

WAIVER REQUESTS

Pursuant to Section 1.3 of the Commission’s rules, the Commission may waive its rules for good cause shown.¹ “Waiver is appropriate if special circumstances warrant a deviation from the general rule and such deviation would better serve the public interest than would strict adherence to the general rule,” including “more effective implementation of overall policy.”² In determining whether waiver is appropriate, the Commission should “take into account considerations of hardship, equity, or more effective implementation of overall policy.”³ As shown below, there is good cause for the Commission to grant a waiver, to the extent necessary, to the *Ka-band Plan* and various limitations in the Commission’s Schedule S, and to grant a waiver of Section 2.106 and certain subsections of Section 25 of the Commission’s rules.

1. Waiver of Section 2.106 and the Ka-band Plan: Feeder Links

As feeder links for its proposed direct-to-cellular system in the Mobile Satellite Service (“MSS”), SpaceX intends to use the gateway links in the Ka-band spectrum already authorized as part of its second-generation non-geostationary (“NGSO”) Fixed-Satellite Service (“FSS”) system (“Gen2 system”), as well as future E-band links, which SpaceX has requested but remain pending.⁴ Some of the Ka-band spectrum is allocated internationally and domestically for FSS and MSS (i.e., 19.7-20.2 GHz (downlink) and 29.5-30.0 GHz (uplink)).⁵ Domestically, however, the *Ka-band*

¹ 47 C.F.R. § 1.3; *see also* *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969); *Ne. Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990).

² *GE American Communications, Inc.*, 16 FCC Rcd. 11038, ¶ 9 (IB 2001) (quoting *WAIT Radio*, 418 F.2d at 1159).

³ *WAIT Radio*, 418 F.2d at 1159.

⁴ *See Space Exploration Holdings, LLC*, FCC 22-91 (rel. Dec. 1, 2022).

⁵ *See* 47 C.F.R. § 2.106.

Plan adopted by the Commission does not include this MSS allocation for these bands,⁶ and the remainder of the Ka-band spectrum licensed to SpaceX is allocated to FSS only. Similarly, most of the E-band spectrum (i.e., 71-74 GHz (downlink) and 81-84 GHz (uplink)) is allocated internationally and domestically for both FSS and MSS, but a portion does not include an MSS allocation.⁷ The Commission recently concluded that feeder links to a similar MSS system are “a use that can be considered as both FSS and feeder links for the MSS.”⁸ Thus, SpaceX’s proposed use of Ka- and E-band spectrum is consistent with the FSS allocations in those bands. Accordingly, to the extent necessary, SpaceX requests that the Commission waive Section 2.106 and the *Ka-band Plan* to allow designation of these bands for use as MSS feeder links.

Waivers of Commission allocations are generally granted “when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services.”⁹ Although in this case the allocation in much of this spectrum is consistent with SpaceX’s proposed use, the same approach could be used for waiver of the *Ka-band Plan*—and SpaceX’s request would satisfy its requirements. Indeed, this is the most rational result given that SpaceX will use these beams to support both its MSS and FSS services simultaneously. As a practical matter, there will be no distinction between SpaceX’s FSS and MSS operations in these bands, as they will have the same characteristics and SpaceX will use directional gateway antennas in both cases. From a technical

⁶ See *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, 32 FCC Rcd. 7809, Appendix B (2017) (“*Ka-band Plan*”).

⁷ See 47 C.F.R. § 2.106.

⁸ *Lynk Global, Inc.*, DA 22-969, ¶ 19 (IB 2022).

⁹ *The Boeing Company*, 16 FCC Rcd. 22645, ¶ 12 & n.48 (IB & OET 2001) (citations omitted) (“*Boeing Authorization*”) (quoting *Fugro-Chance, Inc.*, 10 FCC Rcd. 2860, ¶ 2 (IB 1995)); *Letter from Jose P. Albuquerque & Mark Settle to Suzanne Malloy*, 30 FCC Rcd. 4841, 4842 (IB & OET 2015).

perspective, the use of this spectrum for NGSO MSS operations would not be distinguishable from its use for NGSO FSS operations and thus there would be no potential for interference.

The Commission has previously granted a similar waiver for the NGSO system operated by O3b Limited (“O3b”), finding that the waiver would serve the public interest in light of the lack of distinction between MSS and FSS operations in the band.¹⁰ However, the Commission imposed two conditions with this waiver. First, although there are no equivalent power flux-density (“EPFD”) limits that apply to NGSO MSS systems, the Commission conditioned O3b’s waiver on complying with the applicable EPFD limits for FSS operations in the United States in the 19.7-20.2 GHz and 29.5-30.0 GHz bands, even when these operations are conducted within the MSS.¹¹ Second, the Commission noted that it has not adopted sharing criteria between NGSO FSS and NGSO MSS systems in the 19.7-20.2 GHz and 29.5-30.0 GHz bands, and accordingly required O3b’s NGSO MSS operations in these bands in the United States to be conducted on a non-interference, non-protected basis with respect to other NGSO FSS operations in these bands.¹² In addition, O3b’s authorization was “subject to change as the result of future Commission rulemaking decisions, including any that address technical and/or service rules for MSS or MSS feeder link bands.”¹³

¹⁰ See *O3b Limited*, 33 FCC Rcd. 5508, ¶¶ 21-22 (2018) (“*O3b Authorization*”), reconsideration denied, 35 FCC Rcd. 1631 (2020) (“*O3b Recon. Order*”).

¹¹ *O3b Authorization* ¶ 21.

¹² *Id.* ¶¶ 21-22.

¹³ *O3b Recon. Order* ¶ 6.

2. **Waiver of Sections 2.106, 25.112(a)(3), and 25.202(a)(1): Table of Frequency Allocations**

The 1910-1915 MHz and 1990-1995 MHz bands (the “PCS G Block”) currently does not have a satellite allocation under the U.S. Table of Frequency Allocations. As discussed above, the Commission will grant waivers to permit non-conforming spectrum uses “when there is little potential for interference into any service authorized under the [U.S.] Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services.”¹⁴ Under these circumstances, waiving rules that require conformity with existing frequency allocations would be consistent with Commission precedent. The Commission frequently grants waivers to provide greater flexibility in the use of a licensee’s already assigned spectrum, where doing so would not unduly affect other licensees and would improve the efficient use of spectrum.¹⁵

SpaceX’s direct-to-cellular service presents no potential for interference into any Commission authorized service within the PCS G Block. SpaceX proposes to operate in the PCS G Block on an unprotected, non-interference basis with respect to other authorized services in the United States and will operate under terms already agreed to with the spectrum’s sole U.S. licensee—T-Mobile. SpaceX will also comply with OOB and boundary field strength limits that govern the PCS G Block, and which the Commission has already deemed sufficient to protect other services. Likewise, any other frequency band that SpaceX will seek to use for mobile service in another country as described in this application will be used under similar conditions.

¹⁴ See *Boeing Authorization* ¶ 12 & n.48.

¹⁵ See, e.g., *Omnipoint Request for Broadband Declaratory Ruling or Waiver Concerning PCS Emission Limits Rule Section 24.238*, 15 FCC Rcd. 13422, ¶ 1 (WTB 2000) (waiving PCS OOB limits based on agreements between operator and adjacent-band licensee). See also *State of Florida, Department of Management Services, Division of Telecommunications*, 26 FCC Rcd. 7730, ¶ 6 (PSHSB 2011) (“the public interest will be served by grant of the waiver because the [proposed system], will provide greater spectrum efficiency—and hence enhanced communications capability”).

SpaceX’s proposed direct-to-cellular system will enhance the utilization of PCS G Block holdings in a manner fully authorized, and welcomed, by T-Mobile. The Commission, likewise, has permitted non-conforming uses where the operator agrees to comply with established technical limits known to protect other authorized services, as SpaceX would do here by complying with the technical limits in the PCS service rules.¹⁶ Accordingly, the Commission should waive requirements prohibiting direct-to-cellular operations in these frequencies.

3. Waiver of Sections 25.156(d) and 25.157: Processing Round Procedures

Under Section 25.156 and 25.157 of the Commission’s rules, applications for authority to launch and operate an NGSO-like system are ordinarily processed under a “modified processing round” framework, which would use a band splitting mechanism to share spectrum among competing applicants.¹⁷ The primary purpose of the processing round procedure is to prevent one applicant from unreasonably precluding additional entry by other satellite operators in the requested frequency band.¹⁸ The Commission, however, has waived the processing round requirement and allowed NGSO systems access to the entire frequency band when doing so will not preclude additional entry.¹⁹ The Commission should do so here in the PCS G Block. A

¹⁶ See, e.g., *ContactMEO Communications, LLC*, 21 FCC Rcd. 4035, ¶¶ 1, 26-27, 39 (IB 2006) (permitting NGSO FSS downlinks, from three or four satellites, in a GSO FSS band, conditioned on compliance with Article 22’s EPFD limit); *Northrop Grumman Space & Mission Systems Corporation*, 24 FCC Rcd. 2330, ¶¶ 71, 76, 90 (IB 2009) (“*Northrop Grumman*”) (same); *Boeing Authorization* ¶¶ 16-17 (permitting aeronautical MSS uplinks in FSS spectrum based on compliance with protection measures endorsed by Working Party 4A).

¹⁷ See 47 C.F.R. §§ 25.156(d)(1), 25.157.

¹⁸ See *Streamlining Licensing Procedures for Small Satellites*, 33 FCC Rcd. 4152, ¶ 41 (2018) (“The Commission adopted this [processing round] approach for NGSO-like satellite systems because of the possibility of otherwise unreasonably limiting additional market entry if licenses were granted on a first-come, first-served basis.”); see also *Amendment of the Commission’s Space Station Licensing Rules and Policies*, 18 FCC Rcd. 10760, ¶ 25 (2003); *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, 32 FCC Rcd. 7829, ¶ 61 (2017).

¹⁹ See, e.g., *Iridium Constellation LLC*, 31 FCC Rcd. 8675, ¶ 41 (IB & OET 2016) (“*Iridium*”) (waiving processing round requirements for an NGSO system because access will not preclude additional entry); *O3b Limited*, 30 FCC Rcd. 6115 (IB 2015); *Northrop Grumman* ¶¶ 23-34; *Space Imaging, LLC*, 20 FCC Rcd. 11964, ¶ 10 (IB 2005) (same); *Lockheed Martin Corporation*, 20 FCC Rcd. 11023, ¶ 15 (IB 2005) (same).

processing round would cause needless delay under the circumstances presented by this application for at least the reasons set forth below.

First, a processing round is unnecessary because licensing SpaceX would not preclude additional market entry. T-Mobile has decided to partner exclusively with SpaceX to ensure state-of-the-art, rapidly deployed, carefully coordinated operations on commercially acceptable terms and conditions. No other satellite applicant would have the right to operate in the frequencies at issue, thus a processing round is unnecessary.

Second, the text of the Commission's rules confirms that processing round procedures do not apply to this application. Processing rounds allow the Commission to engage in "comparative consideration with one or more *mutually exclusive* applications" filed "by the 'cut-off' date specified" in an initiating public notice.²⁰ For applications to be "mutually exclusive," however, the grant of one must "effectively preclude" the grant of the other.²¹ Yet for the reasons explained, it would be impossible for the Commission to attract "mutually exclusive" applications if a processing round were held under these circumstances. Any other application would be facially defective because the applicant would lack the right to use the frequencies in question and thus could not possibly preclude granting SpaceX's application.

Third, in addition to undermining T-Mobile's rights as a licensee, holding a processing round would be completely inconsistent with the Commission's secondary market policies. Those policies allow terrestrial licensees to determine to whom they will grant spectrum use rights based

²⁰ 47 C.F.R. § 25.155(b) (emphasis added).

²¹ *Id.* § 25.155(a).

on the marketplace.²² They do not allow the Commission to second-guess those decisions or engage in its own “comparative consideration” of the issue.

Last, waiving the processing round procedure would avoid costly regulatory delays to the introduction of direct-to-cellular services. SpaceX expects to deploy enough satellites to support the service as soon as mid-2023. Given this timeline, announcing a processing round, setting a “cut-off” date, and engaging in needless bureaucratic review of unmeritorious applications would require SpaceX and T-Mobile to defer the introduction of the service and its availability to T-Mobile’s base of more than 100 million subscribers. Because the direct-to-cellular system may provide the *only* form of connectivity for mobile users in unserved or underserved locations—and in some emergencies—such a delay would be uniquely harmful to the public interest. Given these stakes, the Commission should not go through process just for process’s sake. It should grant SpaceX’s application expeditiously without starting an unnecessary processing round.

4. Waiver of Sections 25.112(a)(3) and (b): Acceptability for Filing

Sections 25.113(a)(3) and (b) provide that, to be acceptable for filing, a space station application cannot request authority to operate in a frequency band not allocated internationally for such use.²³ Because certain frequency bands discussed in this application are not allocated for MSS operations internationally, SpaceX requests a waiver of this rule to allow the application to be accepted for filing and for the proposals discussed therein to be fully evaluated and discussed on the record.

²² See, e.g., *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, 18 FCC Rcd. 20604, ¶ 44 (2003).

²³ See 47 C.F.R. §§ 25.113(a)(3) and (b).

The Commission has waived this rule in the past when applicants have shown that their applications are more than “mere ‘placeholders’ for future service, while the applicant pursued changes to the ITU Radio Regulations necessary to permit that service.”²⁴ In fact, the Commission has specifically done so in cases where applicants have sought authorization to provide MSS service in bands not allocated internationally for MSS.²⁵ While the Commission has disfavored applications where international operations were premised on an amendment to the International Table of Frequency Allocations, it has accepted applications that include a viable strategy for operation, and where the “allocation in these bands do[] not necessarily preclude initiation of service.”²⁶ This includes cases where the applicant does not propose to operate in a band “pursuant to an allocation, but will operate on a non-harmful interference basis with respect to any allocated services in the band.”²⁷

That is precisely the case here. SpaceX’s operations would occur—if not pursuant to an international MSS allocation, where available—on a non-interference basis under Article 4.4 of the ITU Radio Regulations. The specifics of these operations will be addressed in each case via direct partnership with the appropriate terrestrial carrier and the approval of the local regulator, as exemplified by SpaceX’s partnership with T-Mobile to operate in the PCS G-Block in the United States.

Furthermore, given the dramatic benefits of providing mobile service directly to mobile handsets via satellite, the public interest weighs strongly in favor of such a waiver. The SpaceX direct-to-cellular system is prepared to deliver immediate and significant enhancement in mobile

²⁴ *In the Matter of Intelsat N. Am., LLC*, 22 FCC Rcd. 11989, ¶¶ 8-10 (2007).

²⁵ *See Iridium* ¶ 19 (waiving section 25.112(a)(3) to consider an application for MSS operations in bands lacking an international MSS allocation).

²⁶ *Id.*

²⁷ *Orbcomm License Corp.*, 23 FCC Rcd. 4804, ¶ 20 (2008).

service coverage on already licensed frequencies through using hosted payloads on already authorized satellites as part of its Gen2 system. As a result, the SpaceX direct-to-cellular system will promote competition for mobile voice, data, and text services without affecting other Commission licensees and while conserving scarce spectral and orbital resources, all while posing no discernable space safety risks of any kind.

Accordingly, because of the strong public interest in processing SpaceX's application, and because SpaceX can operate internationally in the absence of an ITU allocation, waiver is appropriate.

5. Waiver of Sections 25.102(a) and 25.115(a)(1)(i): Blanket Earth Station Licensing

Sections 25.102(a) and 25.115(a)(1)(i) generally require prior authorization before transmitting from an earth station.²⁸ In turn, the Commission's rules define an "earth station" to mean RF devices on the Earth's surface that are "intended for communication" with a space station or other earth stations by a reflecting satellite.²⁹ SpaceX's direct-to-cellular system would operate with off-the-shelf mobile devices that are "intended for communication" with terrestrial networks, not satellites. Such devices would be intended to transmit to a terrestrial base station and would switch to a direct-to-cellular payload only when a terrestrial base station is out of reach or unavailable.

To the extent the Commission determines that Sections 25.102(a) and 25.115(a)(1)(i) require an earth station license for mobile devices that communicate with the direct-to-cellular payload, SpaceX requests a waiver of this requirement. Commission licenses are intended to ensure the operation of transmitting devices in a manner consistent with technical rules intended

²⁸ See 47 C.F.R. §§ 25.102(a), 25.115(a)(1)(i).

²⁹ See 47 C.F.R. § 25.103.

to prevent harmful interference.³⁰ In this case, other Commission requirements already serve that purpose. The Commission's equipment authorization requirements verify compliance with technical rules regarding operation in the 1910-1915 MHz uplink band. Users would not need to modify these authorized devices in any way, including in ways that might potentially affect the device's emissions characteristics, in order to access the SpaceX direct-to-cellular payload.

Under these circumstances, separate licensing under Part 25 would be worse than superfluous—it also would be extremely burdensome on consumers, SpaceX, T-Mobile, and the Commission alike. If an additional layer of user terminal authorizations were required under Part 25, SpaceX would need to constantly monitor the marketplace for the introduction of new mobile devices permitted to operate in the PCS G Block. It then would potentially need to seek modifications of the blanket earth station licenses granted to permit direct-to-cellular communications to accommodate such devices, which Commission staff would need to review and process. In the interim, SpaceX and T-Mobile would need to take steps to ensure that the new devices pending licensing do not operate with direct-to-cellular payloads, thereby limiting the capabilities of otherwise authorized devices and potentially causing unnecessary customer confusion. Accordingly, the Commission should waive Part 25 user terminal licensing requirements, to the extent it believes those requirements would apply in this circumstance.

6. Waiver of Section 25.114(a)(1): Limitations in Schedule S

As required by the Commission's rules,³¹ SpaceX has submitted with this application a completed Schedule S, which contains certain technical information in a prescribed form.

³⁰ See, e.g., *Am. Radio Relay League, Inc. v. FCC*, 524 F.3d 227, 234-35 (D.C. Cir. 2008); *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, 19 FCC Rcd. 24558, ¶¶ 66-71 & n.179 (2004).

³¹ See 47 C.F.R. § 25.114(a)(1).

However, SpaceX has found that it cannot accurately describe its system in certain respects due to limitations in Schedule S itself. Below we discuss aspects of the SpaceX direct-to-cellular system and how the Schedule S was completed under these constraints. To the extent necessary, SpaceX requests that the Commission waive these aspects of Schedule S in light of these limitations.³²

Because SpaceX does not seek to change the orbital characteristics of the satellites subject to this modification, SpaceX has included the orbital characteristics of the Gen2 system in this application by reference.³³ However, Schedule S requires the submission of orbital information. Accordingly, SpaceX has provided a sample of its information in the electronic version of Schedule S merely to satisfy the validation requirements of the form, but—for the avoidance of doubt—does not seek to alter these already-authorized orbital parameters. In addition, because the Commission granted SpaceX authority to launch and operate up to 7,500 satellites in three orbital shells at 525 km, 530 km, and 535 km altitudes, SpaceX has included the full complement of satellites requested in these three shells for purposes of the Schedule S.³⁴ SpaceX will operate direct-to-cellular payloads on up to 7,500 satellites within the Gen2 system, as initially authorized by the Commission, while awaiting deferred consideration by the Commission of the additional satellites originally proposed.³⁵ As a result, not all aspects of the system will be accurately captured in Schedule S. For example, the “Total Number of Satellites in the Active Constellation” will

³² The Commission has previously granted a similar request where SpaceX implemented a workaround for each of the limitations it identified in Schedule S. *See Space Exploration Holdings, LLC*, 34 FCC Rcd. 12307, ¶ 17 (IB 2019).

³³ *See* 47 C.F.R. § 25.117(c).

³⁴ *See Gen2 Authorization* ¶ 19.

³⁵ *Id.*; *see also* Application for Approval of Orbital Deployment and Operating Authority for the SpaceX Gen2 NGSO Satellite System, IBFS File No. SAT-LOA-20200526-00055 (filed May 26, 2020); Amendment, IBFS File No. SAT-AMD-20210818-00105 (filed, Aug. 18, 2021).

reflect the number provided in the sample rather than the total number in the SpaceX direct-to-cellular system.

Additionally, Section 25.114(c)(4)(v) requires both the minimum and maximum saturation flux density (“SFD”) values for each space station receive antenna that is connected to transponders. The concept of SFD only applies to “bent pipe” satellite systems, and thus is not relevant to the SpaceX direct-to-cell system. However, the Schedule S software does not allow an entry of “not applicable.” Instead, it requires a numerical entry for SFD, which must be different for the maximum and minimum values. In order to accommodate this requirement, SpaceX has entered values of “0” and “-0.1” in Schedule S with respect to these parameters.