

# FCC Adopts New Rules for Small Satellite Licensing

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On August 1, 2019, the Federal Communications Commission (Commission) adopted a Report and Order establishing a new, optional licensing process within part 25 of the Commission's rules tailored specifically to small satellite (small sat) applicants. The new small sat rule has a lower application fee and shorter review timeline than the currently applicable process. The decision will limit the regulatory burdens placed on small sat applicants, offer radiofrequency interference protection for critical communication links, and promote orbital debris mitigation and efficient use of spectrum.

This new small sat process will add to, rather than replace, the existing satellite authorization processes laid out in parts 5, 25, and 97 of the Commission's rules. The Commission established eligibility characteristics for small sat systems to be authorized under the new process, exempted qualifying applicants from the Commission's current processing round procedures, enabled qualifying applicants to take advantage of a one-year grace period from posting a surety bond, and adopted a new \$30,000 small sat application fee and a regulatory fee category.

## A. Adoption of a Streamlined Small Satellite and Small Spacecraft Process

The Commission established an optional streamlined part 25 process for applicants seeking small sat authorizations. The goal of this new small sat process is to enable satellites that have shorter missions, require less intensive spectrum use, and pose a lower orbital debris risk to be licensed on a streamlined basis. (¶ 10).

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Under existing rules, some commercial applicants have applied for authorization under the Commission's experimental licensing program – which is restricted for non-commercial uses – to avoid paying the costlier part 25 application fee. The new streamlined process will resolve this issue by authorizing both commercial and non-commercial use systems subject to a reduced filing fee. Non-commercial use applicants may continue to apply for an experimental license under part 5, however. (¶ 11).

The new streamlined process will also be available to entities seeking access to the U.S. market using non-U.S.-licensed space stations. Market access small sat applicants must comply with the small sat streamlined process rules, application and regulatory fees, and part 25 rules currently applicable to market access entities. The Commission adopted minor revisions to Section 25.137 of its rules concerning U.S. market access to add references to the new streamlined process. (¶ 14).

The Commission also made the new streamlined process available to spacecraft with non-Earth orbit missions and adopted the term “small spacecraft” to refer to these space stations, to avoid confusing them with small sats. (¶ 16).

#### B. Characteristics of a Satellite or System Qualifying for Streamlined Processing

The Commission laid out several characteristics that applicants for satellites or satellite systems must possess to use the new streamlined application process. (¶ 18). These characteristics include:

- Ten or fewer satellites under a single authorization.
- A six-year or less total in-orbit satellite lifetime.
- A maximum individual satellite wet mass of 180 kg.
- Either propulsion capabilities or deployment below 600 km in altitude.
- The ability to share use of the authorized frequency band with current operations, without also materially constraining future satellite entrants seeking to use the band.
- Relatively low risk from an orbital debris perspective, as assessed through additional ascertainable characteristics.

##### 1. Number of Satellites

An individual streamlined part 25 license may authorize no more than 10 satellites. (¶ 21). However, the Commission placed no limit on the number of streamlined licenses that a single entity may obtain. As such, applicants for the streamlined process will have to identify any related applications or grants, so that the Commission can better understand system operations. (¶ 22). Additionally, each streamlined process applicant will have to prove in its application that its proposed operations can co-exist with other operations in the requested frequency band. (¶ 25).

The application fee associated with each license application through the streamlined process will increase with each subsequent application an entity files. After a certain number of licenses, this fee will equal the cost of applying for a regular part 25 license, to dissuade applicants that would be better suited to apply through the regular part 25 process from circumventing their current obligations. (¶ 26). However, the Commission imposed no limit on the number of pending applications or licensed-but-unbuilt systems for streamlined applicants. (¶ 29)

## 2. Planned In-Orbit Lifetime

Applicants seeking to use the streamlined process will have to certify that the maximum in-orbit lifetime of any individual satellite in its system will be six years or less, including time to deorbit. (¶ 31). This in-orbit lifetime limit can be satisfied by either placing the satellite into an orbit from which it will passively deorbit within six years, or through a satellite design that ensures deorbiting within six years by active means, like propulsion. Accordingly, the Commission will require applicants to describe the planned deorbit methodology in the application, which will support the applicant's certification. (¶ 35).

## 3. License Term

Consistent with the required six-year in-orbit lifetime, all operations under any individual license acquired through the new streamlined process must be completed within six years as well. (¶ 36). Additional satellites covered by the same license, but launched at a later date, will fall into the license timeline of the first satellite's placement into orbit, and the license term will be calculated from the time when the first satellite is placed into its authorized orbit and begins operating (¶¶ 37-38).

Licenses granted under these new rules will be valid only for the original satellite(s) launched and operated by the licensee without the possibility for replacement (e.g., replenishment of a constellation). Although the Commission declined to adopt a process for license extensions on a routine basis for launch delays, it did not rule out the possibility of license extensions in other limited circumstances outside the control of the applicant, like a loss of a satellite because of a launch failure. Further, the Commission envisioned that if a satellite is lost because of a documented launch failure, it could be "replaced" within the license grant. (¶ 41).

## 4. Deployment Orbit and Maneuverability

Applicants will have to certify that their satellite either will be deployed below 600 kilometers or will have sufficient propulsion capabilities to perform collision avoidance maneuvers and deorbit within the six-year in-orbit lifetime. The Commission does not require small sats without propulsion capabilities to operate below 400 kilometers (the approximate altitude of the International Space Station). (¶ 42). However, applicants will have to describe the design and operational strategies that will be used to avoid collision with crewed spacecraft. (¶ 48)

The Commission concluded that it did not need to adopt additional, more stringent requirements to protect other operators from streamlined process-licensed satellites. It determined that such concerns should be addressed in the Commission's separate proceeding on orbital debris. (¶ 48).

## 5. Maximum Spacecraft Size

Each Earth-orbiting satellite authorized under the streamlined process must have a maximum mass of 180 kilograms. (¶ 49). Consistent with how NASA describes a “small spacecraft,” the Commission adopted a 180 kilogram “wet mass” limit, which means that this limit includes the weight of a satellite’s propellant. (¶ 52).

## 6. Trackability

Each satellite authorized under the streamlined process must measure at least 10 centimeters in its smallest dimension, and these spacecraft must have unique telemetry markers. (¶¶ 54, 56).

## 7. Casualty Risk

Applicants under the new streamlined process must certify that their satellite(s) will complete atmospheric re-entry following conclusion of the mission, that they have conducted a casualty risk assessment using either the NASA Debris Assessment Software or another higher fidelity model, and that this assessment resulted in a human casualty risk of zero. (¶ 59).

## 8. Cessation of Emissions

Applicants must certify that they will have adequate control of radiofrequency operations and can eliminate immediately any harmful interference consistent with the Commission’s rules or conditions in the space station authorization. Satellites must have the capability for immediate cessation of emissions upon receipt of a telecommand from the ground. For some operations, the ability to eliminate immediately harmful interference may also require that transmissions are initiated only by ground command, where, for example, there are few earth stations communicating with the satellite(s). (¶ 61).

## 9. Streamlined Small Spacecraft Process

Small spacecraft with planned non-Earth orbiting missions, such as commercial lunar missions, may also file under the streamlined process. The FCC will exempt these spacecraft from several certification requirements under the streamlined process, but will subject applicants to modified versions of others. (¶¶ 65-66). These applicants will be exempt, for example, from certifications for disposal by atmospheric re-entry and deployment altitude. However, they must describe their disposal plan, given that there are several potential disposal scenarios, and will need to certify that the maximum mass of these spacecraft, including fuel, is 500 kilograms. (¶ 66). These spacecraft will be subject to the same six-year maximum license term as other streamlined process applicants. (¶ 67).

## 10. Operational Debris and Collision Risk

Finally, applicants for the streamlined process must certify that their satellites will not release operational debris during their mission lifetimes and that the satellite operator has assessed and limited the probability of accidental explosions, including those resulting from the conversion of energy sources on board the space station into energy that fragments the spacecraft. (¶ 69). Applicants will also have to certify that the

probability of each individual satellite's risk of in-orbit collision with large objects is less than 0.001. (¶ 70).

#### 11. Other Characteristics

The Commission found that it would not be necessary to adopt generalized limitations on spectrum use for streamlined small sats, other than the sharing requirements described above. (¶ 73). Similarly, the Commission declined to adopt a separate "spectrum efficiency" qualifying characteristic or to prioritize certain types of sharing within the streamlined process. (¶ 75).

#### C. Application Requirements

Applicants will use Form 312 and Schedule S under the new streamlined process. (¶ 76). The Commission declined to specify a single format for submitting information in response to orbital debris mitigation requirements, such as an Orbital Debris Assessment Report. However, the Commission nonetheless advised that applicants prepare an Orbital Debris Assessment Report, or a similar document outlining the process used to verify the accuracy of certifications. The Commission expects that all applicants will use the NASA Debris Assessment Software or other higher fidelity modeling tools to perform calculations necessary to address the various required certifications and will maintain documentation associated with each of the certifications for inclusion in the public application file upon request. Further, because certifications will not always address all required disclosures under the Commission's debris mitigation rules, applicants will need to submit narrative information in addition to certifications. (¶ 80).

#### D. Application Processing

Applicants under the streamlined process will not be subject to processing round procedures or default service rules. (¶ 80). Instead, an applicant will have to (i) certify that operations of its satellites will not interfere with those of existing operators; (ii) certify that it will not materially constrain future operators from using the assigned frequency band(s); and (iii) provide a brief narrative description showing the methods by which both current and future operators will not be materially constrained. (¶ 81).

Examples of applications that might satisfy these sharing requirements may include scenarios where a satellite operates with only a few earth stations and downlinks during short periods of time, with the ability to schedule transmissions so that future satellite entrants can be accommodated. The Commission will dismiss, without prejudice, applications that fail to satisfy the sharing demonstration under part 25 procedures. Satisfying this obligation does not guarantee the Commission will grant the application. Proposed radio frequency operations will be subject to further review for compliance with the Commission's rules and policies. As with a regular part 25 application, the streamlined process systems may require coordination with other operations in the band and may be subject to additional licensing conditions. (¶ 81).

#### E. Interference Protection Status

Small sats authorized through the streamlined process will, in general, have status consistent with the relevant service as allocated in the U.S. Table and will be subject to the same rules as a regular part 25 licensee on sharing with systems operating in frequencies allocated to other services, including non-satellite services. However, the Commission will evaluate small sat applications filed under the streamlined process on a case-by-case basis, and if necessary, may impose certain other conditions to minimize adverse effects of such operations on current or potential future use of the relevant bands by satellite and non-satellite services, including the protection of, or acceptance of interference from, satellite and non-satellite services. In evaluating the effects of small sat operations on current or potential use of the relevant bands by other services, the Commission will evaluate the proposed operations as it would those of any other system filed under part 25. For operations in bands shared with Federal users, conditions may also be imposed as required per coordination of the requested operations with Federal users. (¶ 91).

Further, streamlined small sats will operate on a non-interference basis relative to regularly-authorized part 25 satellites operating in the same service. (¶ 92).

#### F. Revised Bond Requirement

There will be a one-year “grace period,” applicable to small sat streamlined licensees, during which the licensees would not need to post the surety bond required under the Commission’s rules. This grace period would begin 30 days after the license was granted. If, by the end of the one-year grace period, a streamlined small sat license recipient has launched, placed into orbit, and operated 50% of the maximum number of space stations authorized for service, then no bond will be required. (¶ 93).

Following the one-year grace period, operators that have met the 50% milestone may still launch and operate additional satellites, provided that the satellite(s) can still satisfy the criteria for the streamlined process, including deorbit within the six-year license term. Additionally, licensees that fail to begin operation during the one-year grace period may surrender their license to avoid the bond requirement and would not be precluded from filing another license application. Finally, licensees that launch and operate one or more satellites within the one-year grace period, but fail to launch and operate 50% of their authorized satellites within the one-year period, may choose to either post a bond and be subject to the standard NGSO bond and milestone requirements, or, in the case of licenses that specify multiple satellites, accept an automatic reduction in the number of authorized satellites to the number in orbit as of the close of the grace period. (¶ 97).

#### G. Technical Rules

The Commission decided to apply the existing, generally applicable technical rules in part 25 to small sats authorized under the streamlined process. (¶ 98).

#### H. Fees

Applicants under the new streamlined process must pay a \$30,000 application fee, which the Commission concluded is a reasonable estimate of the total cost of processing these types of applications. (¶ 99). Because the streamlined process will also be available to entities seeking access to the U.S. market using foreign-licensed satellites, these entities will also be subject to this \$30,000 application fee. (¶ 100).

The Commission recognized that it may later need to modify the application fee, once the Commission gains more experience processing these applications. As such, the Commission will undertake a comprehensive review of its application fees in a separate proceeding, which may consider the appropriate methodologies for calculating application fees. (¶ 101).

A new regulatory fee category will be applicable to small sats authorized under the new streamlined process, as well as to grantees of U.S. market access. (¶ 105). However, the Commission deferred consideration of the regulatory fee amount for this new category to the Commission's future regulatory fee proceedings because (i) the Commission allocates the total amount of regulatory fees to be collected among the various regulatory fee categories, and a change in the regulatory fee schedule applicable to one category may affect regulatory fees applicable to other categories; and (ii) there will still be ample time to assess and adopt the appropriate fee amount in the separate proceeding before any small sats authorized under the new process would be required to pay regulatory fees, which will likely be September 2021. (¶ 106).

## I. Frequency Considerations for Small Satellites

### 1. Compatibility and Sharing with Federal Users

The Commission declined to address commenter suggestions for improving coordination with Federal users and rejected one commenter's proposal to divide frequency bands into sub-bands for being beyond the scope of this proceeding. (¶¶ 109-10).

### 2. Spectrum Assignments for Streamlined Small Satellites

The Commission declined to adopt any new limitation on or lists of available frequencies, and instead will consider frequency requests on a case-by-case basis, subject to the same analysis for compliance with Commission rules and policies as other part 25 applicants. However, the Commission anticipates that applications for small sat systems under the streamlined process will generally be limited to bands where there currently is an allocation for satellite services in the U.S. Table of Allocations and in the International Table of Allocations, and that applications for other bands would require a request for waiver and an accompanying justification. Additionally, if such waiver requests are granted, these systems would be authorized on a non-interference basis. (¶ 112).

Given its choice to consider frequencies on a case-by-case basis, the Commission further declined to adopt any changes to the Table of Frequency Allocations, or any other rule modifications regarding the use of specific frequencies. Further, the Commission modified existing part 25 rules to provide an exception so that streamlined small sat applications requesting to operate in bands not allocated internationally, and which include an appropriate waiver request, can be considered on their merits without being deemed

unacceptable for filing. (¶ 115).

If an applicant were to request authorization for a non-conforming operation, that applicant would be required to submit a request for a waiver of the Table of Allocations, found in Section 2.106 of the Commission's rules, along with justification to support that waiver request. Applicants will need to provide an electromagnetic compatibility analysis to support a finding that the intended use of the frequency assignment will not cause harmful interference to other stations operating in conformance with the ITU Radio Regulations. Similarly, applicants will be required to state their willingness to accept an assignment on a non-interference, unprotected basis. The Commission encouraged entities that are considering making a request for authorization for a non-conforming operation to discuss the request with Commission staff prior to filing, for the sake of administrative efficiency. (¶ 116).

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If you have any questions about the Report and Order, please contact the Wiley Rein attorneys listed on this alert.

NOTE: Kyle M. Gutierrez, a 2019 Wiley Rein summer associate, contributed to this alert.