



September 13, 2018

via ECFS and e-mail

Marlene H. Dortch
Secretary, Office of the Secretary
Federal Communications Commission
445 12th Street, SW, Room TW-A325
Washington, DC 20554

Re: Streamlining Licensing Procedures for Small Satellites, IB Docket No. 18-86

Dear Ms. Dortch,

On September 11, 2018, Dr. Scott Palo of the University of Colorado and Frederick Steimling, Allen Magnusson, and Blake E. Reid of the Samuelson-Glushko Technology Law & Policy Clinic at the University of Colorado School of Law, met with Jose Albuquerque, Karl Kensinger, Stephen Duall, Merissa Velez, Chris Bair, and Samuel Karty of the International Bureau to discuss the above-referenced proceeding,¹ including issues raised in our previous filings in this proceeding.²

We expressed our general support for the Commission's efforts to streamline the licensing process for small satellite systems and encouraged the Commission to alter the contours of the streamlined process to allow academic researchers to take part. Streamlined Part 25 licenses for small satellites have significant potential to benefit the innovative and rapidly-growing small satellite community as a whole—not just for commercial small satellite operations, but for scientific and university-backed research missions as well. We welcomed the idea that there could be a future Commission proceeding focusing primarily on tailored rules for academic, scientific, and non-profit small satellite missions. However, we highlighted that the current *NPRM* framework already has the potential to provide

¹ *Streamlining Licensing Procedures for Small Satellites*, IB Dkt. No. 18-86, Notice of Proposed Rulemaking, FCC 18-44 (Apr. 17, 2018) (*NPRM*), <https://docs.fcc.gov/public/attachments/FCC-18-44A1.pdf>.

² Comments of University Small-Satellite Researchers, IB Dkt. No. 18-86 (filed Jul. 9, 2018) (University Comments), <https://ecfsapi.fcc.gov/file/107091398724499/2018.07.09%20Satellite%20Researcher%20Part%2025%20Streamlined%20Process%20Comment%20Final.pdf>; Reply Comments of University Small-Satellite Researchers, IB Dkt. No. 18-86 (filed Aug. 7, 2018) (University Reply Comments), <https://ecfsapi.fcc.gov/file/10808299024169/2018.08.07%20Satellite%20Researcher%20Part%2025%20Streamlined%20Process%20Reply%20Comments%20final.pdf>.

substantial benefit for these small satellite missions. Thus, we encouraged the Commission to adopt a streamlined Part 25 procedure that would create benefit for the entirety of the small satellite community, rather than engaging in separate rulemakings for each subgroup.

More specifically, the proposed licensing process in the Commission's *NPRM* would require only a small number of modest substantive changes to fee structures and technical eligibility requirements to create a valuable procedural avenue for academic and non-profit scientific missions. The principal benefit of a streamlined Part 25 process for university or non-profit small satellite missions would be increased interference protection that could not be obtained through Part 5 experimental licensing or Part 97 amateur radio procedures. We stressed, however, that there was universal support in the record for the Commission to continue offering access to Part 5 experimental licenses for academic and non-profit satellite operations.³ Thus, a Part 25 streamlined small satellite procedure should be an addition to, and not a replacement for, currently existing Part 5 and Part 97 opportunities for small satellite authorizations.

We discussed several specific revisions to the current *NPRM* language that would make a streamlined Part 25 procedure significantly more accessible and beneficial for university and non-profit small satellite missions. First, the record substantially supports lowering the proposed \$30,000 application fee for scientific or educational applicants.⁴ Lower fees, possibly on par with current Part 5 experimental licensing fees, would be especially important for educational missions that could highly benefit from increased interference protection but have limited budgets.

Next, we discussed how the small satellite community as a whole would benefit if satellite propulsion capabilities were not a prerequisite for Part 25 streamlined eligibility when proposed missions would operate at altitudes exceeding 400 km.⁵ We expressed concern that the *NPRM*'s propulsion requirement could effectively preclude many small satellite missions from using the streamlined process.⁶ As the Commercial Smallsat Spectrum Management Association (CSSMA) noted, propulsion technology is not yet at the level needed to facilitate easy or affordable implementation in typical missions.⁷ If the Commission's goals for the propulsion requirements are to ensure safe deorbits and the

³ See University Reply Comments at 1-2.

⁴ See University Comments at 15; University Reply Comments at 4-5.

⁵ See *NPRM* at ¶ 33.

⁶ See University Reply Comments at 2-3.

⁷ *Id.* at 3, citing Commercial Smallsat Spectrum Management Association (CSSMA) Comments, IB Dkt. No. 18-86, at 16-17 (filed Jul. 9, 2018), <https://ecfsapi.fcc.gov/file/10709046614953/CSSMA%20-%20Smallsat%20NPRM%20Comments%2020180709.pdf>.

mitigation of collision risks, other functional methods such as passive deorbiting acceleration (increasing drag by altering area/mass ratio) could be alternatives. We also discussed situations where requiring propulsion systems might work against the goals of mitigating satellite collision risks. Propulsion systems would allow equipped small satellites to deviate from standardized Keplerian orbits, possibly disrupting the operations of the Joint Space Operations Center (JSpOC), which uses prior information on the position of satellites to corroborate their identities with tracked objects.⁸ Moreover, small satellites operating at on-life altitudes of 400-600 km could generally deorbit passively within 25 years, satisfying the ODAR limit.⁹

We strongly agreed with a suggestion raised by the Commission that the Part 25 streamlining procedure could be established first. If propulsion requirements eventually factor into small satellite regulations, that investigation should be delayed to a separate proceeding where the state of developing propulsion technology could be more rigorously scrutinized.

Finally, we discussed the *NPRM*'s suggested requirements of minimum satellite dimensions (10 cm x 10 cm x 10 cm) for streamlined eligibility, with the additional requirement for eligible small satellites to "include a unique telemetry marker allowing it to be readily distinguished from other satellites or space objects."¹⁰ We suggested that the Commission consider a more flexible and functional trackability requirement where trackability could be demonstrated without foreclosing the streamlined Part 25 avenue for missions deploying satellites with innovative geometries.¹¹ Even if a Part 25 streamlined procedure did have baseline satellite size requirements for eligibility, we urged the Commission to keep abreast of developments in small satellite and satellite-tracking technology. We also urged the Commission to remain open-minded to waivers of a size requirement and expressed our hope that the Commission's exploration of traffic management for satellite orbits will continue.

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An optimally-designed streamlined process could be highly beneficial to the public interest and to all members of the small satellite community, educational, scientific, and commercial alike. We appreciate the opportunity to discuss these issues with the Commission. Please don't hesitate to contact us if you have any questions.

⁸ See University Comments at 11.

⁹ See *id.* at 10.

¹⁰ See *NPRM* at ¶ 38.

¹¹ For discussion of possible satellite geometries that could be functionally trackable but would not meet the 10 cm x 10 cm x 10 cm eligibility requirement, see University Comments at 11.

Respectfully submitted,

/s/

Blake E. Reid, Director

Allen Magnusson, Frederick Steimling, and
Galen Pospisil, Student Attorneys

Samuelson-Glushko Technology Law &
Policy Clinic

Counsel to Dr. Palo

blake.reid@colorado.edu

CC: Meeting participants