believe that an aggregate OOBE limit is necessary should consider this distinction and should also address the issues described above concerning aggregate in-band limits.

48. *Other Technical Requirements.* We seek comment on whether all of the technical limits that currently apply to terrestrial operations under the part 15 rules should apply to devices used for space-to-Earth transmissions. For example, should we apply the existing minimum bandwidth, frequency hopping, and power spectral density rules to devices operated on satellites?¹⁰² Are there provisions in the existing technical rules that could hinder satellite uses? Are there any additional requirements that would be necessary to prevent harmful interference to authorized services such as radio astronomy observations as discussed above or to better enable coexistence with existing unlicensed applications? For example, is there a need for limits on frequency stability, transmit duty cycle, or maximum bandwidth? Should we require a contention-based protocol mechanism whereby a satellite contends for terrestrial spectrum usage before transmission and possibly limits or modifies its transmissions based on the amount of available spectrum? Noting the longer transmission paths to satellites compared to terrestrial-only operations, advocates for using a contention-based-protocol should address what requirements would be necessary and how it could work given that disparity? Could terrestrial devices implement the contention-based-protocol sensing and relay that information to a satellite? In such a scenario, do the protocols support any scheduling mechanisms which can account for the differences in transmission time to avoid packet collisions? If multiple parties develop satellite systems that share spectrum, is there a need for time synchronization between time division duplex (TDD) systems, or frequency usage between frequency division duplex (FDD) systems, and if so, how could that be accomplished? If existing technical limits are insufficient or additional requirements appear necessary, commenters should offer specific suggestions for modifications, including a justification for why those changes are needed.

⁹⁹ 47 CFR § 15.407(b)(4)(i).

¹⁰⁰ 47 CFR § 25.202(f).

¹⁰¹ 47 CFR § 25.202(k)(1).

¹⁰² 47 CFR §§ 15.247(a), 15.407(a)(3)(i).

4. Equipment Authorization

49. Part 15 intentional radiators must generally be approved under the equipment certification procedure.¹⁰³ This procedure requires that equipment be tested at an FCC-recognized accredited laboratory to demonstrate that it complies with the requirements in the rules, and then approved by an FCC-designated Telecommunication Certification Body.¹⁰⁴ A certification requirement also applies to terrestrial transmitting devices under the part 22, 24, and 27 rules, as well as portable earth station transceivers under the part 25 rules.¹⁰⁵ Equipment used on satellites for space-to-Earth transmissions must be licensed by the Commission under part 25 and must comply with all requirements and conditions of the license, but it does not go through an equipment certification process.

50. Under the SCS framework, the Commission requires that terrestrial wireless equipment operating under at least one of parts 22, 24, or 27 that also communicates with a satellite must be certified as a satellite earth station under part 25.¹⁰⁶ The Commission also established a streamlined process for applicants to expand existing part 22, 24, and 27 equipment certifications to include part 25.¹⁰⁷

51. We do not propose any changes to the existing requirement that intentional radiators operating under the part 15 rules must generally be certified before they can be imported, marketed and operated, nor do we propose any changes concerning equipment the Commission has included on the Covered List of equipment it has determined to pose an unacceptable risk to the national security of the United States or the security and safety of United States persons.¹⁰⁸ However, we seek comment on whether there is a need to adopt any additional requirements for terrestrial devices that comply with the part 15 rules and are intended to communicate with satellites. Specifically, is there any need for devices that are designed to comply with part 15 technical requirements, but also intended to communicate with satellites under the framework proposed herein, to also be certified under part 25? If we were to require a part 25 certification in addition to a part 15 certification, we propose that it would be applied only to new equipment authorizations or authorizations being updated through the permissive change process.¹⁰⁹ Equipment already certified for part 15 would be permitted to communicate with satellites under their existing equipment authorizations. What would be the benefits of that requirement to consumers and the Commission, and would these benefits outweigh the burdens of requiring an additional certification? In this context, to simplify the certification process we propose that no additional device testing would be necessary to obtain the part 25 certification in addition to the part 15 certification, and that simply meeting the part 15 technical rules would render the device also eligible for the part 25 certification. We

¹⁰³ 47 CFR § 15.201(b).

¹⁰⁴ 47 CFR §§ 2.907, 2.948.

¹⁰⁵ 47 CFR §§ 22.377, 24.51, 25.129, 27.51.

¹⁰⁶ See *SCS R&O*, 39 FCC Rcd at 2717, para. 217.

¹⁰⁷ *SCS R&O*, 39 FCC Rcd at 2718-19, paras. 220-23.

¹⁰⁸ 47 CFR §§ 2.803(b), 2.805(a), 2.903, 2.1204(a), 15.201(b). Pursuant to sections 2(a) and (d) of the Secure and Trusted Communications Networks Act of 2019, and sections 1.50002 and 1.50003 of the Commission's rules, the Federal Communications Commission's Public Safety and Homeland Security Bureau (PSHSB) publishes a "Covered List" of communications equipment and services that have been determined by one of the sources specified in that statute to pose an unacceptable risk to the national security of the United States or the security and safety of United States persons (covered equipment). Secure and Trusted Communications Networks Act of 2019, Pub. L. No. 116-124, 133 Stat. 158 (2020) (codified as amended at 47 U.S.C. §§ 1601-1609 (Secure Networks Act)); 47 CFR §§ 1.50002, 1.50003. For the current version of the Covered List, see Federal Communications Commission, *List of Equipment and Services Covered By Section 2 of The Secure Networks Act*, <https://www.fcc.gov/supplychain/coveredlist>.

¹⁰⁹ Under certain circumstances, changes may be made in certificated equipment without requiring a new application for and grant of certification, i.e., permissive change. 47 CFR § 2.1043(b).

seek comment on this proposal. In particular, we seek comment on how such an approach might or might not work if we were to modify certain rules either for terrestrial or space-based equipment (e.g., power, out-of-band-emissions, and antenna gain) to facilitate communications between these terrestrial devices and satellites. Are there options for permitting or requiring different approaches based on the authorization framework—i.e., fully licensed versus licensed by rule versus unlicensed? In addition, we seek comment on how various equipment certification requirements combined with different authorization requirements and our prospective application of the certification requirements has implications for currently certified equipment that also meets the criteria for covered equipment on the Commission's Covered List as such equipment is not eligible for new certifications or permissive changes.¹¹⁰ Are there alternative approaches that would be simpler, and if so, what would they be? Are any specific requirements necessary beyond the existing part 15 certification requirements, and if so, how could we make these the least burdensome possible?

5. International Issues

52. We seek comment on how the framework discussed above for permitting devices that meet part 15 technical parameters to communicate with satellites could be implemented consistent with international obligations of the United States as a Member State of the International Telecommunication Union (ITU).¹¹¹

53. *ITU.* The United States is a Member State of the ITU.¹¹² As an ITU Member State, the United States adheres to the ITU Radio Regulations.¹¹³ Under the framework discussed above, we seek comment on authorizing space stations and earth stations to operate in certain frequency bands where part 15 devices are permitted to operate with higher power pursuant to a satellite allocation in the United States, but also on an unprotected, non-interference basis. While adding a satellite allocation to the designated bands would render such operations consistent with the United States Table, these operations would not conform with the International Table which does not currently include such satellite allocations, and operation, particularly with respect to the potential for harmful interference to or from cross-border stations, would be governed by ITU Radio Regulation No. 4.4. This provision states 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.”¹¹⁴ Accordingly, we seek comment on what steps should be taken to ensure that any frequency assignments that are made as a result of this proceeding that are not consistent with the International Table do not cause harmful interference to, or result in claims of protection from harmful interference from, stations that are operating in accordance with ITU provisions, including the International Table.

54. The framework discussed above includes requiring that operations be conducted on an unprotected, non-interference basis, in both the Earth-to-space and space-to-Earth directions. In addition,

¹¹⁰ 47 CFR §§ 2.903, 2.1043.

¹¹¹ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, October 10, 1967 (Outer Space Treaty). Full text of these U.N. treaties is available at <https://www.unoosa.org/oosa/en/ourwork/space/treaties.html>.

¹¹² 47 CFR § 2.100. The legal framework of the ITU is comprised of the Constitution and Convention, which have treaty status and are binding on ITU Member States. *Id.*

¹¹³ The ITU Radio Regulations form an integral part of the ITU Administrative Regulations, which complement the ITU Constitution and Convention. *Id.*

¹¹⁴ ITU Radio Regulation No. 4.4, <https://life.itu.int/radioclub/rr/art4.pdf>.

it envisions requiring that appropriate materials be submitted to the ITU as part of any space station application that seeks to operate in bands available for unlicensed devices in addition to operations in bands licensed for traditional satellite services.¹¹⁵ We seek comment on how these requirements can be implemented consistent with our obligations under the ITU Constitution and Convention, including those pertaining to the ITU Radio Regulations, particularly ITU Radio Regulation No. 4.4.¹¹⁶ We also seek comment on what analyses or other showings could be required as part of a space station application to demonstrate that the operations would not cause harmful interference to stations operating in accordance with the ITU Radio Regulations. In addition, to the extent that space stations applicants licensed under part 25 of our rules plan to communicate with areas outside of the United States, pursuant to a market access authorization issued by another jurisdiction, we seek comment on what measures should be disclosed as part of the application to eliminate immediately any harmful interference concerns. Should the authorization include a condition that communications with areas outside of the United States are only permitted if the governing administration has authorized such communications and must be subject to that authorization?¹¹⁷ Should documentation of such authorization be provided to the Commission prior to a United States-licensed space station begins operations in an area outside of the United States?¹¹⁸

55. *International Harmonization.* We also seek comment on what measures could be taken to promote international harmonization, particularly with Canada and Mexico. Although the framework discussed in this proceeding would authorize satellite communications in the United States only, a United States satellite license includes all operations of that United States-licensed space station—including authorization of transmission or reception at the space station to/from stations located outside of the United States. As observed in the SCS proceeding,¹¹⁹ such communications are subject to the laws, regulations, and requirements of any country in connection with communications in that country, including but not limited to, authorization to communicate with earth stations in that jurisdiction. We seek comment on whether United States-authorized space stations that can be used to communicate with equipment meeting part 15 technical parameters (or the foreign equivalent) outside of the United States should require a licensee to ensure that all of its operations are duly authorized by the country in which such communications will occur and that it will satisfy all terms and conditions of any foreign license or authorization, as was adopted for SCS.¹²⁰

6. National Security Issues

56. The Secure Networks Act is designed to protect the nation's communications infrastructure from foreign security threats.¹²¹ It established a comprehensive framework to identify,

¹¹⁵ See *supra* para. 30.

¹¹⁶ ITU Rules of Procedure at part A1, AR4, Page 2 (stating that, in No. 1.6, “administrations, prior to bringing into use any frequency assignment to a transmitting station operating under No. 4.4, shall determine: a) That the intended use of the frequency assignment to the station under No. 4.4 will not cause harmful interference into the stations of other administrations operating in conformity with the Radio Regulations; b) What measures it would need to take in order to comply with the requirement to immediately eliminate harmful interference pursuant to No. 8.5. When notifying the use of frequency assignments to be operated under No. 4.4, the notifying Administration shall provide a confirmation that it has determined that these frequency assignments meet the conditions referred to above in item a) and that it has identified measures to avoid harmful interference and to immediately eliminate such in case of a complaint” (emphasis omitted)).

¹¹⁷ Hubble Grant at condition 13; Spire Grant at condition 12.

¹¹⁸ *Id.*

¹¹⁹ SCS R&O, 39 FCC Rcd at 2722, para. 232.

¹²⁰ SCS R&O, 39 FCC Rcd at 2722-23, para. 234.

¹²¹ Secure and Trusted Communications Networks Act of 2019, Pub. L. No. 116-124, 133 Stat. 158 (2020) (codified as amended at 47 U.S.C. §§ 1601-1609 (Secure Networks Act)).

block, and remove untrusted equipment from American networks. The Secure Networks Act requires the Commission to publish a list of equipment and services that pose “an unacceptable risk to the national security of the United States or the security and safety of United States persons” based on specific determinations made by certain enumerated sources (Covered List).¹²² Through the Secure Equipment Act, Congress directed the Commission to “no longer review or approve any application for equipment authorization for equipment that is on the [Covered List][.]”¹²³ In the *EA Security R&O and FNPRM*, the Commission established several new rules to prohibit authorization of equipment identified on the Commission’s Covered List developed pursuant to the Secure Networks Act.¹²⁴ In the *EA Security Second R&O and FNPRM*, the Commission provided further guidance on the prohibition on authorization of covered equipment, prohibited the authorization of devices that contain certain component parts identified on the Covered List, and adopted a procedure to implement prohibitions on the continued importation and marketing of previously authorized covered equipment.¹²⁵

57. We seek comment on national security concerns associated with any of the proposals above. Would permitting satellites that can transmit and/or receive in frequency bands available under the part 15 rules pose any national security concerns? As discussed above, any proposed new satellite operations would fall under a part 25 authorization framework. Would the part 25 space station licensing framework sufficiently address potential national security concerns? If not, what new types of concerns would be raised? Would allowing satellite uplink or downlink operations in frequency bands that are widely used by part 15 unlicensed devices provide any new openings for bad actors to exploit or state sponsored espionage? Are there devices (including modules) or classes of devices that should be prohibited from communicating with satellites? Would there be national security risks posed by such communication with devices that have already been granted equipment authorizations? What steps could the Commission take to address any potential new national security concerns?

58. Similarly, we seek comment on whether allowing terrestrial equipment that communicates with satellites in frequency bands available under part 15 raises any new national security issues that we need to address. Is there a need to require manufacturers to take any additional steps to secure their equipment, and if so, what steps would be necessary? Would we need to place additional requirements on certain types of equipment or certain manufacturers to address any national security concerns?

C. Within Spacecraft

59. Various devices that operate under part 15 of the rules, particularly those containing transmitters such as Wi-Fi or Bluetooth, can prove useful for essential functions on the growing number of crewed missions.¹²⁶ For example, laptop computers can be used in scientific experiments, for

¹²² Secure Networks Act, § 2(b)-(c); 47 CFR §§ 1.50002, 1.50003.

¹²³ Secure Equipment Act, Pub. L. No. 117-55, 135 Stat. 423.

¹²⁴ *Protecting Against National Security Threats to the Communications Supply Chain through the Equipment Authorization Program*, ET Docket No. 21-232 and EA Docket 21-233, Report and Order, Order, and Further Notice of Proposed Rulemaking, 37 FCC Rcd 13493 (2022) (*EA Security R&O and FNPRM*).

¹²⁵ *Protecting Against National Security Threats to the Communications Supply Chain through the Equipment Authorization Program*, ET Docket No. 21-232, Second Report and Order and Further Notice of Proposed Rulemaking, 90 Fed. Reg. 53227 (Nov. 25, 2025) (*EA Security Second R&O and FNPRM*).

¹²⁶ For example, the SpaceX Dragon has been carrying personnel to and from the ISS since 2020 and the Boeing Starliner is designed to carry personnel to and from the ISS and other low orbit destinations. Blue Origin has conducted multiple crewed missions with its suborbital spacecraft. Privately funded space stations are under development to serve as hubs for private research, manufacturing, and potential future space tourism. See Matthew Glasser, *Private Astronaut Mission Marks Next Step Toward a New Space Station* (June 9, 2025), <https://abcnews.com/US/private-astronaut-mission-marks-step-towards-new-space/story?id=122674463>.

communication with other personnel, and for entertainment purposes on long missions.¹²⁷ Smartphones can be used for taking pictures and also for communicating with families on earth and smart watches can monitor the health of the space crews while using Wi-Fi or Bluetooth protocols. The part 15 rules do not specifically prohibit or allow the use of these devices within spacecraft. Today, these devices are allowed to be used by astronauts in the ISS via close coordination with NASA. A list of devices that will be brought onto the ISS is provided to the FCC before each mission and the Office of Engineering and Technology of the FCC confirms that these devices are certified and compliant to the part 15 rules. NASA administers the overall process for the electronic devices that can be brought into the ISS.¹²⁸

60. To provide clarity on the requirements for unlicensed devices aboard spacecraft, we propose to modify the part 15 rules to confirm that the operation of certified unlicensed devices within spacecraft is a permissible use, subject to any other applicable restrictions, such as those of federal agencies and international treaties. We are limiting this proposal to operation within spacecraft because we believe that there are a number of factors that make the potential interference from part 15 devices within spacecraft to authorized users of the spectrum on earth extremely unlikely. For example, the distance separation from Earth will significantly attenuate any signals from a spacecraft, thus significantly reducing the potential to cause harmful interference to authorized services on Earth.¹²⁹ Also, the spacecraft shielding that protects occupants and equipment inside from radiation and temperature extremes will also act as RF shielding to severely attenuate signals radiating outside of the spacecraft.¹³⁰

61. Operation of part 15 devices on board spacecraft would be subject to the same non-interference requirement in section 15.5 as terrestrial devices.¹³¹ Unintentional radiators emit significantly lower signal levels than intentional radiators, so unintentional radiators used within spacecraft will have an even lower potential for causing harmful interference than intentional radiators. We are therefore proposing to confirm that the use of unintentional radiators within spacecraft is also a permissible use under part 15 of the rules. The proposed changes would benefit crew members and passengers by making clear that both intentional and unintentional radiators, such as smartphones, smart watches, notebooks and tablets, could be operated within spacecraft, subject to any other applicable restrictions, such as those of federal agencies and international treaties. We emphasize that this proposal applies solely to operation within a spacecraft, such as a wireless connection from a portable device to a wireless access point within a spacecraft.

62. We propose to add a new section to part 15 confirming that the operation of intentional and unintentional radiators that comply with the technical and authorization requirements is permissible within spacecraft (i.e., within a fully shielded environment, but remains subject to any other requirements for equipment used in space. For example, the Commission could as part of its part 25 licensing process impose requirements, such as specific limitations on the types of equipment or operating frequencies that can be used on board spacecraft. Does our proposal sufficiently limit the likelihood of harmful interference to authorized services on Earth? Are the current part 15 rules sufficiently protective in this scenario? Should we limit the types of devices that can be operated on spacecraft? Do we need to place restrictions on the frequency bands in which they can operate, and if so, in which bands? Conversely,

¹²⁷ Vast, Inc. is developing the Haven-1 commercial space station module which will include two onboard Wi-Fi/Bluetooth access points and two wall-mounted iPads operating in the 2400-2483.5 MHz and/or 5150-5850 MHz bands inside the spacecraft to support onboard communications and data for crew devices. *See* application of Vast, Inc., filed May 5, 2026, ICFS File No. SAT-LOA-20260120-00035.

¹²⁸ *See* ISS Safety Requirements Document 4-17
<https://ntrs.nasa.gov/api/citations/20210009936/downloads/SSP%2051721-Baseline.pdf>

¹²⁹ For example, the free space path loss at 2.4 GHz is approximately 150 dB at a distance of 300 kilometers.

¹³⁰ Henry B. Garrett, Albert C. Whittlesey, *Spacecraft Design Guidelines* at 35 (2012)
<https://descanso.jpl.nasa.gov/SciTechBook/series3/04Chapter3SCDesign.pdf>.

¹³¹ 47 CFR § 15.5(b).

does the fact that devices would operate within an enclosed spacecraft mean that we could in some cases permit higher power or other types of operations not currently permitted under the part 15 rules? If so, what particular technical requirements could be modified? Should the Commission consider a different interference management policy for part 15 devices operating within spacecraft than for terrestrial operation? If so, how can such processes be managed? How could we ensure that equipment specifically designated for use within a spacecraft which might have different operating parameters from terrestrial based devices are not used on Earth where the potential for causing harmful interference might be much greater than within a controlled spacecraft environment?

D. Extravehicular Activity (EVA) and Communications Between Spacecraft

63. We seek comment on what rule changes we could make to facilitate extravehicular activity (EVA) and communications between spacecraft or other space-based devices (e.g., equipment used for in-space servicing, assembly, and manufacturing (ISAM) applications) to support developing space industries.¹³² The types of applications that might be used in EVA and communications between spacecraft could include voice, video, and data communications, especially for use of robotic arms and other apertures, and could also include radars and field disturbance sensors to help locate and position personnel, spacecraft, satellites, or other objects. We seek comment on this assessment and what other types of applications for EVA and communications between spacecraft could use equipment operating in the bands available for part 15 devices.

64. We believe that unlicensed devices could play a pivotal role in unleashing new applications related to ISAM. The Commission, in 2024, issued a Notice of Proposed Rulemaking that proposed a new framework for licensing space stations engaged in ISAM.¹³³ ISAM refers to a set of capabilities used in-orbit, on the surface of space objects and celestial bodies, and in transit between these regimes.¹³⁴ We seek comment on the potential use of devices operating under the part 15 technical requirements for various uses, including EVA and communications between spacecraft, that may be considered as part of ISAM capabilities.

65. While we recognize the potential benefits of making more spectrum available for EVA and communications between spacecraft, we will not at this time propose specific rule changes to facilitate these applications for devices operating under the part 15 rules. Devices must operate under the part 15 rules on a non-interference basis, and transmissions from space can potentially impact terrestrial operations over a wide area.¹³⁵ However, to build a record on the possibility of using frequencies available under part 15 for EVA and communications between spacecraft, we are seeking comment on a number of issues, including potential frequency bands, power levels, antenna requirements, and other technical issues. We also seek comment on whether there are any international treaties or agreements that must be considered in permitting communications in space in these frequency bands, as discussed above in the context of Earth-to-space and space-to-Earth transmissions in these bands.

66. We seek comment on the frequency bands that could be used for communications or other transmissions (e.g., field disturbance sensors, radars, Ultra-Wideband devices) in EVA and between spacecraft. Would any of the currently available frequency bands described above be suitable? Are there other frequency bands that could be used for these purposes? Are there certain frequency bands that should be excluded, such as the current part 15 restricted bands or bands with satellite allocations, and

¹³² “Extravehicular Activity (EVA), are activities performed by space-suited astronauts outside their spacecraft in orbit above the Earth.” See NASA, *Extravehicular Activities*, <https://www.nasa.gov/johnson/exhibits/extravehicular-activities/> (last visited July 14, 2026).

¹³³ *ISAM NPRM*.

¹³⁴ *ISAM NPRM*, 39 FCC Rcd at 1865, para. 2.

¹³⁵ 47 CFR § 15.5(b).

why?¹³⁶ What is the potential for harmful interference to authorized services or adverse impacts to other part 15 intentional radiators, either in space or on Earth? Could potential interference be mitigated through appropriate antenna pattern design or other approaches? If so, what specific antenna characteristics are necessary? With respect to power levels and OOB limits, we note that the current part 15 rules were developed for a terrestrial environment that has significantly more clutter losses than the space environment, as well as significant temperature and other differences. With that in mind, we seek comment on whether the current power and antenna gain limits are suitable. Are the current OOB limits adequate to prevent harmful interference? Do any of these parameters need to be adjusted for operation in the space environment? Commenters should provide specific technical proposals as well as reasoning for each to justify any recommended changes. Would enough devices operate in this scenario such that we should consider an aggregate interference limit for them? Would any additional requirements for devices operated in EVA or communications between spacecraft be necessary to limit the likelihood of harmful interference, such as antenna directivity requirements or limits on the operational time in orbit?

E. Unintentional Radiators

67. While many commonly used part 15 devices are intentional radiators, part 15 also requires unintentional radiators to comply with emission limits.¹³⁷ Unintentional radiators include computers and other devices with digital circuitry that generate and use high frequency timing signals, power supplies associated with computers and digital devices, as well as radio receivers that generate radio frequency signals used in their tuning circuitry.¹³⁸ The Commission is aware of reports of satellites emitting signals that are impacting ground based receivers, and may possibly be impacting other satellites as well. For example, some parties state that they have detected both wideband and narrowband signals from a satellite constellation at frequencies between 40 and 70 MHz and between 110 and 188 MHz.¹³⁹ These reports suggest that the signals in question are being generated unintentionally, such as through power supplies or digital circuitry.¹⁴⁰ The International Telecommunication Union (ITU) Working Party 7D is currently studying this issue.¹⁴¹ Depending on the source of the signals that various parties have observed, it is possible that they are of a type that would be subject to the part 15 unintentional radiator limits in terrestrial-based equipment.

68. We seek comment on the issue of unintentional emissions generated by satellites or other spacecraft. What is the extent of the observed problems? What types of ground-based services are being impacted and where? Are unintentional emissions from satellites and spacecraft affecting radio astronomy observations? Are there also concerns about effects to satellite systems in orbit and if so, which ones? What is the likely source of the unintentional emissions in question? Are there any observed problems that seem to be worsening over time? Does there appear to be a need for actions to

¹³⁶ 47 CFR § 15.205.

¹³⁷ 47 CFR pt. 15, subpt. B.

¹³⁸ 47 CFR § 15.101.

¹³⁹ F. Di Vruno, et al., Unintended electromagnetic radiation from Starlink satellites detected with LOFAR between 110 and 188 MHz, *Astronomy & Astrophysics*, 676, A25, at 1 (2023), <https://www.aanda.org/articles/aa/pdf/2023/08/aa46374-23.pdf>; C. G. Bassa, et al., Bright unintended electromagnetic radiation from second-generation Starlink satellites, *Astronomy & Astrophysics*, 689, L10, at 1 (2024), <https://www.aanda.org/articles/aa/pdf/2024/09/aa51856-24.pdf>.

¹⁴⁰ F. Di Vruno, et al., Unintended electromagnetic radiation from Starlink satellites detected with LOFAR between 110 and 188 MHz, *Astronomy & Astrophysics*, 676, A25, at 17 (2023), <https://www.aanda.org/articles/aa/pdf/2023/08/aa46374-23.pdf>.

¹⁴¹ See ITU, *Working Party 7D (WP 7D) – Radio Astronomy*, <https://www.itu.int/en/ITU-R/study-groups/rsg7/rwp7d/Pages/default.aspx> (last visited July 14, 2026).

reduce unintentional emissions from satellites or other spacecraft? If so, what actions could be taken? As noted above, the environmental differences create disparities in signal attenuation between those emanating from space and those being transmitted from terrestrial-based stations. If we were to require unintentional radiators operating in space to comply with emission limits, would the current part 15 unintentional radiator limits be appropriate? Do they cover the required frequency range, or would we need higher or lower frequency cutoffs for measuring radiated emissions, e.g., at frequencies below 30 MHz? Are the part 15 emission limits sufficiently protective to prevent harmful interference to potentially impacted services or would we need tighter limits in any frequency ranges? If so, in what instances and frequency bands would this be necessary, and what limits should apply? Due to the potentially large number of devices that could be emitting simultaneously, would we need to consider aggregate interference from unintentional radiators in space? If so, how could we set and enforce aggregate interference limits?

F. Costs and Benefits

69. We estimate that the economic benefits of the proposed rule changes to enhance space-based communications for part 15 devices will substantially outweigh the costs, which we expect to be minimal. The expanded ability to use part 15 devices for Earth-to-space applications could result in new and innovative wireless communication products and services by lowering barriers to entry. For example, Hubble and Spire were granted satellite licenses in the 2400-2483.5 MHz band through the grant of a waiver of our rules,¹⁴² whereas the proposed rules changes could eliminate the need for such waivers and lower entry barriers for new technologies. We lack information to precisely estimate the economic value of these yet-to-be developed new products and services, but we expect that such uplinking capabilities could be valuable for IoT services, especially in rural areas.¹⁴³ In addition, our proposal to formally allow part 15 devices to communicate within spacecraft could eliminate the current practice of ad hoc approvals for each within-space vehicle use of devices like laptops. We judge the cost of these approvals to be modest given that allowing earth-to-space communications in these bands are not expected to change the interference environment for other licensed or unlicensed users of these bands. The proposed rule changes allowing EVA and communications between spacecraft could foster innovation and encourage the development of new services, including in-space servicing, assembly, and manufacturing. Finally, the proposed rules might aid in managing interference from unintentional radiators either within spacecraft or more broadly. While we lack information to precisely quantify each of these benefits, in terms of relative magnitudes, we expect the most benefits to flow from Earth-to-space applications, since the user base of part 15 Earth-based devices is larger than the user base of devices in spaces. We seek comment on this judgment, in addition to data and quantitative estimates on the magnitude of benefits. We seek information about potential new applications in Earth-to-space, within spacecraft, for EVA, and between spacecraft communications that may generate such benefits. Of particular interest would be estimates of the potential number of users and devices impacted and the magnitudes of use of these new applications.

70. We recognize that rule changes to allow part 15 space-to-Earth communications may have substantial benefits due to the large number of terrestrial part 15 devices that could benefit from such communications without the requirement for new hardware.¹⁴⁴ However, we also recognize there are

¹⁴² See *supra* note 27.

¹⁴³ For example, Hubble recently reached \$100 million in total funding in September 2025 demonstrating strong interest its satellite-based Bluetooth network. Jason Rainbow, *Hubble Network raises \$70 million to accelerate 60-satellite Bluetooth constellation* (Sep. 18, 2025), <https://spacenews.com/hubble-network-raises-70-million-to-accelerate-60-satellite-bluetooth-constellation/>.

¹⁴⁴ Deloitte 2023 survey data implies there are 21 connected devices in the average American home. Jana Abranas, Paul Silverglate, Susanne Hupfer, Jeff Loucks, Prashant Raman, Michael Steinhart, *Consumers embrace connected devices and virtual experiences for the long term* (Sep. 5, 2023), <https://www.deloitte.com/us/en/insights/industry/telecommunications/connectivity-mobile-trends->

(continued....)

potentially significant technical challenges in minimizing interference issues with other licensed and unlicensed devices for any new space-based communications in these bands. Implementation will require careful consideration of technical safeguards, including power flux density limits, out-of-band emission controls, and potentially aggregate interference limits to ensure coexistence with incumbent services and terrestrial part 15 operations. In addition, coordination with international obligations under the ITU Radio Regulations and the Outer Space Treaty will be necessary to avoid creating harmful interference for devices authorized in other countries and to ensure space station operators conform with all relevant international requirements. Benefits of any part 15 rule change for space-to-Earth communications will therefore be dependent on their exact technical implementation and whether the potential interference issues with terrestrial devices can be resolved. As we propose no rule changes for part 15 space-to-Earth communications here and lack information on how part 15 space-to-Earth communications would be implemented, we do not estimate expected benefits at this time. However, we seek information on how part 15 space-to-Earth communications would be implemented and estimates of the potential number of users and devices impacted and the benefits that may flow from these new applications.

71. We estimate costs of the proposed part 15 rule changes to be minimal or non-existent. We expect that the proposed rule changes here and in any future proposal will not disturb incumbent use of the associated spectrum and that frequency interference will be minimal to non-existent. The rule changes for Earth-to-space and within spacecraft communication simply remove a purely regulatory ban on a technical capability to receive signals that satellites have always had. We expect final rules changes for EVA and between spacecraft communications to minimize interference with incumbent users. Costs may increase with compliance obligations may also increase for some stakeholders. For example, the Commission seeks comment on whether part 15 devices intended to communicate with satellites should also obtain certification under our part 25 licensing rules. However, we expect that these compliance costs would be relatively small and invoked on a largely voluntary basis. As voluntary actions, the compliance costs would then be outweighed by private value-added from the newly certified uses. We seek comment on the expectation of minimal or no cost impact, especially with regards to expanded Space-to-Earth interference and potential interference concerns. We also seek information on costs of these proposed rule changes in the form of data and quantitative estimates.

IV. PROCEDURAL MATTERS

72. *Paperwork Reduction Act Analysis.* This document does not contain proposed information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), 44 U.S.C. §§ 3501-3521. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, 44 U.S.C. § 3506(c)(4).

73. *Regulatory Flexibility Act.* The Regulatory Flexibility Act of 1980, as amended (RFA),¹⁴⁵ requires that an agency prepare a regulatory flexibility analysis for notice-and-comment rulemaking proceedings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.”¹⁴⁶ Accordingly, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA), concerning potential rule and policy changes contained in this *Notice of Proposed Rulemaking*. The IRFA is set forth in Appendix B. The Commission invites the general public, in particular small businesses, to comment on the IRFA. Comments must be filed by the deadlines for comments on the *Notice of Proposed Rulemaking* indicated on the first page of this document, and must also have a separate and distinct heading designating them as

(Continued from previous page) _____
[survey/2023/connected-consumers-facing-new-reality-virtual-experiences.html](https://www.fcc.gov/survey/2023/connected-consumers-facing-new-reality-virtual-experiences.html). Given that a large proportion of these devices are part 15 devices, we can conclude that billions of part 15 devices are active in the United States

¹⁴⁵ 5 U.S.C. § 601 *et seq.*, as amended by the Small Business Regulatory Enforcement and Fairness Act (SBREFA), Pub. L. No. 104-121, 110 Stat. 847 (1996).

¹⁴⁶ *Id.* § 605(b).

responses to the IRFA.

74. *Providing Accountability Through Transparency Act.* Consistent with the Providing Accountability Through Transparency Act, Public Law 118-9, a summary of the *Notice of Proposed Rulemaking* will be available on <https://www.fcc.gov/proposed-rulemakings>.

75. *Filing Requirements.* Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS).

- *Electronic Filers:* Comments may be filed electronically using the Internet by accessing the ECFS: <https://www.fcc.gov/ecfs>.
- *Paper Filers:* Parties who choose to file by paper must file an original and one copy of each filing.
 - Filings can be sent by hand or messenger delivery, by commercial courier, or by the U.S. Postal Service. **All filings must be addressed to the Secretary, Federal Communications Commission.**
 - Hand-delivered or messenger-delivered paper filings for the Commission's Secretary are accepted between 8:00 a.m. and 4:00 p.m. by the FCC's mailing contractor at 9050 Junction Drive, Annapolis Junction, MD 20701. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
 - Commercial courier deliveries (any deliveries not by the U.S. Postal Service) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
 - Filings sent by U.S. Postal Service First-Class Mail, Priority Mail, and Priority Mail Express must be sent to 45 L Street NE, Washington, DC 20554.
- *People with Disabilities:* To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530.

76. *Ex Parte Rules.* The proceeding this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.¹⁴⁷ Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

¹⁴⁷ 47 CFR § 1.1200 *et seq.*

77. *Additional Information.* For additional information on this proceeding, contact Hugh L. Van Tuyl, Hugh.VanTuyl@fcc.gov, (202) 418-7506.

V. ORDERING CLAUSES

78. IT IS ORDERED, pursuant to the authority found in sections 4(i), 301, 302, 303, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 301, 302a, 303, 307, that this *Notice of Proposed Rulemaking* IS HEREBY ADOPTED.¹⁴⁸

79. IT IS FURTHER ORDERED that the Commission's Office of the Secretary, SHALL SEND a copy of this *Notice of Proposed Rulemaking*, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for the Small Business Administration (SBA) Office of Advocacy.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

¹⁴⁸ Pursuant to Executive Order 14215, 90 Fed. Reg. 10447 (Feb. 20, 2025), this regulatory action has been determined to be significant under Executive Order 12866, 58 Fed. Reg. 68708 (Dec. 28, 1993).

Appendix A
Proposed Rules

For the reasons discussed in the document above, the Federal Communications Commission proposes to amend part 2 of Title 47 of the Code of Federal Regulations 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. Amend § 2.106 by adding paragraph (d)(36) to read as follows:

§ 2.106 Table of Frequency Allocations.

* * * * *

(d) * * *

(36) NG36 The bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz may be used by non-Federal stations in the mobile-satellite service (Earth-to-space) on an unprotected and non-interference basis and subject to the Commission's rules in part 25 of this chapter.

* * * * *

Appendix B

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ the Federal Communications Commission (Commission) has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the policies and rules proposed in the *Notice of Proposed Rulemaking (Notice)* assessing the possible significant economic impact on a substantial number of small entities. The Commission requests written public comments on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments specified on the first page of the *Notice*. The Commission will send a copy of the *Notice*, including this IRFA, to the Chief Counsel for the Small Business Administration (SBA) Office of Advocacy.² In addition, the *Notice* and IRFA (or summaries thereof) will be published in the Federal Register.³

A. Need for, and Objectives of, the Proposed Rules

2. As space launches and satellite deployments continue to increase, companies with space-based operations, some of which are small entities, are increasingly seeking opportunities to expand capacity, reduce costs, and increase the overall utility of their operations. The increase in space launches, coupled with the growing diversity of non-satellite spacecraft, has resulted in a growing need to support both communications in space and between Earth and space. To meet this growing need, we begin this proceeding to explore unlicensed device use in space.

3. In the *Notice*, the Commission proposes changes to our part 15 rules⁴ to enable devices operating in the bands available under part 15 to be used to communicate with satellites in space in both the Earth-to-space and space-to-Earth directions. The proposed rules seek to enable part 15 unlicensed devices to meet our objective of expanding connectivity in rural and remote locations that currently lack any communications capability. The *Notice* also proposes rules clarifying that the use of equipment authorized under the part 15 rules is permitted on board spacecraft, subject to any applicable federal agency or other restrictions. We also propose to permit certain part 15 devices to operate within spacecraft. In addition to seeking comment from small and other entities on our proposed rules, we also seek comment on the appropriate regulatory model and technical requirements necessary to prevent harmful interference to authorized services and adverse impacts on terrestrial part 15 devices, as well as other scenarios in which devices that comply with the part 15 rules could be used in space, the types of applications in which these devices could be used, the specific frequency bands that may be suitable for various applications, and the technical requirements that should apply in each case.

B. Legal Basis

4. The proposed action is authorized pursuant to sections 4(i), 301, 302, and 303 of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 201, 302a, 303 and sections 1.407 and 1.411 of the Commission's Rules, 47 CFR §§ 1.407 and 1.411.

C. Description and Estimate of the Number of Small Entities to Which the Proposed

¹ 5 U.S.C. §§ 601 *et seq.*, as amended by the Small Business Regulatory Enforcement and Fairness Act (SBREFA), Pub. L. No. 104-121, 110 Stat. 847 (1996).

² *Id.* § 603(a).

³ *Id.*

⁴ *See* 47 CFR § 15.1(a).

Rules Will Apply

5. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.⁵ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”⁶ In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act (SBA).⁷ A “small business concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.⁸ The SBA establishes small business size standards that agencies are required to use when promulgating regulations relating to small businesses; agencies may establish alternative size standards for use in such programs, but must consult and obtain approval from SBA before doing so.⁹

6. Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe three broad groups of small entities that could be directly affected by our actions.¹⁰ In general, a small business is an independent business having fewer than 500 employees.¹¹ These types of small businesses represent 99.9% of all businesses in the United States, which translates to 34.75 million businesses.¹² Next, “small organizations” are not-for-profit enterprises that are independently owned and operated and not dominant their field.¹³ While we do not have data regarding the number of non-profits that meet that criteria, over 99 percent of nonprofits have fewer than 500 employees.¹⁴ Finally, “small governmental jurisdictions” are defined as cities, counties, towns, townships, villages, school districts, or special districts with populations of less than fifty thousand.¹⁵ Based on the 2022 United States Census of Governments data, we estimate that at least 48,724 out of 90,835 local government jurisdictions have a population of less than 50,000.¹⁶

7. The rules proposed in the *Notice* will apply to small entities in the industries identified in

⁵ 5 U.S.C. § 603(b)(3).

⁶ *Id.* § 601(6).

⁷ *Id.* § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

⁸ 15 U.S.C. § 632.

⁹ 13 CFR 121.903.

¹⁰ 5 U.S.C. § 601(3)-(6).

¹¹ See SBA, Office of Advocacy, *Frequently Asked Questions About Small Business* (July 23, 2024), https://advocacy.sba.gov/wp-content/uploads/2024/12/Frequently-Asked-Questions-About-Small-Business_2024-508.pdf.

¹² *Id.*

¹³ 5 U.S.C. § 601(4).

¹⁴ See SBA, Office of Advocacy, *Small Business Facts, Spotlight on Nonprofits* (July 2019), <https://advocacy.sba.gov/2019/07/25/small-business-facts-spotlight-on-nonprofits/>.

¹⁵ 5 U.S.C. § 601(5).

¹⁶ See United States Census Bureau, 2022 Census of Governments –Organization, <https://www.census.gov/data/tables/2022/econ/gus/2022-governments.html>, tables 1-11.

the chart below by their six-digit North American Industry Classification System (NAICS)¹⁷ codes and corresponding SBA size standard.¹⁸ Based on currently available United States Census data regarding the estimated number of small firms in each identified industry, we conclude that the proposed rules will impact a substantial number of small entities. Where available, we also provide additional information regarding the number of potentially affected entities in the industries identified below.

TABLE 1. 2022 UNITED STATES CENSUS BUREAU DATA BY NAICS CODE

Regulated Industry (Footnotes specify potentially affected entities within a regulated industry where applicable)	NAICS Code	SBA Size Standard	Total Firms¹⁹	Total Small Firms²⁰	% Small Firms
Radio and Television Broadcasting and Wireless Communications Equip Manufacturing ²¹	334220	1,250 employees	155	136	87.74%
Other Communications Equipment Manufacturing ²²	334290	800 employees	310	294	94.84%
Aircraft Manufacturing ²³	336411	1,500 employees	234	209	89.32%
Wired Telecommunications Carriers ²⁴	517111	1,500 employees	3,403	3,027	88.95%
Wireless Telecommunications Carriers (except Satellite) ²⁵	517112	1,500 employees	1,184	1,081	91.30%

¹⁷ The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the United States business economy. See www.census.gov/NAICS for further details regarding the NAICS codes identified in this chart.

¹⁸ The size standards in this chart are set forth in 13 CFR 121.201, by six digit North American Industrial Classification System (NAICS) code.

¹⁹ U.S. Census Bureau, "Selected Sectors: Employment Size of Firms for the U.S.: 2022." Economic Census, ECN Core Statistics Economic Census: Establishment and Firm Size Statistics for the U.S., Table EC2200SIZEEMPfirm, 2025, "Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2022." Economic Census, ECN Core Statistics Economic Census: Establishment and Firm Size Statistics for the U.S., Table EC2200SIZEREVfirm, 2025.

²⁰ *Id.*

²¹ Affected Entities in this industry include Radio Frequency Equipment Manufacturers Uncrewed Aircraft Radio Equipment Manufacturers.

²² Affected Entities in this industry include Radio Frequency Equipment Manufacturers (Non-standard specialized equipment).

²³ Affected Entities in this industry include Uncrewed Aircraft Radio Equipment Manufacturers.

²⁴ Affected Entities in this industry include Competitive Access Providers and Competitive Local Service Providers.

²⁵ Affected Entities in this industry include 600 MHz Band, Broadband Personal Communications Service, Upper 700 MHz Band Licenses, Wireless Broadband Internet Access Service Providers, Wireless Carriers and Service Providers, Wireless Communications Services, and Wireless Telephony.

Regulated Industry (Footnotes specify potentially affected entities within a regulated industry where applicable)	NAICS Code	SBA Size Standard	Total Firms ¹⁹	Total Small Firms ²⁰	% Small Firms
Satellite Telecommunications ²⁶	517410	\$44 million	332	195	58.73%

TABLE 2. TELECOMMUNICATIONS SERVICE PROVIDER DATA

2024 Universal Service Monitoring Report Telecommunications Service Provider Data ²⁷ (Data as of December 2023)	SBA Size Standard (1500 Employees)		
Affected Entity	Total # FCC Form 499A Filers	Small Firms	% Small Entities
CAP/CLEC	655	562	85.80
Competitive Local Exchange Carriers (CLECs) ²⁸	3,729	3,576	95.90
Wireless Telecommunications Carriers (except Satellite) ²⁹	585	498	85.13
Wireless Telephony	326	247	75.77

D. Description of Economic Impact and Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

8. The RFA directs agencies to describe the economic impact of proposed rules on small entities, as well as projected reporting, recordkeeping and other compliance requirements, including an estimate of the classes of small entities which will be subject to the requirements and the type of professional skills necessary for preparation of the report or record.³⁰

9. In the *Notice*, the Commission does not propose new mandatory reporting or recordkeeping requirements for small entities. Devices operating under part 15 will continue to comply with existing equipment authorization requirements (e.g., certification or Supplier's Declaration of Conformity), thereby minimizing the economic impact to small entities of compliance with our proposed rules. We note, however, that the Commission seeks comment on whether devices intended to communicate with satellites should also obtain certification through a "license by rule" framework under

²⁶ Affected Entities in this industry include Fixed Satellite Small Transmit/Receive Earth Stations.

²⁷ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2024), <https://docs.fcc.gov/public/attachments/DOC-408848A1.pdf>.

²⁸ Affected Entities in this industry include all reporting local competitive service providers.

²⁹ Affected Entities in this industry include all reporting wireless carriers and service providers.

³⁰ 5 U.S.C. § 603(b)(4).

part 25. If adopted, this would apply only to new equipment authorizations or permissive changes, and would not require additional testing beyond part 15 compliance.

10. The proposed rules in the *Notice* are expected to have minimal economic impact on small entities and we estimate compliance costs of the proposed part 15 rule changes to be minimal or non-existent. Moreover, we expect the proposed rules will benefit small and other entities by removing regulatory barriers that prevent part 15 devices from communicating with satellites and operating within spacecraft. In addition, these changes are anticipated to create significant opportunities for innovation and service expansion, particularly for small businesses engaged in wireless equipment manufacturing, IoT deployment, and satellite communications without imposing significant new compliance obligations on small and other entities. We further expect that the economic impact for small and other entities is expected to be positive, particularly in rural and remote areas where terrestrial connectivity is limited. For example, the proposed rules, if adopted, could expand connectivity in rural and remote areas, as well as enable small entities to develop new products and services, and reduce costs associated with obtaining waivers or ad hoc approvals. These benefits include precision agriculture, environmental monitoring, emergency communication, and other IoT-based services.

11. Under the proposed rules, compliance activities would primarily involve technical staff familiar with FCC equipment authorization process, RF engineering, and regulatory filings. These skills are commonly available within small wireless equipment manufacturers and service providers. As a result, the Commission does not expect a need for small entities to hire consultants or other professionals in order to comply with the rules proposed in the *Notice*, if adopted. We seek comment from small entities as to whether the proposed rules would necessitate the hiring of additional resources in order for them to effectively comply with them.

12. As part of our invitation for comment by interested parties, we request that any small entities participating in the comment process discuss any benefits or drawbacks associated with the proposed approaches, and provide information on their current costs of compliance with the Commission's existing rules. We expect the information we receive in comments from interested parties will help the Commission in its efforts to identify and evaluate relevant matters for small entities, including compliance costs, and to identify other burdens that may result from the matters raised in the *Notice*.

E. Discussion of Significant Alternatives Considered That Minimize the Significant Economic Impact on Small Entities

13. The RFA directs agencies to provide a description of any significant alternatives to the proposed rules that would accomplish the stated objectives of applicable statutes, and minimize any significant economic impact on small entities.³¹ The discussion is required to include alternatives such as: "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."³²

14. In the *Notice*, The Commission considered several alternatives to minimize the potential for significant economic impact on small entities while achieving the objectives of this proceeding. For example, we considered retaining the existing prohibition on part 15 operations in space, which would

³¹ 5 U.S.C. § 603(c).

³² *Id.* § 603(c)(1)-(4).

avoid new compliance obligations, but would also foreclose significant benefits to small entities, such as expanded connectivity for IoT applications and reduced costs for space-based communications. This alternative was rejected because it would not meet the public interest objectives of promoting innovation and efficient spectrum use.

15. In addition, to reduce costly administrative burdens on small and other entities, we consider the adoption of a license-by-rule approach for part 15 devices communicating with satellites, similar to the Supplemental Coverage from Space (SCS) framework. This alternative would eliminate the need for individual earth station applications, thereby reducing costs and complexity for small entities while ensuring compliance with statutory licensing requirements. The Commission also considered a streamlined blanket licensing option for large numbers of technically identical devices, which would allow small entities to deploy devices under a single authorization rather than filing multiple application, thereby reducing paperwork and administrative costs. Other alternatives considered by the Commission as a means of minimizing compliance costs for small entities include: voluntary, rather than mandatory, part 25 certification and maintaining existing part 15 technical limits for Earth-to-space operations to avoid costly redesigns for small manufacturers. We note that any future changes to technical rules for space-to-Earth or EVA operations would be considered in subsequent proceedings with an emphasis on minimizing burdens. Lastly, we considered economic burdens on small entities could be significantly reduced by either implementing extended compliance times and/or by establishing exemptions from any future reporting or certification requirements to account for resource constraints on small entities. We seek comment on all of these approaches.

16. These alternatives reflect the Commission's intent to balance innovation and spectrum efficiency with minimizing compliance burdens for small entities. As the record in this proceeding is further developed, we will consider alternative proposals and approaches from commenters that would minimize the economic impact on small entities. The Commission's evaluation of the comments filed in this proceeding will shape the final conclusions it reaches, the final alternatives it considers, and the actions it ultimately takes to minimize any significant economic impact that may occur on small entities as a result of the final rules.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

17. None.