

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Comprehensive Review of Licensing	)	IB Docket No. 12-267
and Operating Rules for Satellite	)	
Services	)	

**COMMENTS OF SPIRE GLOBAL, INC.**

Nanosatisfi, Inc., doing business as Spire Global, Inc. (“Spire”), would like to acknowledge and thank the FCC for undertaking this ambitious proceeding to update its satellite licensing and operating rules.<sup>1</sup> The streamlining of these regulations will no doubt encourage innovation and healthy competition in what continues to be an evolving global industry. As part of this effort, Spire asks the FCC to consider the impact of its rules on nanosatellite systems, which are markedly different from conventional satellite systems in many respects, including development and construction time, launch process, and operational lifetime. The actions the FCC takes now to shape the satellite regulatory environment can play a key role in enabling the growth of small U.S. businesses and establishing the U.S. as a leader in the burgeoning nanosatellite field.

Spire is a privately funded startup company headquartered in San Francisco, California. The company is designing, building and operating a constellation of remote sensing satellites in low-earth orbit. Spire joins an increasing number of new, private space companies in an exciting period of growth – not only for small satellite technology and secondary launch services, but also for the space-based data industry and the commercial space industry as a whole.

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<sup>1</sup> *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Notice of Proposed Rulemaking, FCC 14-142 (rel. Sept. 30, 2014)(“NPRM”).

Spire's satellite constellation is comprised of 3U cubesats, fitting into the picosat category, but more commonly referred to as a nanosatellite or smallsat. These small, but very capable nanosatellites can be designed and manufactured within weeks or months and launched into orbit for a cost on the order of a few hundred thousand dollars. These nanosatellites typically will de-orbit within a few years and require periodic replenishment. It is estimated that between 2015-2020, more than 1,000 nanosatellites (between 1 -10 kg) could be launched.

At present, the companies developing business plans for nanosatellites must navigate through a regulatory environment that is predicated on the use of conventional satellites, which are materially different from nanosatellites. Conventional satellites typically undergo years of development, cost hundreds of millions of dollars to manufacture and launch, and are operational for 15 years or more. Moreover, the need for frequent replenishment of nanosat satellites and the greater relative ease by which they can be launched makes the traditional concept of discrete and well delineated satellite constellations less meaningful. These differences can place significant burdens on new, small satellite companies seeking to comply with FCC licensing and operating rules predicated on a fundamentally different satellite architecture. Although Spire offers specific comments on the FCC's proposed rule changes in direct response to the NPRM, the company asks that the FCC bear in mind the unique nature of nanosatellites, as it revises and establishes its rules in this proceeding.

Spire's specific comments to the FCC's proposed rule changes are as follows:

- **Section III.B (NPRM ¶¶ 19-34; 47 C.F.R. §§ 25.164, 25.165):** Spire encourages the FCC to revise the language as it relates to bonds and milestones with the consideration that smaller satellites, specifically cubesats, are often developed and manufactured entirely in-house and may not have a set of schedule milestones that matches the current FCC requirements (*i.e.*, entering into a binding contract for manufacturing or conducting a formal CDR). Including language, such as "or equivalent," would add flexibility for the companies entering the market with a materially different (but technically equivalent and sufficient) approach to spacecraft development.
- **Section III.I (NPRM ¶¶ 133-134; 47 C.F.R § 25.113):** Spire supports the proposed

changes to Section 25.133. The term “deployment” is arguably more suitable in general for the process by which nanosatellites are placed into orbit, as they are typical either secondary payloads brokered and managed by a third party, or sometimes ultimately deployed from the International Space Station. Spire also agrees with the proposal to eliminate the written notification requirement from Section 25.113(f).

- **Section III.X (NPRM ¶ 185; 47 C.F.R. § 25.165(a)):** Spire supports the comments regarding further clarification of replacement satellites, as applied to both GEO and NGSO satellites.

Additionally, nanosatellite systems generally pose less of an orbital debris risk than conventional satellite systems. The probability of collision for an orbiting object depends on the object’s surface area and time in orbit. As explained in the attachment, nanosatellites have a smaller surface area and usually spend much less time in orbit than conventional satellite systems. Despite the potential for a greater number of nanosatellites than conventional satellites, the risk of orbital debris from nanosatellites is no greater and, in fact, substantially less than conventional satellite systems.

### **Conclusion**

While the effort to update the regulations with collaborative industry input is highly encouraging, Spire would like to emphasize that the differences in the emerging small satellite industry and the traditional satellite industry can be substantial. The FCC should continue to analyze and address these differences in developing its licensing and operating rules moving forward.

Respectfully submitted,

**Spire Global, Inc. (Nanosatisfi)**

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