

**Before the
Federal Communications Commission
Washington, DC 20554**

Request of

SpaceQuest, Ltd.

Amendment to Application for
Authority to Operate the AprizeSat-8
and AprizeSat-10 Satellites

Call Sign: S3085

File No. _____

**Amendment to Application for Authority to Operate
the AprizeSat-8 and AprizeSat-10 Satellites**

Pursuant to Section 25.116 of the Federal Communications Commission’s (“Commission”) rules, 47 C.F.R § 25.116, SpaceQuest, Ltd. (“SpaceQuest”), hereby amends its application for authority to operate the in-orbit AprizeSat-8 and AprizeSat-10 non-geostationary orbit (“NGSO”) small satellites (“smallsats”) (together, the “AprizeSats”) pursuant to Federal Communication Commission’s (“Commission”) streamlined small space station rules (the “Application”).¹ SpaceQuest amends the Application to (i) withdraw its request for certain frequency bands, and (ii) request additional waivers of the Commission’s rules out of an abundance of caution. The changes described herein simplify the requested authorization and grant of the Application, as amended, will ensure that the AprizeSats can be used to conduct vital satellite-based vessel tracking operations for Federal government and other customers and, therefore, would be consistent with the public interest.

¹ SpaceQuest, Ltd., File No. SAT-LOA-20210503-00058, Call Sign S3085 (filed May 3, 2021) the “Application”).

I. DISCUSSION

Through its Application, SpaceQuest requests authority to operate the in-orbit AprizeSats using VHF, UHF, and S-band frequencies.² In the context of discussions with the International Telecommunication Union (“ITU”) staff, SpaceQuest clarified that it sought to operate in four narrowband channels allocated for maritime mobile-satellite service within the 156.5-162.5 MHz band for maritime automatic identification system (“AIS”) receive operations. Consultations with Commission staff also revealed the need to update certain aspects of the Application to facilitate processing. Accordingly, SpaceQuest hereby amends the Application to withdraw its request for certain sub-bands within the 156.5-162.5 MHz band and to include additional waivers to facilitate processing of the application. All other information provided in the Application remains the same.

A. Withdrawal Of Certain Requested Frequency Bands

The Application requests authority to operate throughout the entire 156.5-162.5 MHz (Earth-to-space) band for maritime AIS receive operations.³ Sub-bands within that range are allocated for reception by satellites in the mobile-satellite service (“MSS”) on a primary basis.⁴ SpaceQuest otherwise requested a waiver of the Commission’s rules to the extent necessary to permit reception of AIS signals by the AprizeSats throughout the 156.5-162.5 MHz band.⁵ These receive-only satellite operations would cause no interference to authorized, co-frequency operations and would not constrain current or future operations in the band.

² See *Application*, Narrative at 4 (requested frequencies include: (i) 145.9-146.0 MHz band (Earth-to-space); (ii) 156.5-162.5 MHz band (Earth-to-space); (iii) 399.9-400.05 MHz band (Earth-to-space); (iv) 400.5-400.65 MHz band (space-to-Earth); and (v) 2300-2305 MHz band (space-to-Earth)).

³ AIS uplink operations are described in greater detail in the Technical Appendix. See *Application*, Technical Appendix at Section A.6.

⁴ See 47 C.F.R. § 2.106, footnotes US52, 5.226, 5.228.

⁵ See *Application*, Narrative at 16.

After reviewing its initial request and to facilitate ITU coordination, SpaceQuest has determined that it does not require the use of the full 156.5-162.5 MHz band (Earth-to-space) for maritime AIS receive operations.⁶ The AprizeSat receivers are instead tuned to the four narrowband channels allocated for maritime MSS within the 156.5-162.5 MHz band – 161.9625-161.9875 MHz (“AIS 1”), 162.0125-162.0375 MHz (“AIS 2”), 156.7625-156.7875 MHz (“AIS 3”), and 156.8125-156.8375 MHz (“AIS 4”). Because several sub-bands within the 156.5-162.5 MHz band are not allocated for such AIS services, this change simplifies the frequency request for AIS operations and therefore serves the public interest.

II. ADDITIONAL WAIVER REQUESTS

As established in the Application narrative, the Commission may waive any of its rules for “good cause” shown.⁷ Waiver of a rule is appropriate if (i) special circumstances warrant a deviation from the general rule; and (ii) such deviation would better serve the public interest than would strict adherence to the rule.⁸ As discussed below, special circumstances justify grant of these requested waivers and grant will not undermine the policy objectives of the rules and otherwise be consistent with the public interest to permit SpaceQuest to operate the AprizeSats on a commercial basis.

A. Waiver of § 25.112(a)(3) Dismissal of Applications

Out of an abundance of caution, SpaceQuest requests a waiver Section 25.112(a)(3), which provides that an application will be deemed unacceptable for filing when the applicant requests authority to operate a space station in a frequency band that is not allocated

⁶ AprizeSat-8 and AprizeSat-10 were launched into low-Earth orbit in 2013 and 2014, respectively, to validate an innovative smallsat-based architecture for tracking and monitoring high-value maritime assets through the AIS.

⁷ See *id.*, Narrative, 11 (citing 47 C.F.R. § 1.3; *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969)).

⁸ *Id.*

internationally for such operations.⁹ In adopting its streamlined small space station rules, the Commission stated that it will review requests for non-conforming operations (with requests for waivers) of small satellites on their merits in the context of specific applications filed under the streamlined rules, on a case-by-case basis, without deeming those applications unacceptable for filing as is required under current Part 25 rules.¹⁰ To the extent the Application is not considered under Section 25.122's small space station provisions, SpaceQuest requests a waiver of Section 25.112(a)(3) as may be necessary to accept and process the application.

The Commission has previously granted waivers of Section 25.112(a)(3) where the absence of a current allocation does not preclude initiation of service and thus is not a "place holder" application.¹¹ Under such circumstances, permitting operators the flexibility to operate in such spectrum is consistent with the public interest and a waiver would be warranted.¹²

Waiver of Section 25.112(a)(3) to permit SpaceQuest to operate in the 145.9-146.0 MHz band for backup TT&C uplink and the 2300-2305 MHz band for data downlinks is consistent with the public interest.¹³ First, SpaceQuest's use of the 145.9-146.0 MHz band is for emergency TT&C backup only, and TT&C operations will otherwise occur in the UHF bands allocated to the Mobile Satellite Service. Moreover, SpaceQuest has operated in both the 145.9-

⁹ See 47 C.F.R. § 25.112(a)(3); *see also* Space Station Licensing Reform Order, 18 FCC Rcd 10783 at ¶¶ 49, 124 (the Commission will typically return as "premature" applications seeking to operate in frequencies for which there is no international allocation because of the time it takes for the ITU to adopt an international frequency allocation).

¹⁰ Streamlining Licensing Procedures for Small Satellites, *Report and Order*, 34 FCC Rcd 13077 (Aug. 1, 2019) at ¶ 115.

¹¹ See Iridium Constellation, LLC, *Order & Authorization*, File No. SAT-MOD-20131227-00148, Call Sign S2110 (granted Aug. 1, 2016) at ¶¶ 22, 48 (waiving section 25.112(a)(3) to permit consideration of Iridium's request for operations in bands which were not allocated internationally for MSS).

¹² *Id.*

¹³ See 47 C.F.R. § 2.106 (the 145.9-146.0 MHz (Earth-to-space) band is allocated to the amateur and amateur-satellite service; the 2300-2305 MHz (space-to-Earth) band is allocated to the amateur service).

146.0 MHz band and the 2300-2305 MHz band on an experimental basis since the launch of the AprizeSats. The technical characteristics of such frequency operations cannot now be changed, and therefore should not be considered merely a “place holder” request for spectrum.

SpaceQuest has also requested a waiver of the Commission’s table of frequency allocations to permit these non-conforming operations in the relevant frequencies.¹⁴ Considering the foregoing, the public interest strongly favors grant of a waiver of Section 25.112(a)(3) to facilitate commercial operations of the AprizeSats.

B. Waiver of Certain Administrative Processing Rules

SpaceQuest respectfully requests a waiver of Sections 25.155(b) and 25.157(c) of the Commission’s rules, which set forth administrative procedures for consideration of applications for NGSO-like systems.¹⁵ Waiver would not undermine the purpose of the rules because

(i) SpaceQuest has filed its application pursuant to the Commission’s small space station rule explicitly exempting such applications from processing rounds; and (ii) SpaceQuest’s operations in the 399.9-400.05 MHz band and 400.05-400.65 MHz band (the “UHF bands”) will be conducted on a non-interference, non-protection basis with respect to other authorized systems in the band. Waiver therefore serves the public interest better than strict adherence to the rule.

1. Sections 25.157(c), NGSO Application Processing Rounds

Under Section 25.157(c) of the Commission’s rules, applications that are deemed acceptable for filing are processed under a processing round framework, which uses a band-splitting sharing mechanism to divide spectrum among competing applicants.¹⁶ The

¹⁴ See *Application*, Narrative at 15-16.

¹⁵ 47 C.F.R. §§ 25.155(b), 25.157(c). To the extent necessary, SpaceQuest also seeks a waiver of 47 C.F.R. § 25.156(d), which would otherwise require consideration of the application pursuant to the procedures in 25.157, for the same reasons set forth in this amendment.

¹⁶ 47 C.F.R. § 25.157(c).

Commission, however, has determined that small space station applications filed under Section 25.122 may be processed without a processing round.¹⁷ The Commission has also waived the processing round requirement for other Part 25 applications and allowed access to frequency bands when doing so will not preclude additional entry.¹⁸ SpaceQuest requests a waiver of Section 25.157(c) to the extent necessary to process the Application without a processing round.

SpaceQuest will operate the AprizeSats in the requested frequencies on a non-interference, non-protection basis and, therefore, grant of the application would not preclude additional entry of any other applications seeking to use these bands. The use of UHF bands for the limited purpose of providing TT&C to the AprizeSats is not a traditional service which might otherwise necessitate a processing round. Such TT&C operations will be limited in frequency and time and will otherwise be performed to avoid interference to any authorized users of the UHF band. SpaceQuest will also operate the AprizeSats in conformance with the relevant power flux density requirements in the Commission's rules further mitigating interference concerns.¹⁹ Considering these elements, grant of a waiver would not undermine the policy objective of the rule – to prevent earlier authorized NGSO systems from precluding later filed systems from operating – and will further the public interest by ensuring SpaceQuest may provide its service on a commercial basis.

¹⁷ *Id.* at § 25.157(i).

¹⁸ See O3b, File No. SES-LIC-20100723-00952, Call Sign E100088 (granted Sept. 25, 2012); *see also* Northrop Grumman Space & Missions Systems Corporation, 24 FCC Rcd 2330, (2009) at ¶¶ 29, 34 ("Northrop Grumman"). *See also* Space Imaging, LLC, 20 FCC Rcd 11964 (2005) at ¶¶ 10-11 ("Space Imaging"); Lockheed Martin Corporation, 20 FCC Rcd 11023 (2005) at ¶ 15; and Digital Globe, Inc., 20 FCC Rcd 15696 (2005) at ¶ 8 ("Digital Globe").

¹⁹ *See Application*, Technical Appendix at Section A.8.

2. *Section 25.155(b), Mutually Exclusive Applications*

SpaceQuest additionally seeks a waiver of Section 25.155(b) to the extent this rule may be interpreted to require Commission consideration of SpaceQuest's application in a new processing round. Pursuant to Section 25.155(a), applications are mutually exclusive only "if their conflicts are such that the grant of one application would effectively preclude by reason of harmful interference, or other practical reason, the grant of one or more other applications."²⁰ Section 25.155(b) provides that "[a] license application for NGSO-like satellite operation, as defined in §25.157(a), will be entitled to comparative consideration with one or more mutually exclusive applications only if the application is received by the Commission in a condition acceptable for filing by the 'cut-off' date specified in a public notice."²¹

Because SpaceQuest will operate the AprizeSats on a non-interference, non-protection basis, grant of the immediate application would not preclude by reason of harmful interference the grant of any other applications seeking to use these bands. Waiver of Section 25.155(b), therefore, is warranted to the extent it could be interpreted to require consideration of other UHF band applications.

III. **PUBLIC INTEREST CONSIDERATIONS**

SpaceQuest recognized early on the potential of smallsat-based AIS technology and pioneered the collection and analysis of raw AIS signals from space in 2007. At its own expense, the company developed smallsat-based AIS technology, data collection payloads, and processing software. Grant of the Application, as amended, will promote the public interest by permitting continued operation of the AprizeSats to support important AIS operations for Federal government and other customers.

²⁰ 47 C.F.R. § 25.155(a).

²¹ *Id.* at § 25.155(b).

Continued access to the AprizeSats' smallsat-based AIS architecture will enable the U.S. government and commercial users to globally track and monitor maritime vessels, including those which may present a threat and those that may be threatened. Enhancing maritime domain awareness enhances national security, safety, economic, and environmental interests. Accordingly, grant of the application, as amended, would strongly serve the public interest.

IV. CONCLUSION

For the foregoing reasons, and for the reasons set forth in the Application, SpaceQuest requests that the Commission authorize the AprizeSats for the limited duration of a small satellite license in order to serve key government agencies and commercial entities consistent with the public interest.