In early October 2020, ESE Carbon Company performed road testing of its E2 one-piece carbon fiber wheels at the world-renowned Transportation Research Center in Liberty, Ohio – the largest independent vehicle test facility and proving grounds in the U.S.

Testing was performed over a 3-day period, with the first segment focused on Braking.

The vehicle used for testing was a 2017 Tesla Model S P100D that weighed in at 5,099 pounds. It was fitted with thermocouples, accelerometers, a GPS speed sensor and Link V-Max 4000 data acquisition system to record time, speed, distance, wheel hub accelerations, and brake/wheel temperatures. Tests were performed using both OEM wheels and E2 carbon fiber wheels, to obtain comparison data between the performance of each. The OEM wheels weigh 27.7 lbs. each, and the E2 carbon fiber wheels weigh 17.9 lbs. each, for a total weight difference of 39.2 lbs. for a set. Both sets of wheels were fitted with Pirelli P Zero tires, sized 245/45ZR19.

For the braking tests, five panic brake stops from 100-0km/h were performed with the vehicle's regenerative braking set to low. The stopping distances for each individual run, the average of all the runs, and the net difference between the averages are shown in the table below.

100-0km/h Braking Test

Carbon Wheel		OEM Wheel	
Run 1	155.21	Run 1	166.76
Run 2	146.97	Run 2	129.24
Run 3	142.23	Run 3	146.70
Run 4	132.36	Run 4	132.44
Run 5	126.33	Run 5	154.53
Average	**140.62**	**Average**	**145.93**

Difference -5.31

* All values listed in feet

As the data shows, when fitted with the E2 carbon fiber wheels, average stopping distances were 5.31 feet shorter than with the OEM wheels. "From a driver or pedestrian perspective, in a real-world scenario, this could be lifesaving," says Carlos Hermida, CEO of ESE Carbon Company. He continues, "This was an early look at braking improvements and results are encouraging, and we will continue to do more testing to further validate the performance enhancements of carbon fiber wheels."

Hermida continues, "Let's face it, for years hardcore automotive enthusiast have sworn by carbon fiber for its incredible strength, stiffness and light weight, but that's a discussion for another time. For now, let's say that I'm really happy with what we've seen this week!"

Stayed tuned for results on other segments of the road testing. For more information about E2 carbon fiber wheels, please visit www.esecarbon.com.

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