

SpaceX's prototype rocket flies to its highest altitude yet during hover test

This afternoon, a prototype of SpaceX's next generation rocket took to the skies for a second time in south Texas, reaching a height of a small skyscraper before landing back on Earth. The flight demonstrated the vehicle's ability to take off and land in a controlled manner, and it paves the way for more aggressive testing of the vehicle's design in the months ahead.

The test, commonly referred to as a "hop" test, marked the highest flight yet of SpaceX's prototype, nicknamed "Starhopper." Equipped with one main engine, the vehicle flew for the first time on July 25th, but it only got about 60 feet (18 meters) off the ground, and the entire scene was shrouded in plumes of exhaust. Today, Starhopper provided a more impressive sight when it took off from SpaceX's test site in Boca Chica, Texas, slowly climbing to its target altitude of around 500 feet (150 meters). Once there, the vehicle hovered in the air a full minute, before using its engine to land gently back down on the ground.

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Starhopper's tests are supposed to evaluate the design and hardware that'll be used on the company's future Starship rocket, a monster spaceship that SpaceX is developing to send people and cargo to deep space destinations like the Moon and Mars. Towering around 180 feet (55 meters) tall, Starship is meant to launch from Earth on top of a giant rocket booster called Super Heavy. When it reaches other worlds, the vehicle will land upright with its onboard engines, similar to how SpaceX's Falcon 9 rockets land on the ground today. It's also supposed to take off again from these distant destinations to

return to Earth.

[embedded content]

On these test flights, SpaceX has been testing a new engine called Raptor, which the company plans to use to power Starship. Starhopper has only been flying with one Raptor, but the final Starship design calls for the spaceship to have six Raptor engines. Three will be optimized to work best in our planet's atmosphere at sea level, and the other three will be designed to work best in the vacuum of space.

Soon, SpaceX will add more engines to its test flights. The company has been building two new prototype rockets: one in Boca Chica and another at a SpaceX facility in Cape Canaveral, Florida, near where the Falcon 9 and Falcon Heavy fly. These two test vehicles are a bit more robust than the Starhopper, which was never meant to be a faithful replica of Starship. (The top portion of Starhopper also fell over during a particularly gnarly wind storm in Texas, and SpaceX opted not to replace it.)

Image: SpaceX

The newer prototypes will be equipped with three engines each as well as grid fins for steering and better landing gear. The two are meant to perform a series of hop tests that could reach as high as 12 miles (20 kilometers) up in the months ahead. Eventually, SpaceX will fly prototypes that are supposed to achieve orbit during the first launches to space, once SpaceX finishes the Super Heavy booster. SpaceX CEO Elon Musk also noted that the two teams building these prototypes are in a friendly race to reach space first. However, the rules aren't super strict, it seems. "A success by both in close proximity would be amazing & each would count as a win," Musk tweeted in August.

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being retired

After performing just two hops, the Starhopper is officially being retired as SpaceX focuses on the next prototype rockets. Starhopper will become a souped-up engine test stand where SpaceX can ignite Raptor engines vertically to see how they perform, according to Musk.

Now that this latest test is complete, Musk is poised to give an update on the Starship's design and progress. Originally, he planned to give a talk at Boca Chica on August 24th, following the 500-foot flight. However, Musk pushed back the event after the Federal Aviation Administration was slow to approve Starhopper's flight, forcing SpaceX to delay the test until Monday, August 26th. Musk recently suggested that the talk would occur as soon as mid-September, once the three raptor engines are attached to the Boca Chica test vehicle.

<https://www.theverge.com/2019/8/27/20833213/spacex-starhopper-test-flight-launch-boca-chica-texas-raptor-engine>