

# Certus Evo GNSS/INS

## Car Dead Reckoning Test Comparison



## REVISION HISTORY

| VERSION | DATE          | CHANGES         |
|---------|---------------|-----------------|
| 1.0     | December 2023 | Initial Release |

*Table 1. Revision history*

Certus Evo is a high-end tactical grade MEMS based GNSS/INS with dual antenna heading and 10mm RTK. Certus Evo comprises a Motus MEMS IMU.

## Test 1 - Certus Evo with high accuracy wheel encoder

When aided with an external velocity source, Certus Evo can achieve long term dead reckoning performance better than 0.5% of distance travelled.

Certus Evo was installed in a passenger car and fitted with a high accuracy wheel encoder.

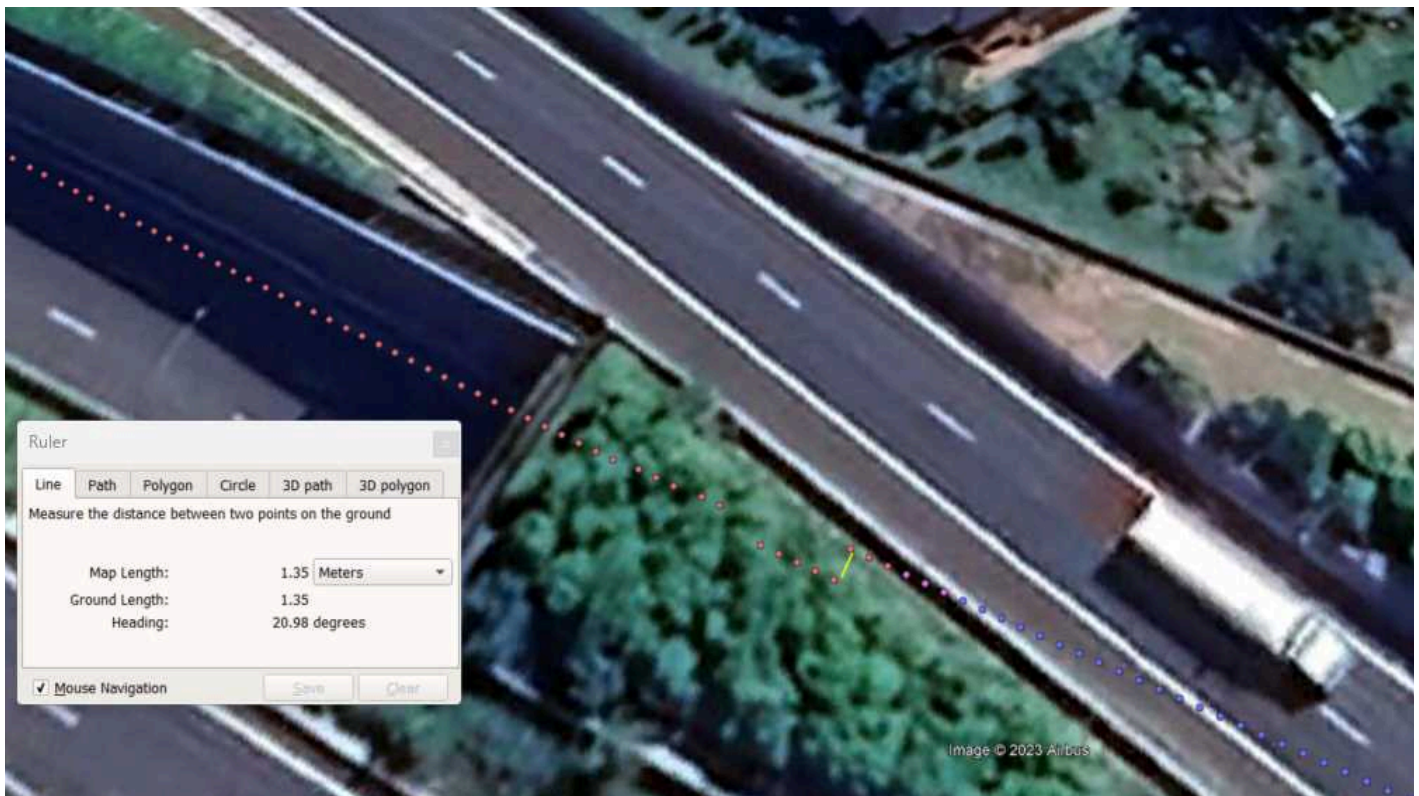


The test was completed through the M4 tunnel in Sydney, Australia, covering a distance of 5.4km, and the position compared with a Google Maps overlay at the exit of the tunnel.



Certus Evo's dead reckoning position was compared with the Google Map position at the exit of the tunnel and the error was found to be 1.35 metres or 0.024% of distance travelled. The position error over time and final approach can be seen below comparing the Certus Evo position output with the Map overlay.

It should be noted that in this particular test, the result is exceptionally good, exceeding the published spec of 0.5% DT.

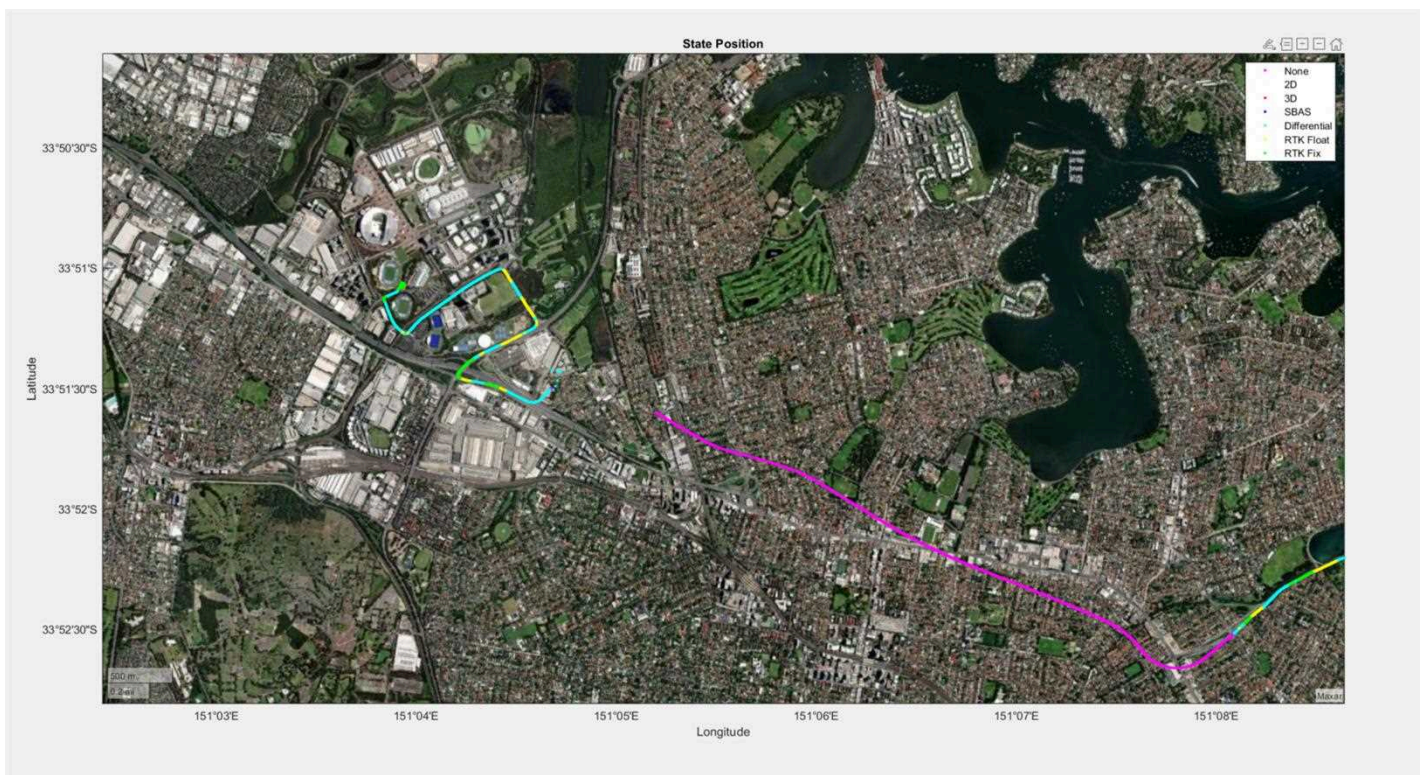


## Test 2 - Certus Evo with free inertial drift

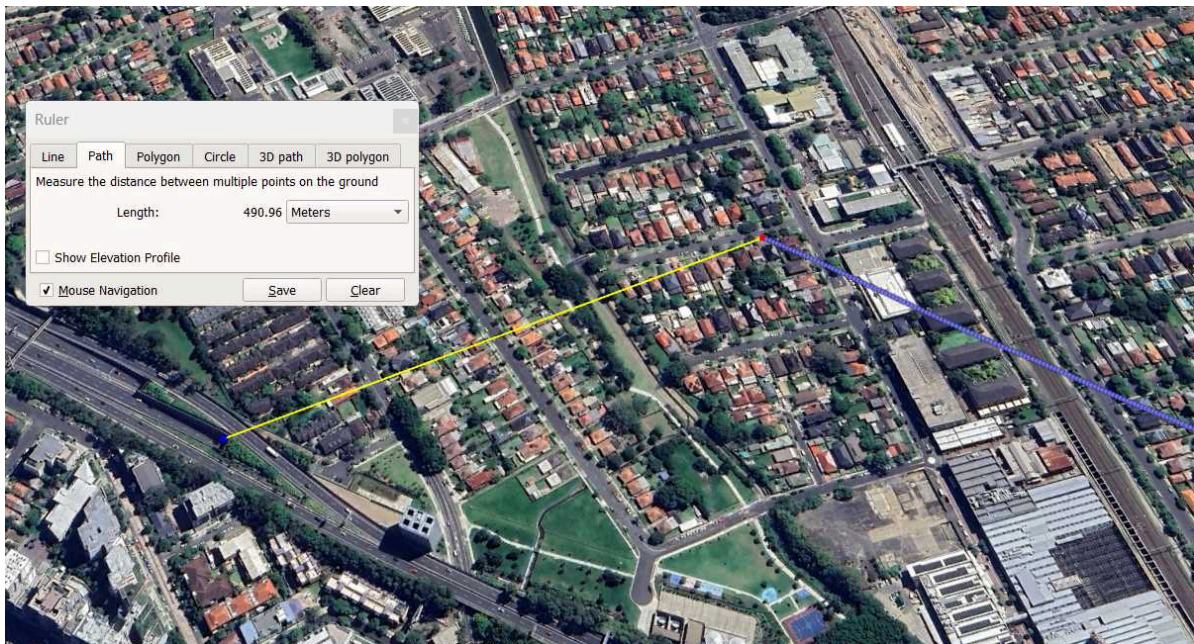
During test 1, another unit was used to determine the free inertial (unaided) performance of the unit through the same length of tunnel.

Up until the entry of the tunnel, Certus Evo was navigating with GNSS. The unit lost GNSS when entering the tunnel.

The total duration of the test was 4 min 30 sec.



At the exit of the tunnel, the error reported by the unit, compared to Google Maps was 491m over the duration of 4 min 30 sec.



## Conclusion

In Test 1, with Certus Evo operating with velocity aiding, the unit was able to exceed the stated performance of 0.5% of distance travelled.

In Test 2, when operating without velocity aiding (free inertial), the unit had a drift of 491m over the duration of 4 min 30 sec. Free inertial drift will vary significantly between tests, this test is a fair representation of free inertial performance over this duration.

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