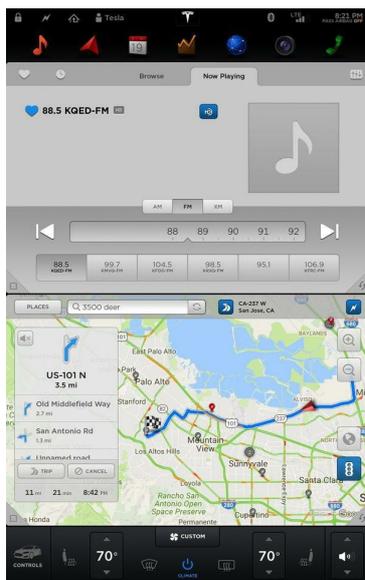


REVIEW

Can Tesla's Autopilot Be Trusted? Not Always

By Eric A. Taub

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The updated software version that Tesla has begun uploading to vehicle owners as part of an upgrade.

LOS ANGELES — Driving a Tesla Model S with Autopilot technology can be frightening and exhilarating.

Exhilarating, because when you are behind the wheel of a vehicle that can steer itself and will brake and accelerate when necessary, it's easy to glimpse the future of transport, when fully autonomous driving becomes the norm.

But Autopilot also gave me trepidation, as I wondered if the vehicle would indeed make that curve, or slow in time to avoid hitting the car that had come to a sudden stop in front of me. Fortunately, it succeeded, most of the time. And when there seemed room for doubt, I was able to apply my own human intervention.

The issue of "handoff" — whether a person can safely resume control quickly enough — has been a topic that Tesla's critics have seized upon. In

my Autopilot test drives, I have been too nervous to be lulled into complacency. And in at least one case, it was a good thing I was paying attention.

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Mine have been only test drives, in a car lent by the company. Last month I tried the original version of Autopilot. This week I used the updated version that Tesla has begun uploading to vehicle owners as part of a software upgrade.

My wife found “freaky” – in a good way – the “summon” feature on Autopilot old and new, which enables the car to enter and leave the garage without a person in the vehicle. My grandchildren, who were along for the Autopilot test drives, screamed in delight when I took my hands off the wheel as the car steered itself on winding city streets and curving freeways.

With Autopilot engaged in the stop-and-go traffic endemic to Los Angeles (mostly stop, much less go), driving became much less strenuous. Gone is the constant braking and accelerating, as the car stays in lane and, with its active cruise control, slows and speeds up to keep you creeping along.

When I drove with Autopilot last month, the older version gave me periodic reminders – a small pop-up visual warning on the display screen and an audible chime – to put my hands back on the wheel. But once I did, the warning disappeared, and I could once again remove my hands until the next warning a few minutes later.

This feature is where the new Autopilot may be most discernibly different. The company has said it made the warnings more emphatic in an effort to avoid the sort of fatal crash that occurred in May.

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In that accident, a Tesla operating in Autopilot mode on a Florida highway

plowed full speed into a tractor-trailer that had turned in front of it. Evidently, neither the driver nor the automated system recognized the hazard. The new version is meant to force the driver to pay attention — or at least keep hands on the wheel.

The updated Autopilot, at freeway speed, will visually and then audibly warn you to place your hands on the wheel, if it senses they are off. If you need to be reminded with three audible warnings within an hour, the Autopilot system disengages and remains that way until the car is next restarted.

The visual warning has been enhanced, too. Besides the pop-up alert on the screen, the entire perimeter of the instrument panel pulses a warning in white light.

When you are pattering along at a few miles per hour in heavy traffic, though, the warnings, by design, do not come on at all.

The other big Autopilot change is potentially more significant in terms of technology. To help the car sense things like a tractor-trailer on a Florida highway, Tesla says it has made Autopilot less reliant on the vehicle's cameras, putting more of the onus on the radar system.

Something more sophisticated than my test drives would be required to gauge the effectiveness of that change. But whether because of the new radar emphasis, or for other reasons, I did find that the automatic braking and steering seemed more precise and less abrupt with the updated Autopilot. Before, the car seemed to slow long after I would have started to brake; now, it seems more suitably cautious.

Yet, both before and after the upgrade I found anomalies in the Autopilot operation.

Several times, as I drove in the freeway fast lane with Autopilot engaged, the Tesla began to veer toward the center divider. That happened even though the lane markings, which are supposed to guide the system, were clearly visible. In each case, I steered the car back toward the center of the lane, automatically disengaging Autopilot.

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At other times, I found that the vehicle made more minor steering corrections to stay in lane than I would have done if I were in control. If the lane stripes were slightly out of alignment, the car moved to the left or right to follow them, apparently not sensing that they would straighten out 10 or 20 yards ahead.

Tesla says Autopilot is designed primarily to work on limited-access roads

such as expressways. But the system also works on standard city streets, with or without center dividers, as long as lane markings are visible.

On city streets, Tesla intends the system to be used in bumper-to-bumper traffic. Autopilot does improve that type of driving, as the car can control speed and frequent braking better than a bored, irritated human.

But on in-town streets when traffic is flowing, I found Autopilot to be much more erratic. On a road that curved about 90 degrees, I twice found the car heading straight for the curb. Tesla told me that's because Autopilot was not designed to steer into such tight curves. And after the road straightened, the Tesla decided it should veer into the left turn lanes that opened up at the intersection, even though I wanted to go straight.

On a straight section of road that slightly widened at one point, the Tesla headed for a parked car. Autopilot did not disengage, but the forward sensors sounded an audible warning indicating that I would need to manually hit the brakes. Good thing I was paying attention.

It is clear to me that Autopilot is no substitute for an engaged driver. That, Tesla says, is the point it has made all along, no matter how dare-devilish its most adventuresome car owners might be. And with the new version of Autopilot, Tesla has integrated that message more fully into the system.

But if a driver needs to stay engaged, with one's hands on the wheel and eyes on the road while using Autopilot, what is the purpose of the technology?

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Autopilot clearly helps in stop-and-go traffic, significantly reducing driver fatigue. And maybe, as Tesla contends, Autopilot can help a responsible driver avoid accidents.

But in normal, full-speed traffic conditions, if the driver must be ready to retake control at any time, Autopilot would not seem to have much utility, especially on shorter drives when fatigue or boredom are less likely.

Autopilot is an awe-inspiring demonstration technology, pointing the way to a full autonomous driving future. But drivers who think they now own a self-driving vehicle are sadly, and perhaps dangerously, mistaken.

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