SpaceX says 12,000 satellites isn’t enough, so it might launch another 30,000



Enlarge / 60 Starlink satellites stacked for launch at SpaceX facility in Cape Canaveral, Florida.

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SpaceX is seeking permission to launch another 30,000 low-Earth orbit (LEO) satellites for its Starlink broadband network, which would be in addition to the nearly 12,000 satellites the company already has permission to launch. But it’s too early in the process to determine whether SpaceX is likely to launch most or all of the additional 30,000 satellites.

The Federal Communications Commission made the requests on SpaceX's behalf, as is standard practice, in a series of filings with the International Telecommunication Union (ITU) last week. (Here's an example of one of the filings.) The 30,000 satellites would operate "at altitudes ranging from 328 kilometers to 580 kilometers," SpaceNews reported yesterday.

The filings are known as coordination requests. As SpaceNews noted, the ITU coordinates spectrum "to prevent signal interference and spectrum hogging." SpaceX's filings could help the company reserve spectrum before other operators claim it, but it's an early step in the process and doesn't commit SpaceX to launching all 30,000 satellites.

SpaceNews wrote:

> *Filings trigger a seven-year deadline whereby the satellite operator, in this case SpaceX, must launch at least one satellite with its requested frequencies and operate it for 90 days. Once spectrum rights have been assigned through this "bring into use" procedure, other ventures must design their systems to avoid interference with the newly minted incumbent operator.*

Dramatic expansion in satellites orbiting Earth

SpaceX is facing competition in the nascent low-Earth satellite broadband market from OneWeb, Space Norway, Telesat, and Amazon. Broadband delivered by low-Earth satellites should provide faster speeds and lower latencies than traditional satellites, which orbit at much higher altitudes. SpaceX has said it intends to provide gigabit speeds and latency as low as 25ms, but the company hasn't revealed how much the service will cost.

SpaceX's constellation alone would dwarf the total number of

satellites orbiting Earth today. As of January 2019, about 8,950 satellites had been placed into Earth orbit since 1957, and about 5,000 of those were still in space, according to the European Space Agency (ESA). Only about 1,950 of those are still functioning.

If SpaceX proceeds with the additional 30,000 satellites, it would have to seek FCC permission and provide more technical detail, including plans to minimize debris and prevent collisions. SpaceX is designing its satellites to burn up completely during atmospheric re-entry in order to prevent physical harm from falling objects.

The ESA recently had to perform a collision-avoidance maneuver to protect one of its satellites from a potential collision with a Starlink satellite. The ESA says it is investing in technology that can automate collision avoidance because of the massive number of satellites being deployed for broadband networks.

“As the number of satellites in space dramatically increases, close approaches between two operated spacecraft will occur more frequently,” the ESA said.

SpaceX wants more capacity

In a statement about the new ITU filings, SpaceX told Ars and other media outlets yesterday that it “is taking steps to responsibly scale Starlink’s total network capacity and data density to meet the growth in users’ anticipated needs.” SpaceX hasn’t launched its first 12,000 satellites yet but said that demand is rising “for fast, reliable Internet around the world, especially for those where connectivity is non-existent, too expensive, or unreliable.”

SpaceX launched 60 satellites in May this year to test the system before preparing for a wider deployment and says it plans to make two to six launches by the end of this year. The

company has FCC permission to deploy up to 11,943 satellites.

SpaceX said yesterday that it plans to deploy satellite broadband in the Northern United States and Canada as soon as next year. SpaceX recently asked the FCC for permission to adjust the orbital spacing of its satellites, a change that would let the company also cover the Southern US by the end of next year.

Global coverage could follow shortly after that if SpaceX’s predictions prove accurate. The company said yesterday that it can provide full coverage of the populated world after 24 launches and had previously said it could make 24 Starlink launches in 2020.

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