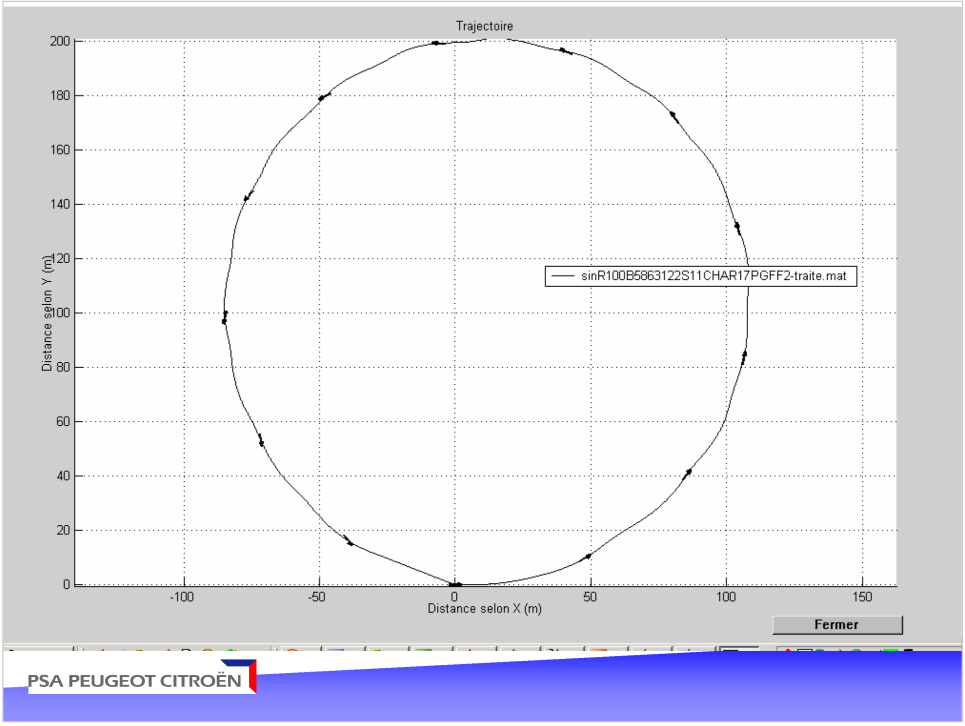
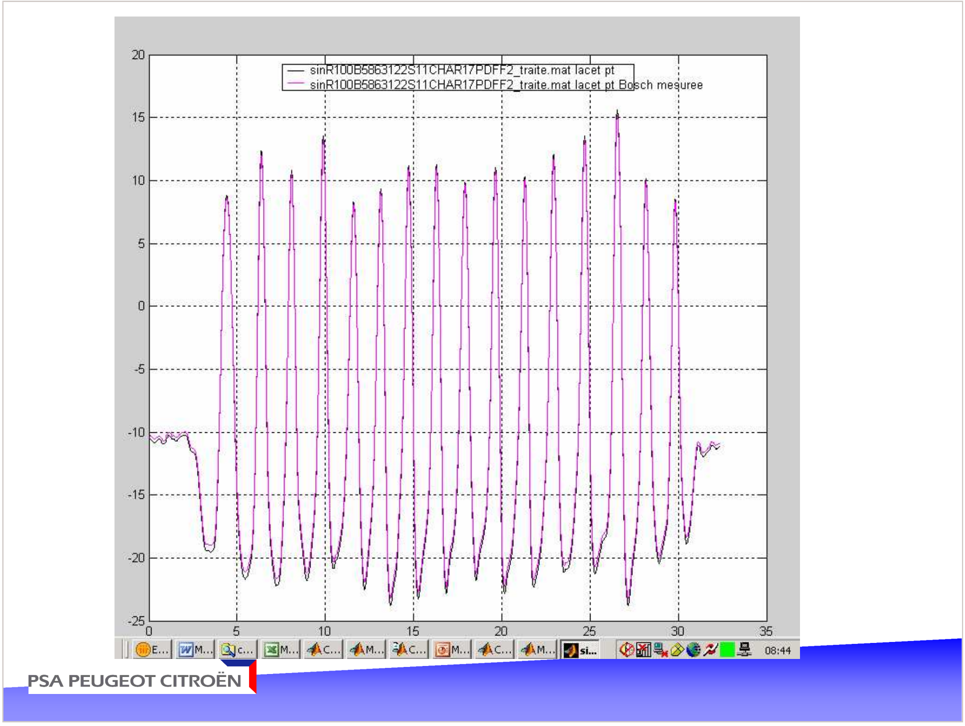


The trajectory is a circle of 100 meter radius + a slalom of 3 meter amplitude.

It was selected because there is during the same test :

- -A significant side slip of the vehicle
- -A low frequency yaw rate due to the circle
- -An easy defined trajectory

We also tried to use VDA double lane change but the difference between estimated and measured yaw rate was less significant (probably because there is not the low frequency component)



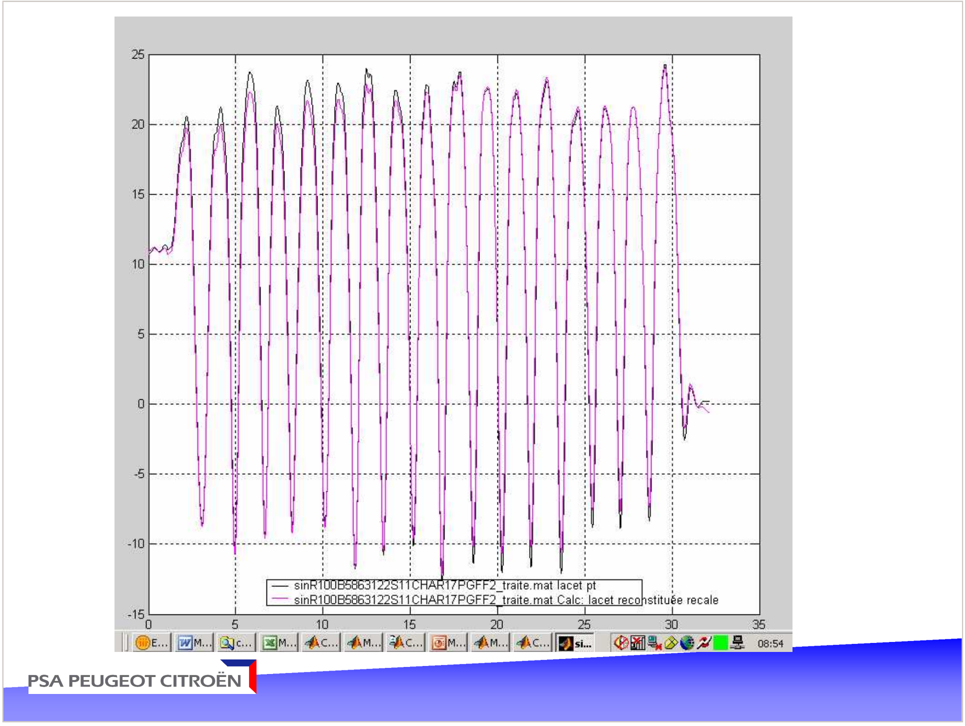
In black we have the measurement obtained with a yaw rate sensor that complies with ISO requirement.

In purple the measurement obtained with an “ESP” yaw rate sensor.

The correlation is very good.

At the beginning and at the end of the record we can see the low frequency content due to the circular trajectory.

If we look for the maximum difference between the two sensors we obtain approximately 0.5°/s for a value of 20°/s. That is 2.5%.



In black we have the measurement obtained with a yaw rate sensor that complies with ISO requirement.

In purple the measurement obtained with a yaw rate estimation. This estimation is a basic one obtain with some filtering on the difference of two lateral accelerations :

- One at the front
- one at the rear

The correlation seems to be good

Here at the end of the record the car was stopped.

If we look for the maximum difference between the sensor and the estimation we obtain approximately 1°/s for a value of 22.5°/s. That is significantly bigger than the first one but in our sense not enough to define a criteria because we believe that with a little tuning this difference can be reduced easily.

conclusion

Due to this example, we do not believe it is possible to define a simple and precise test manoeuvre to check the accuracy of yaw rate information.

I.e. it would be to easy to tune the yaw rate estimation for this manoeuvre