

Test program application and preliminary results

France

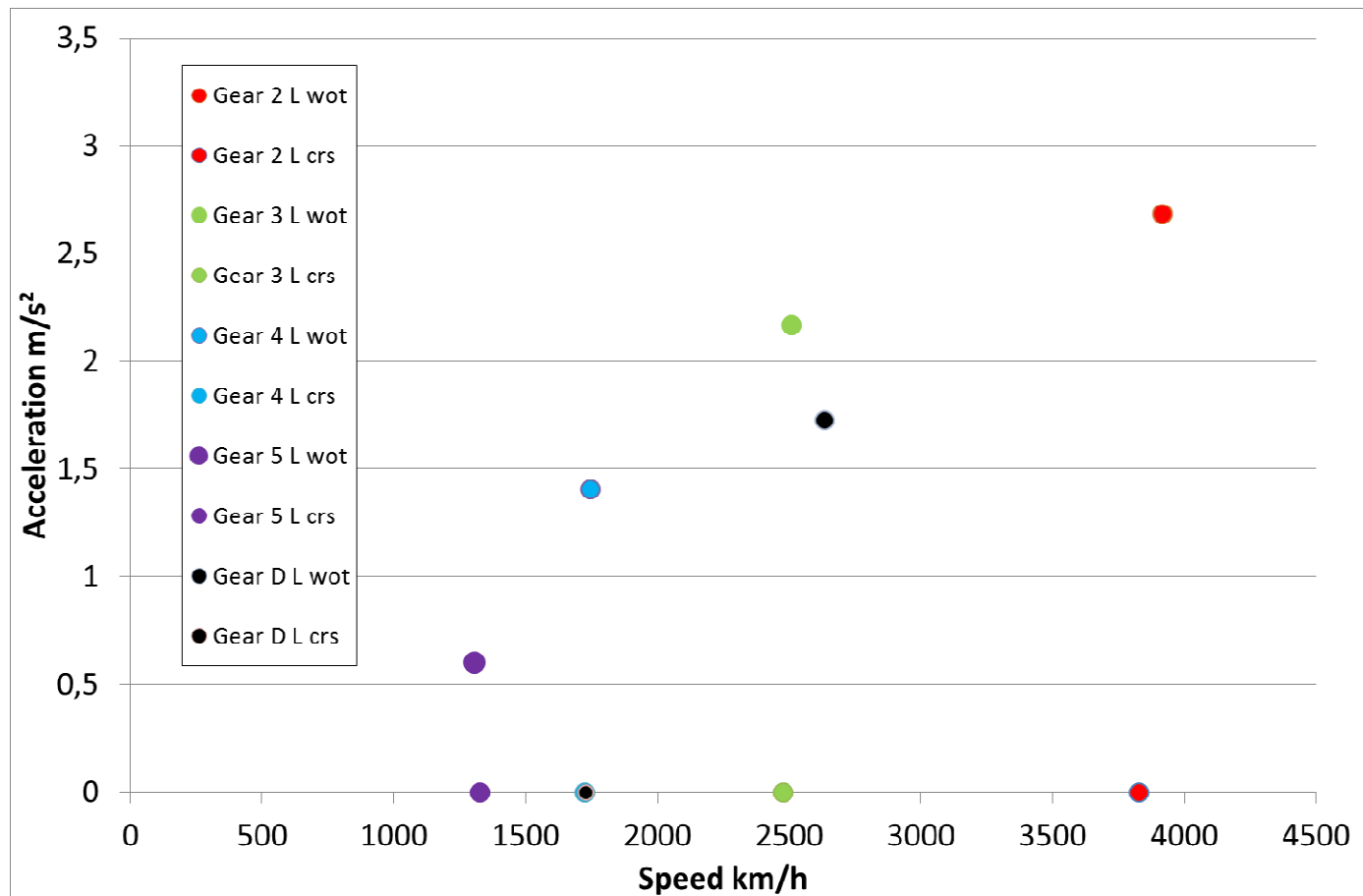
ASEP-05-10

Tests and analysis to be done

- The group requests GRB members to deliver data for the next meeting under ASEP-04-05 Rev.1 2017-07-12 Test program for a single vehicle for the development of ASEP. At least 2 data sets :
 - One on locked gear condition and
 - a second on non-locked gear conditions or HEV or any new technology vehicle.
- Preliminary investigation was done on one vehicle tested on locked and non-locked conditions

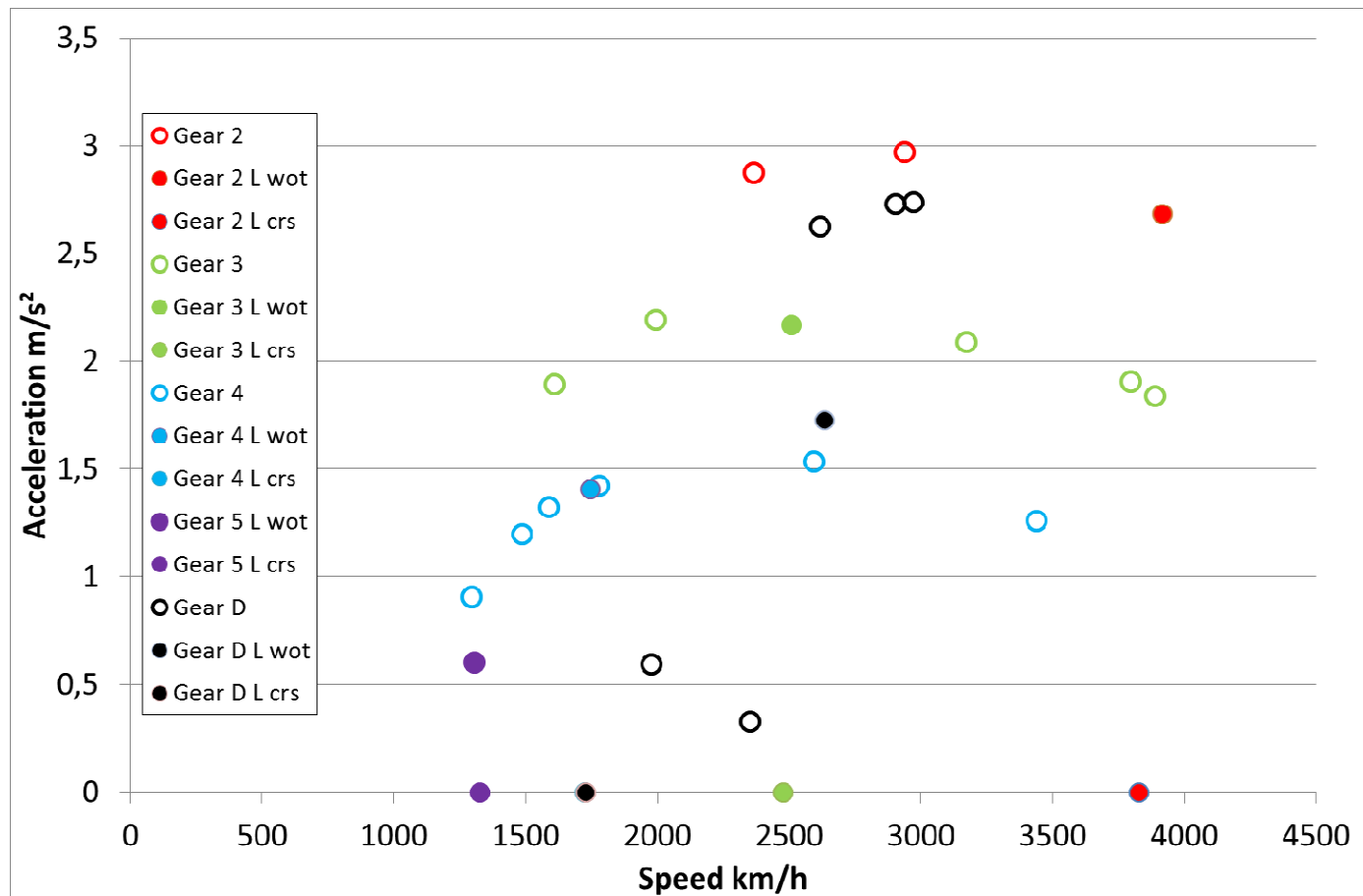
Test Program application

- UN R51.03 annex 3, on gear 2 to 5 and D



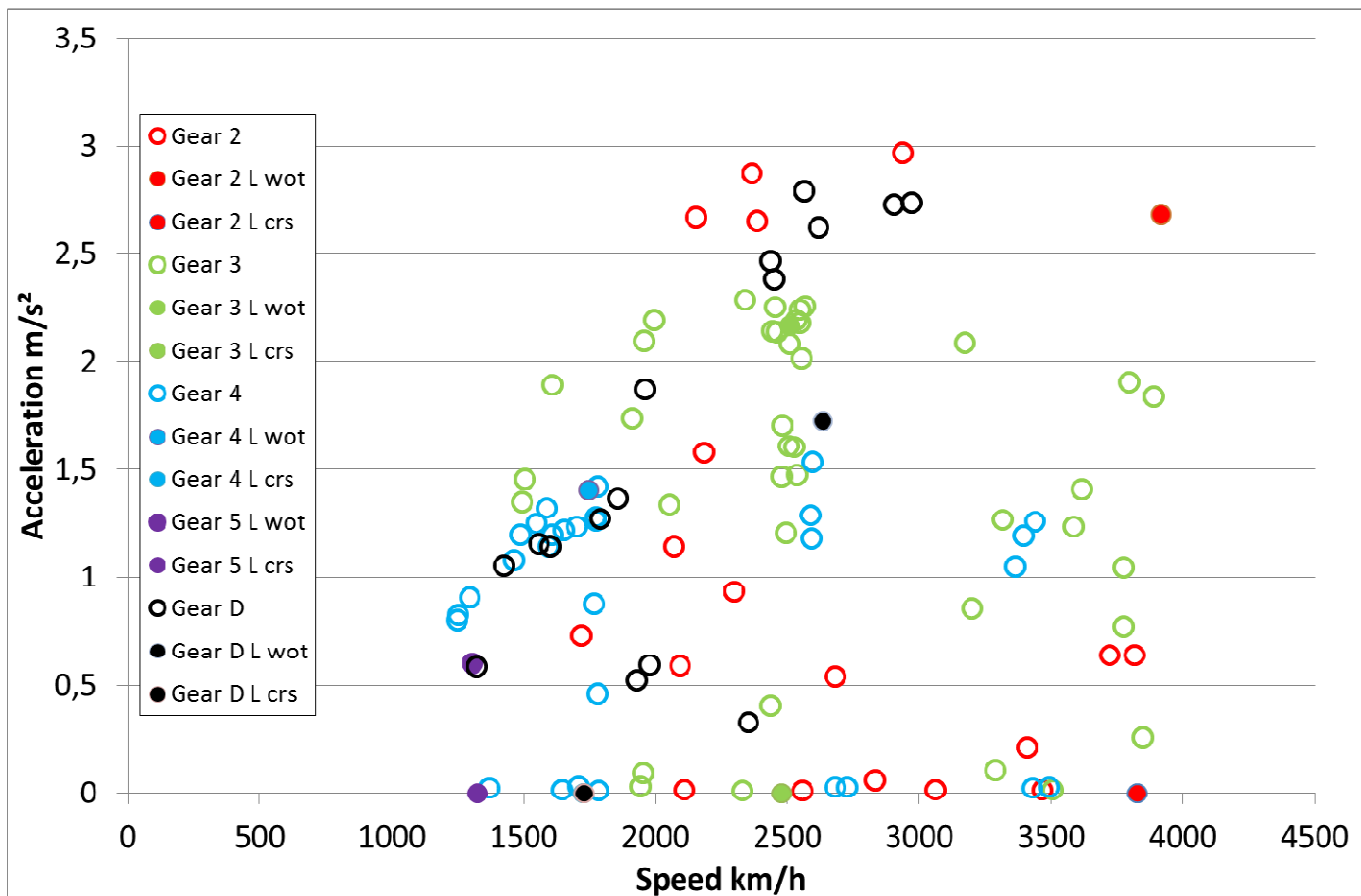
Test Program application

- Wot on control range, on gear 2 to 5 and D



Test Program application

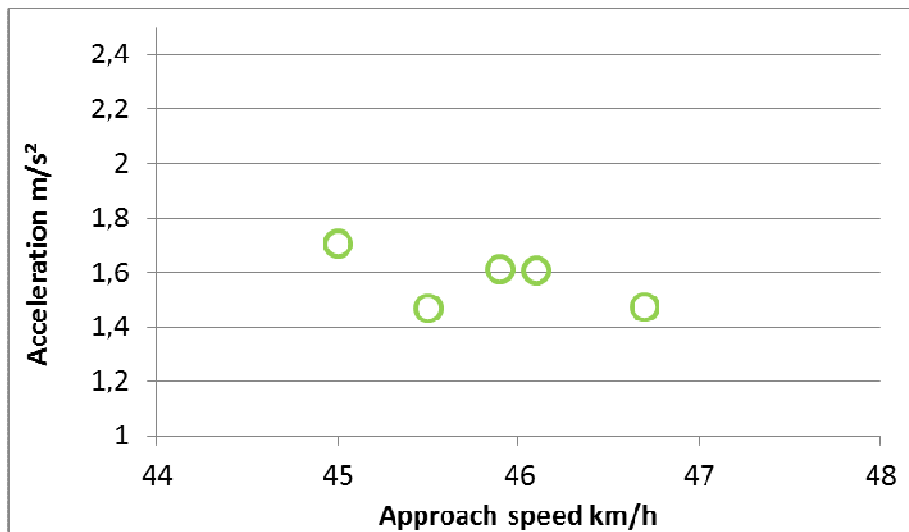
- From crs to wot on control range, on gear 2 to 5 and D



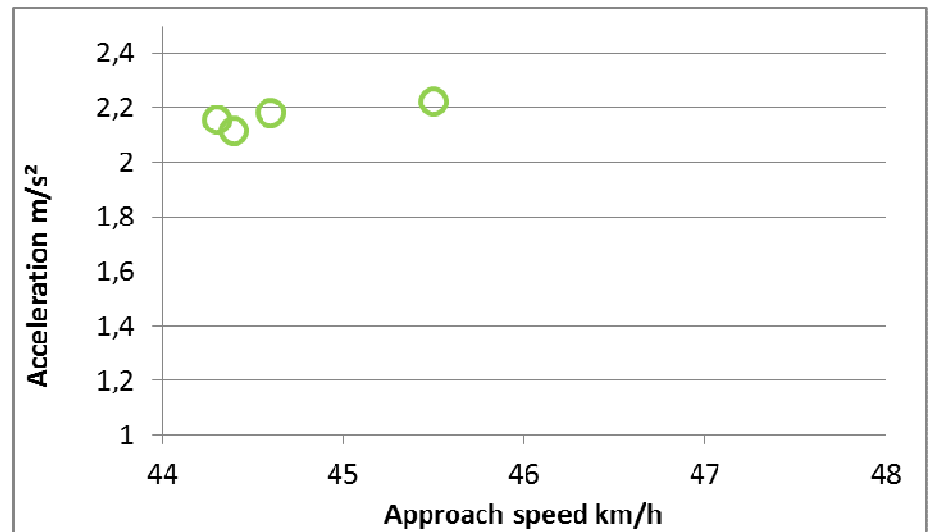
Test Program application

- Partial throttle : Difficulties to manage target acceleration with target speed \rightarrow *Variability of acceleration level with approach speed for a target speed*

Partial throttle

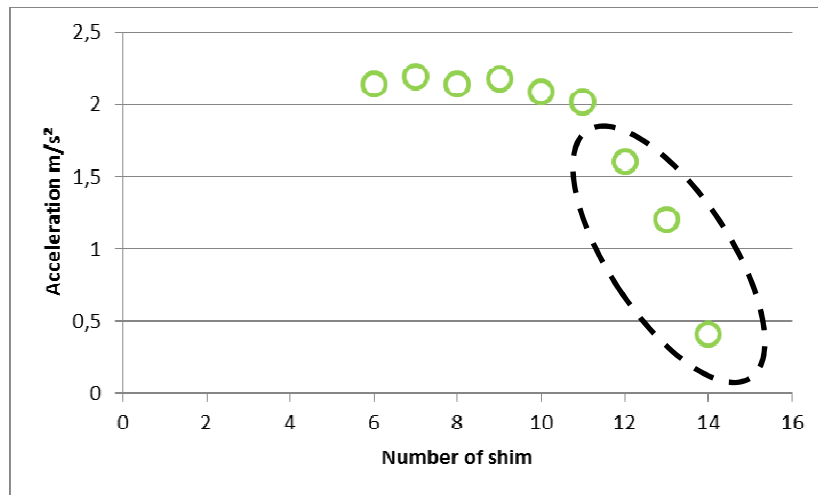


wot

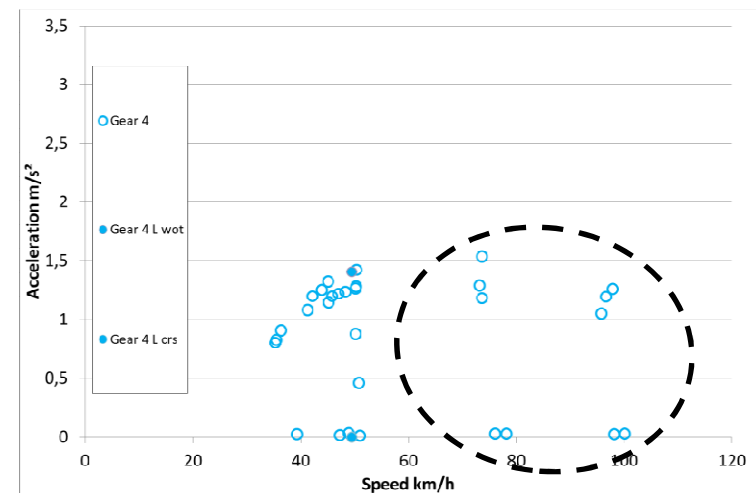


Test Program application

- Partial throttle : Difficulties to manage useful pedal range ...



... especially for high speed

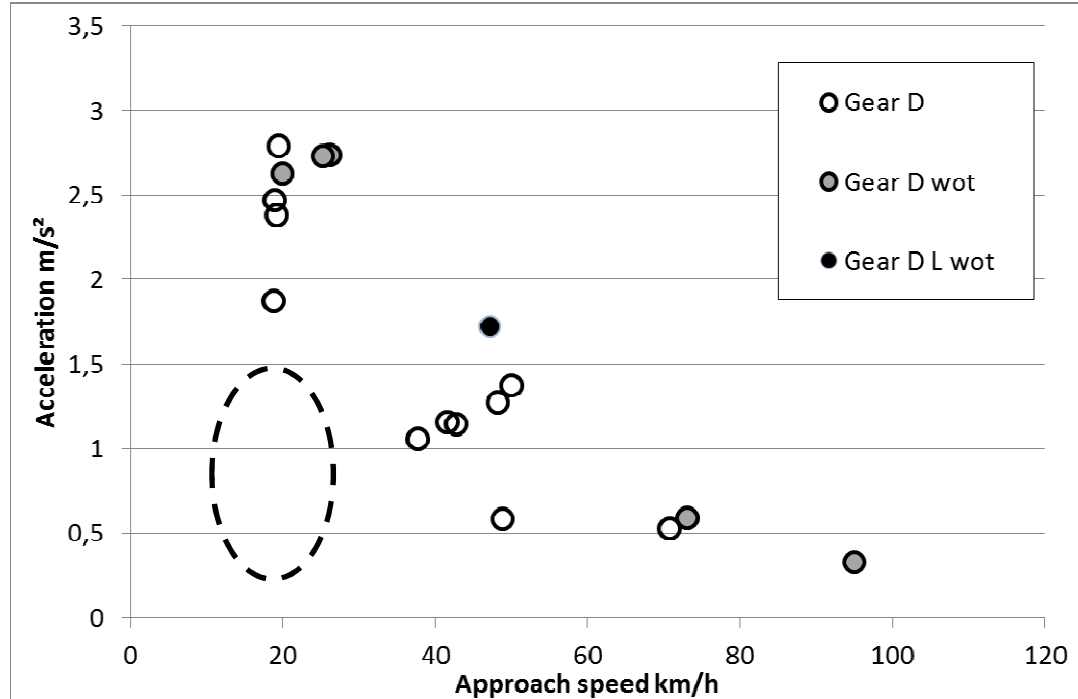


Test were done using shim for throttle steps (14) :



Test Program application

- Partial throttle : Difficulties to manage non-locked conditions



Wot + 2 levels of partial throttle were targeted

Test Program application

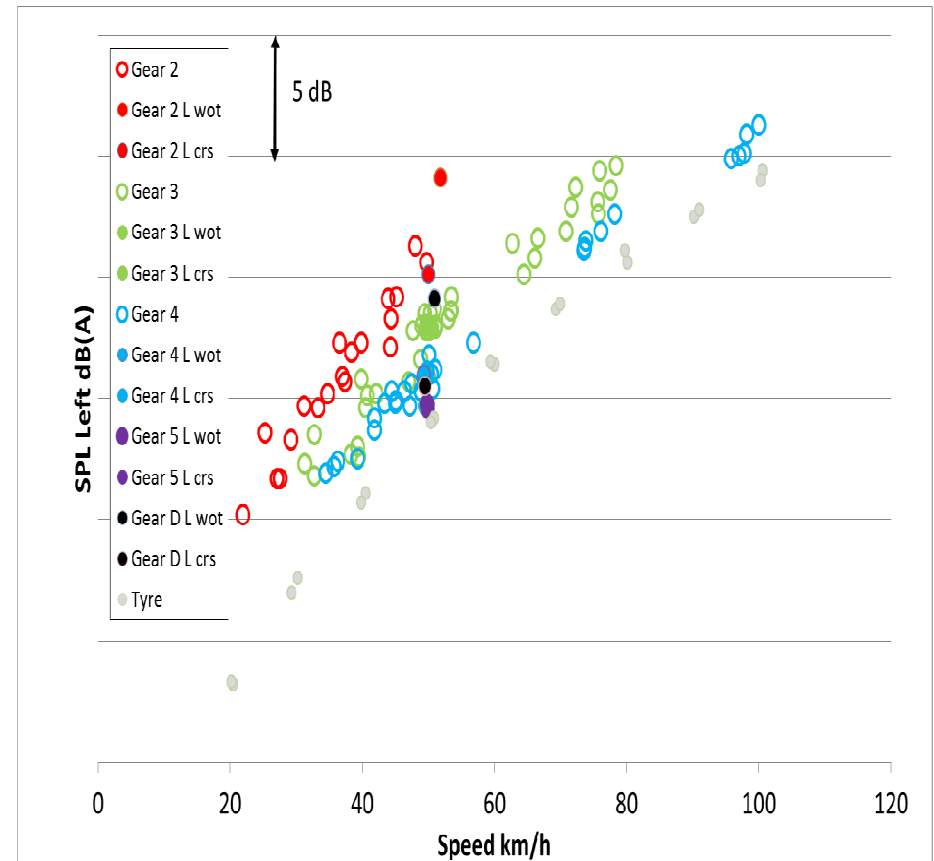
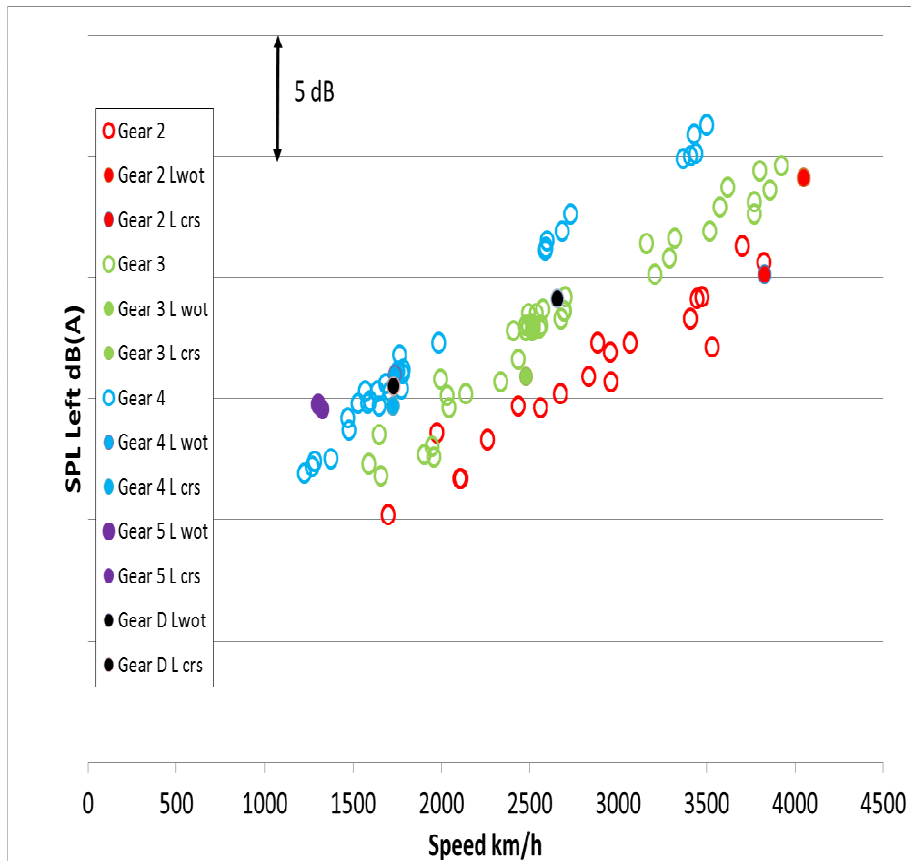
- To be clarify :
 - Speed (engine speed) target for *ASEP Tests*.
 - *Acceleration target for ASEP Tests.*
 - *Add cruise test for ASEP tests.*
 - *Need or not to have same target speed for wot, pot and crs.*
 - *Non-locked conditions.*
- To be defined :
 - Potential range of partial subject to doubt

Preliminary results

Test results : The cloud

- UN R51.03 annex 3 + from crs to wot on gear 2 to 5

Total vehicle sound level

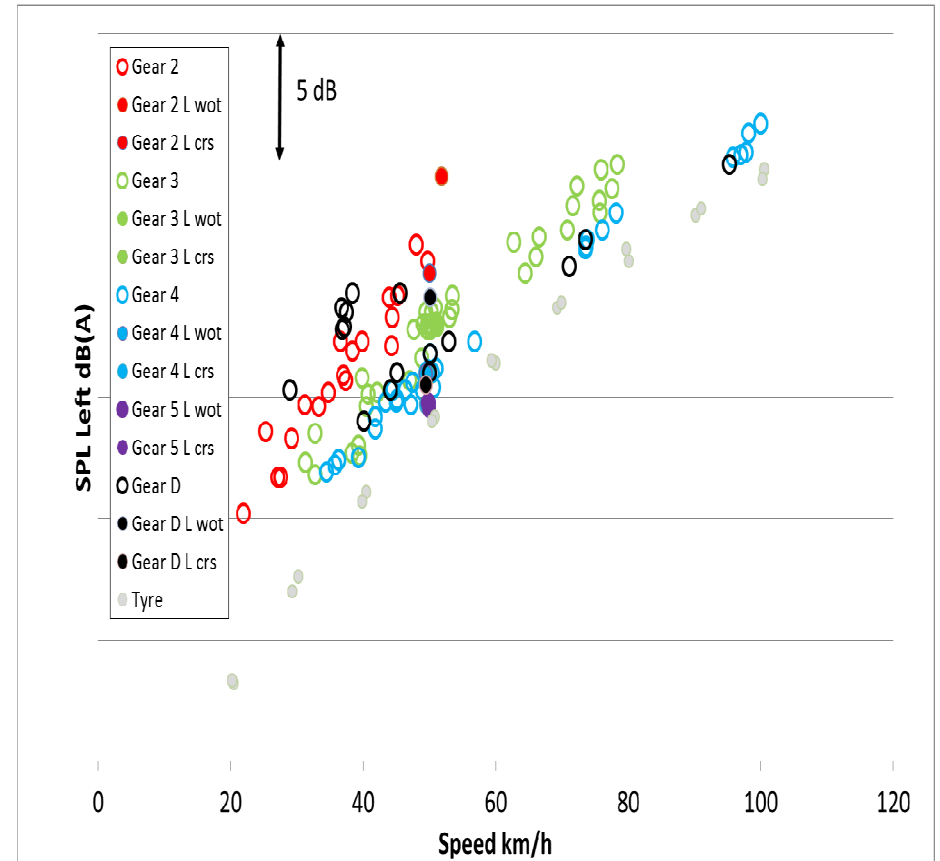
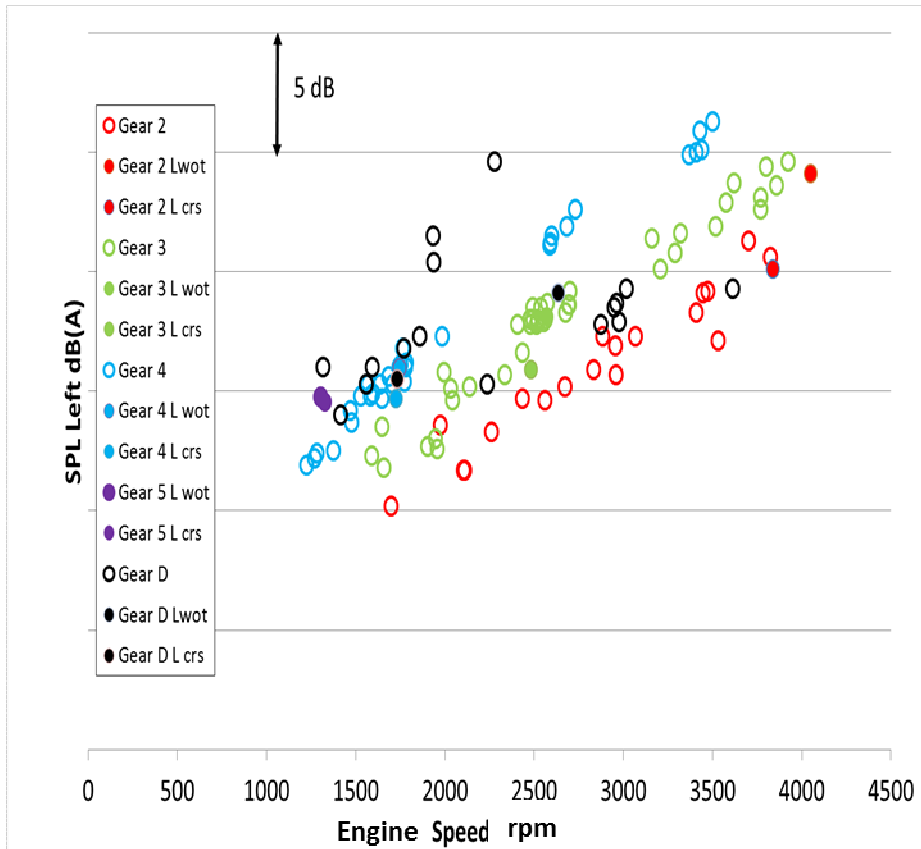


Preliminary results

Test results : The cloud

- UN R51.03 annex 3 + from crs to wot on gear 2 to 5

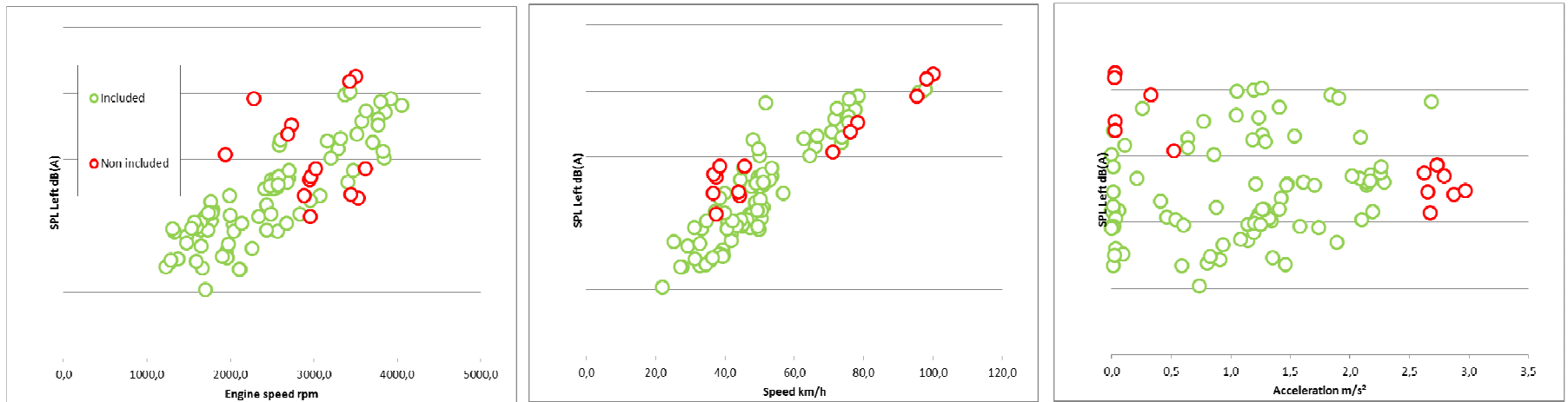
Total vehicle sound level



Preliminary results

Test results : The cloud

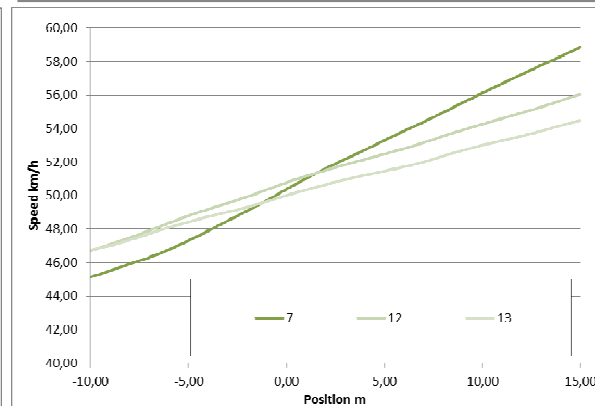
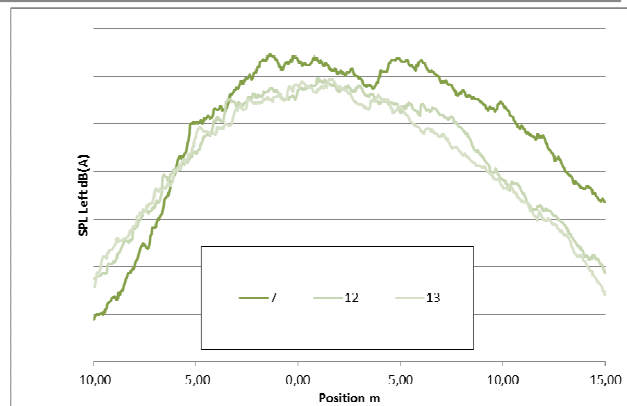
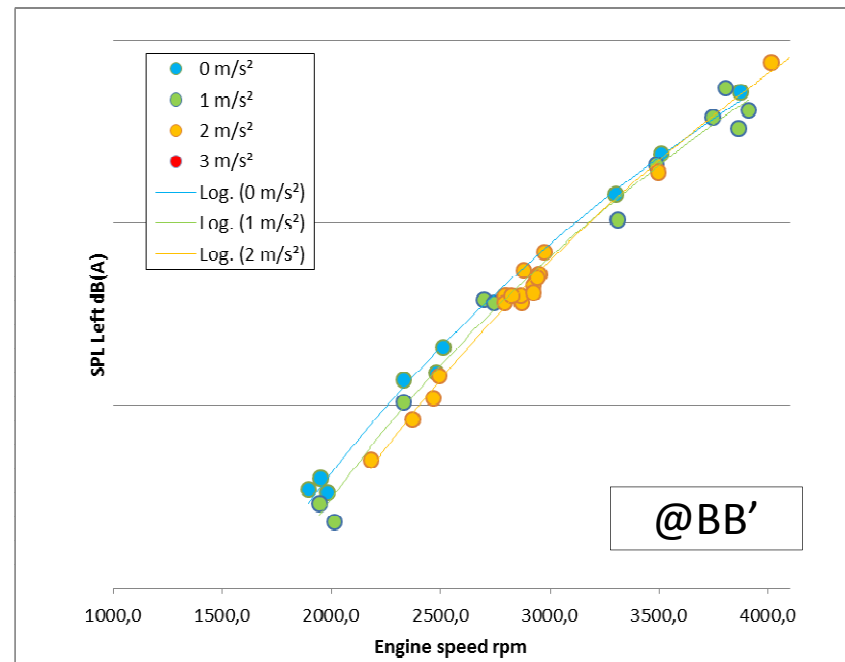
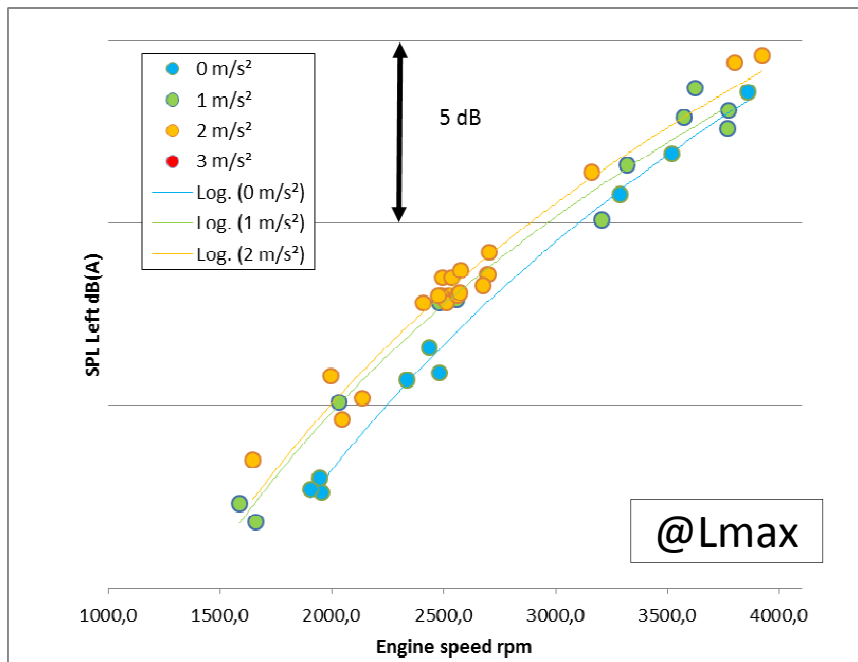
- Some points were excluded from the cloud because of non-understanding behaviour for vehicle and/or propulsion sound level :
 - High speed : $> 70-80$ km/h
 - High acceleration



More analysis shall be made to understand

Preliminary results

Partial throttle : N @ L_{max} or @BB'



Preliminary results

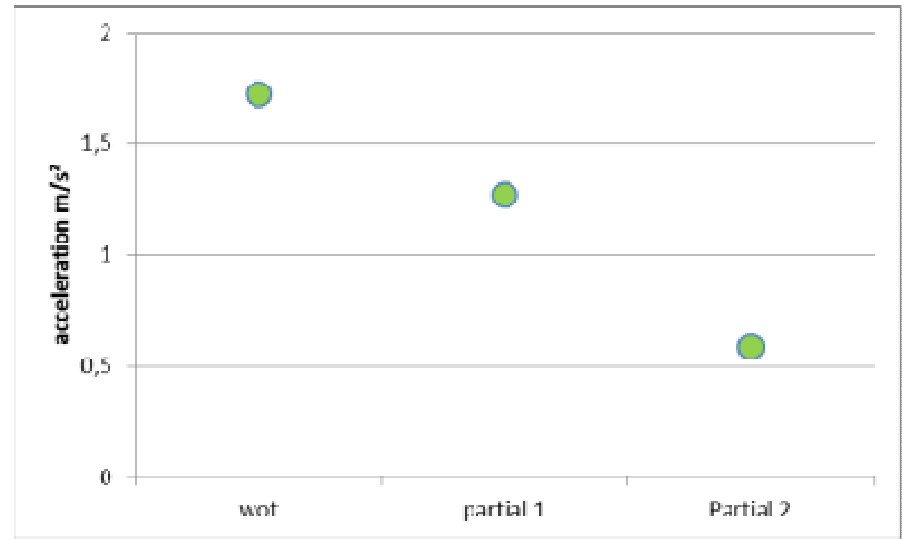
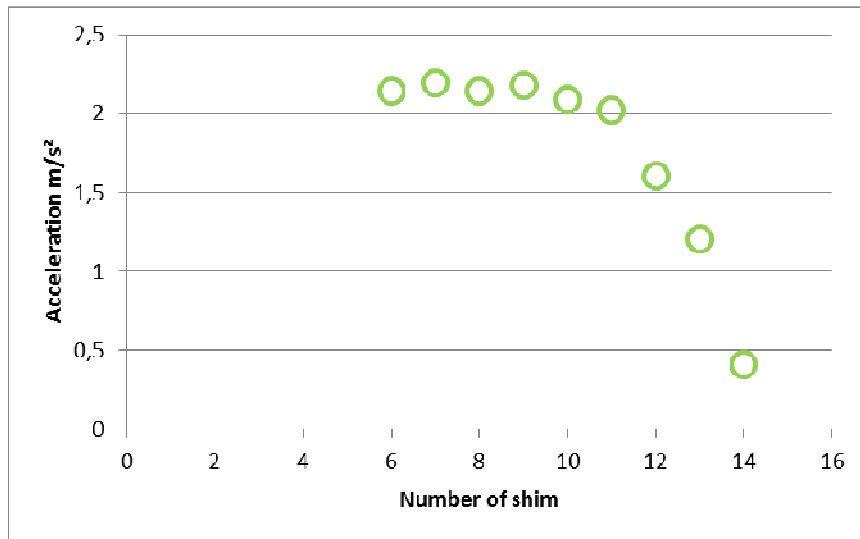
Partial throttle : Behaviour

- Locked condition :

Using shim for throttle steps (14)



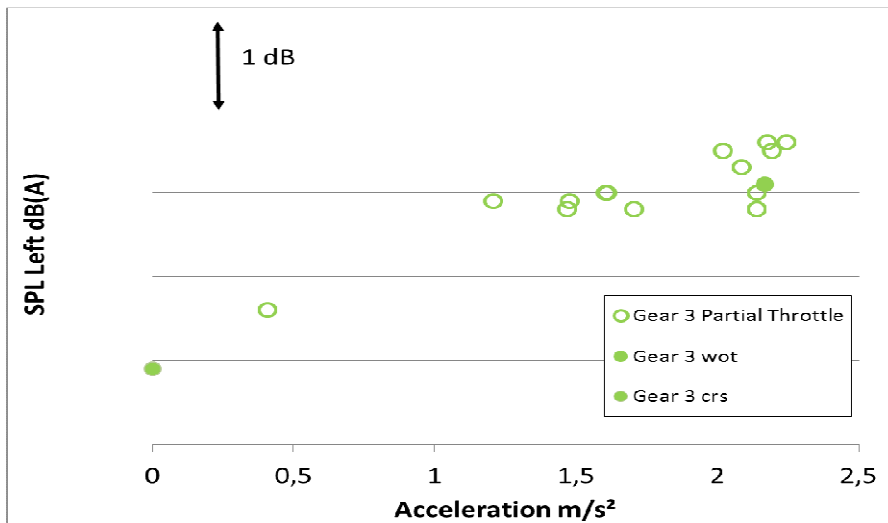
- Non locked condition :



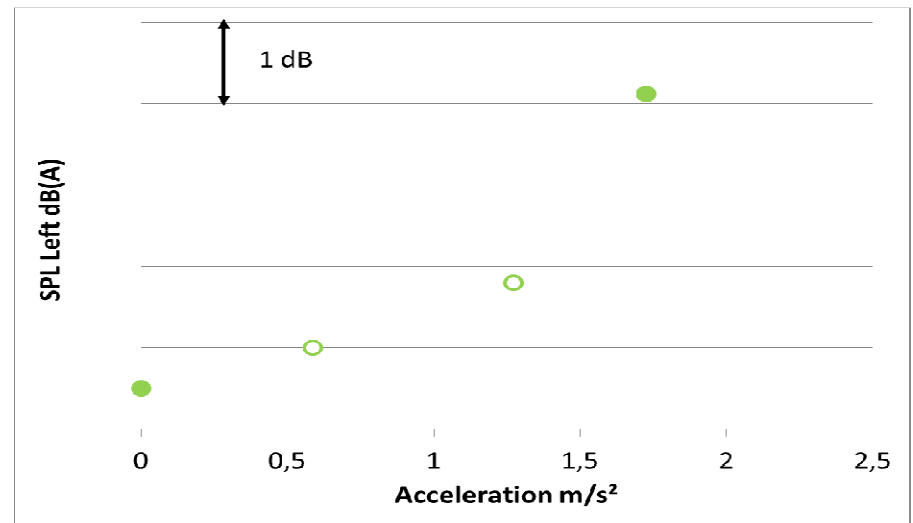
Preliminary results

Partial throttle : Behaviour

- Locked condition :
Using shim for throttle steps (14)



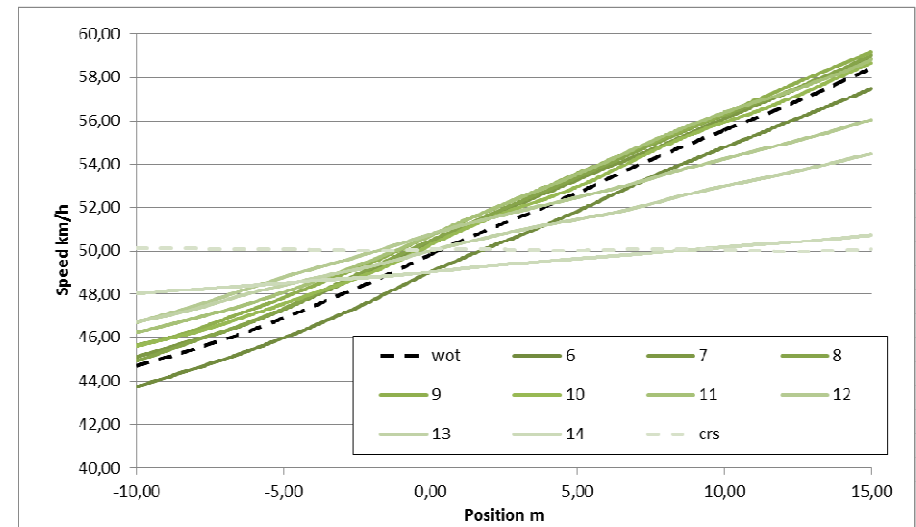
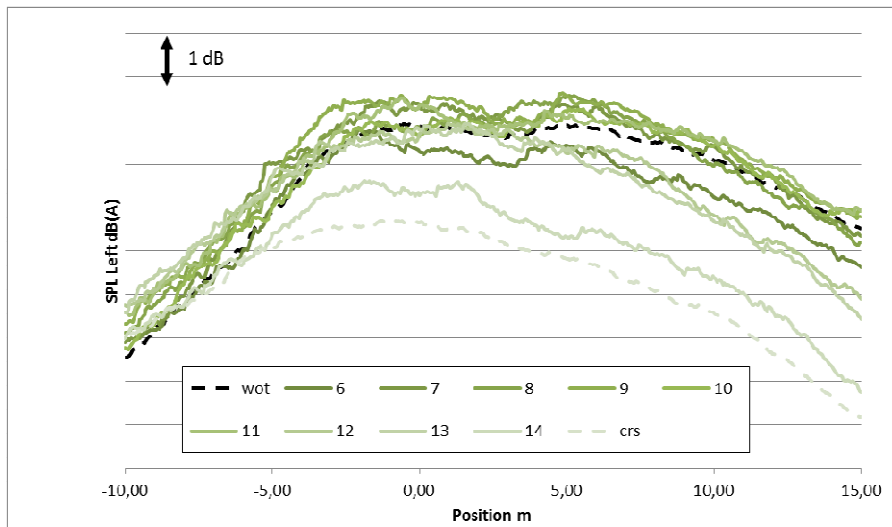
- Non locked condition :



Preliminary results

Partial throttle : Behaviour

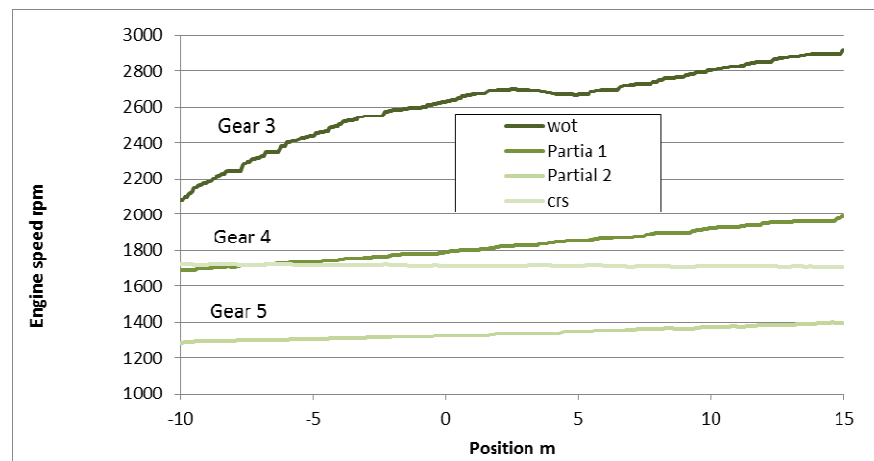
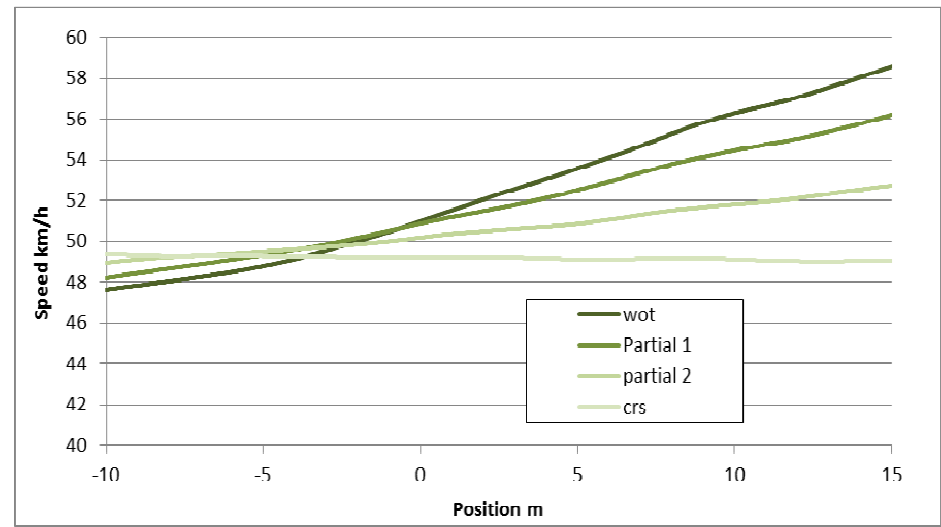
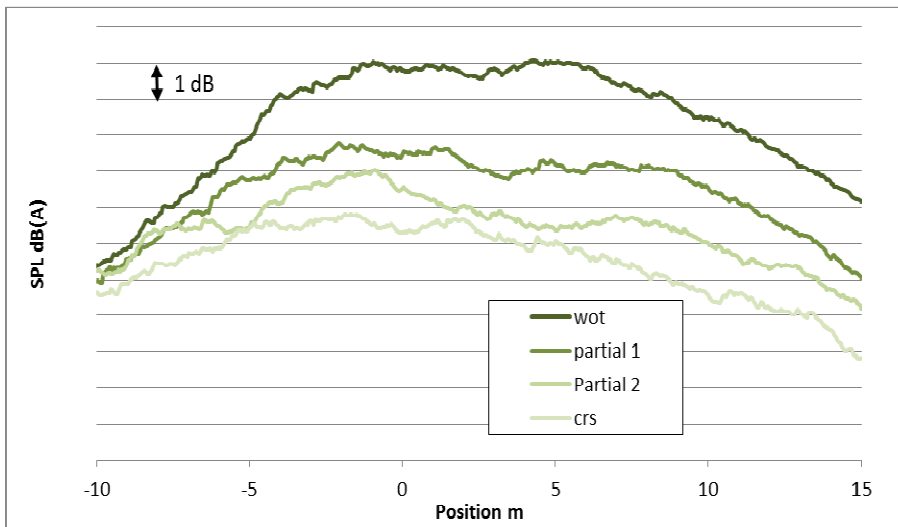
Locked condition :



Preliminary results

Partial throttle Behaviour

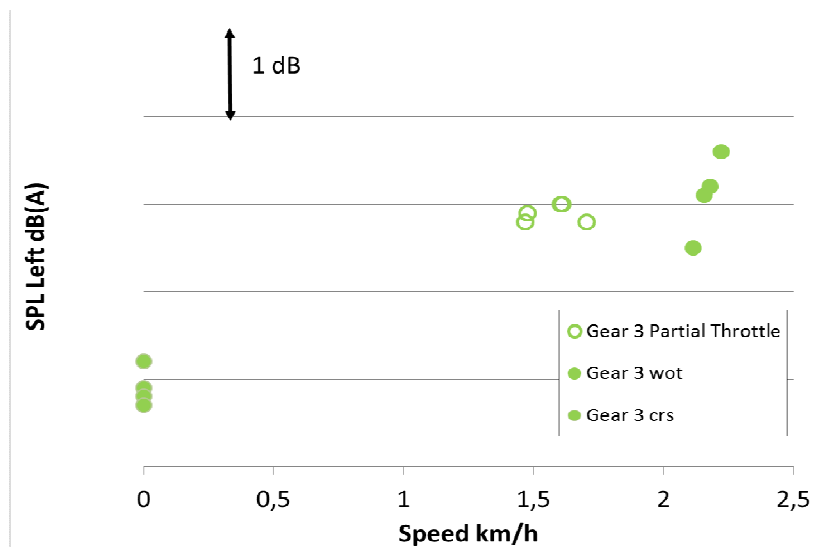
Non locked condition :



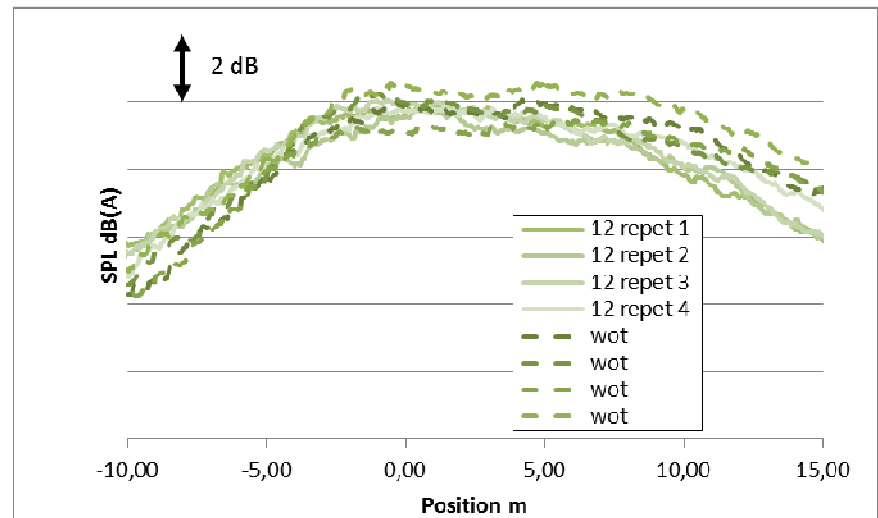
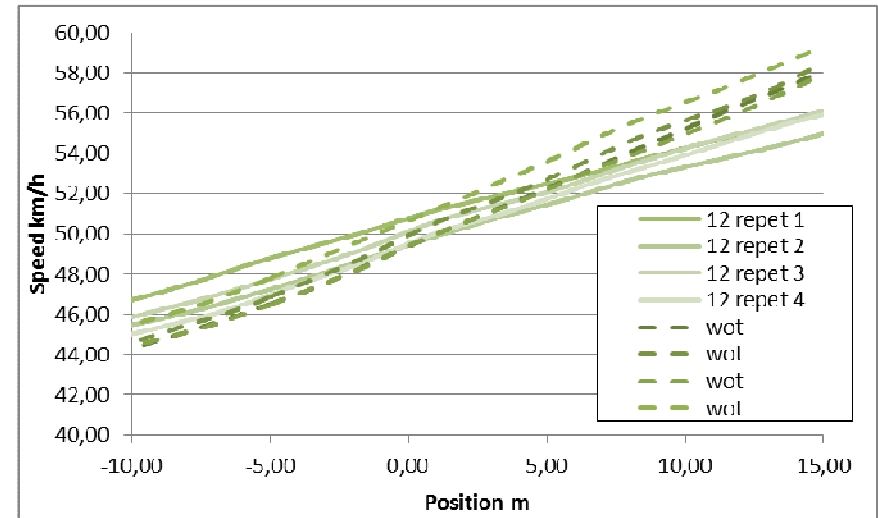
Preliminary results

Partial throttle : Repeatability

- Using shim for throttle step



→ Similar repeatability

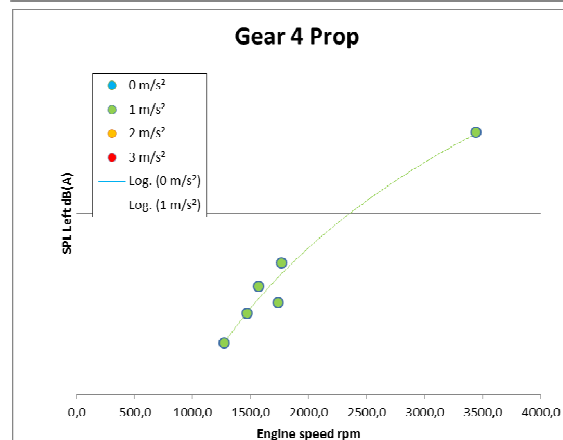
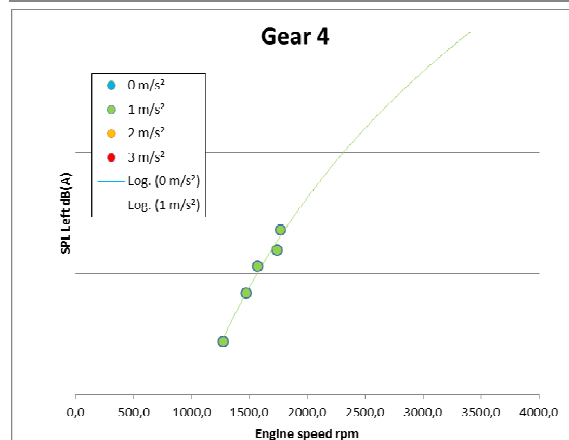
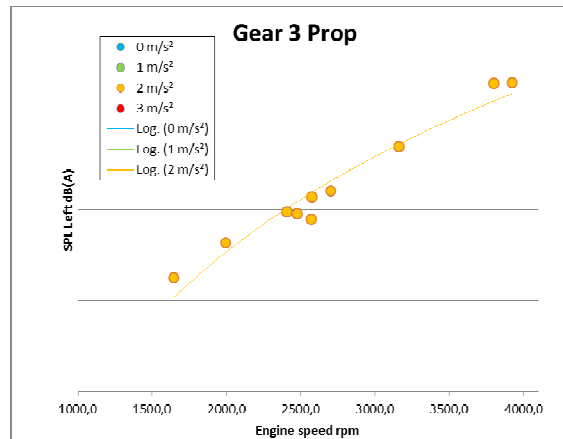
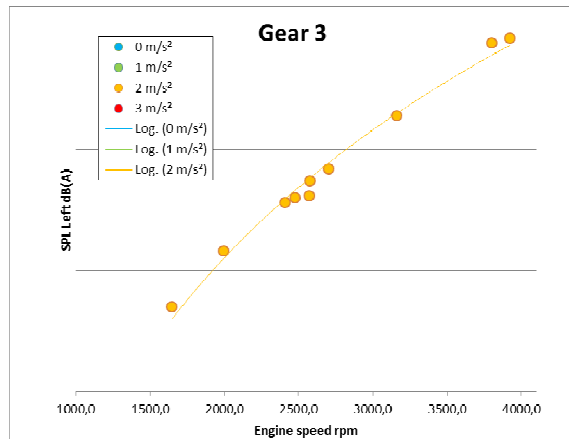


Preliminary results

The cloud : Analysis (locked cdt)

- Wot on gear 3 to 4

Total vehicle + propulsion sound level

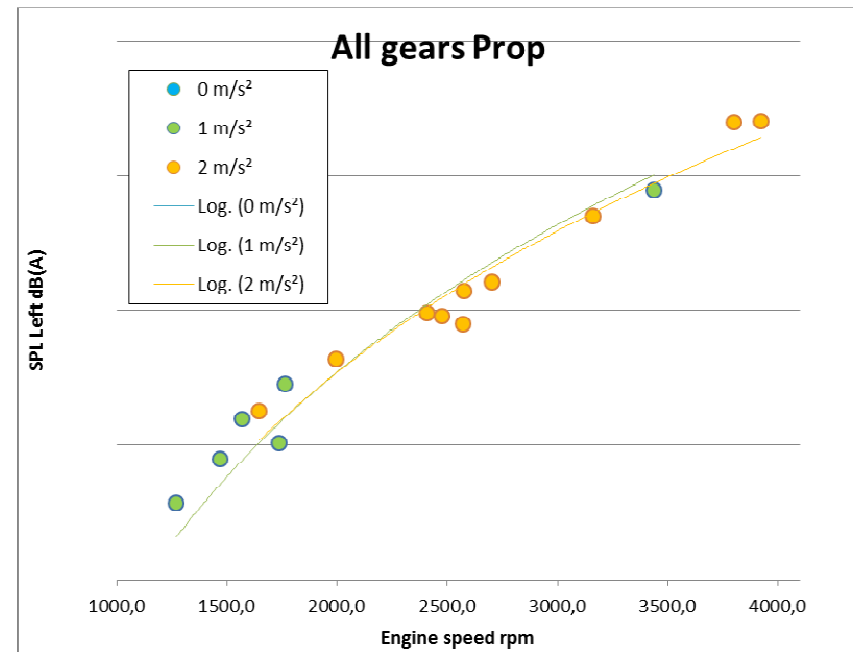
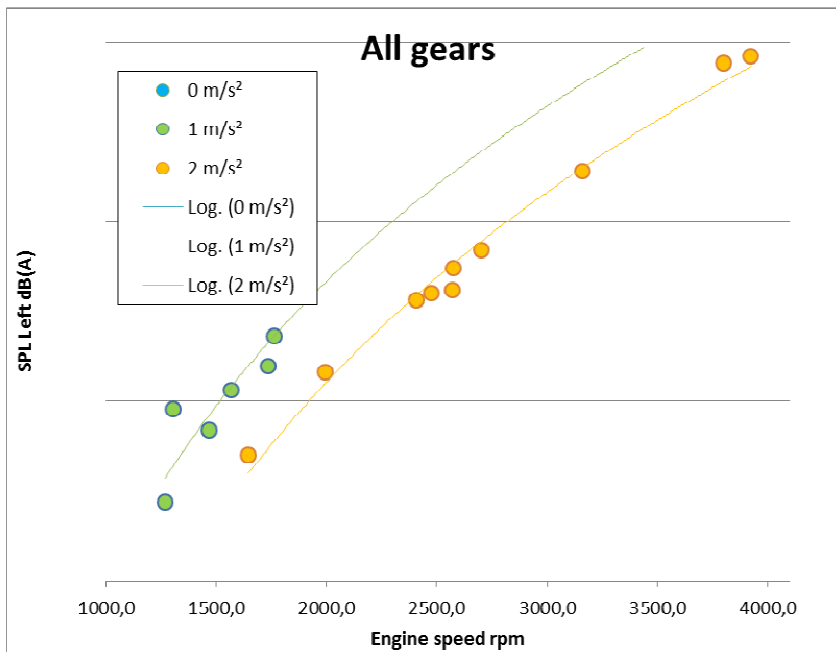


Preliminary results

The cloud : Analysis (locked cdt)

- Wot on gear 3 to 4

Total vehicle + propulsion sound level

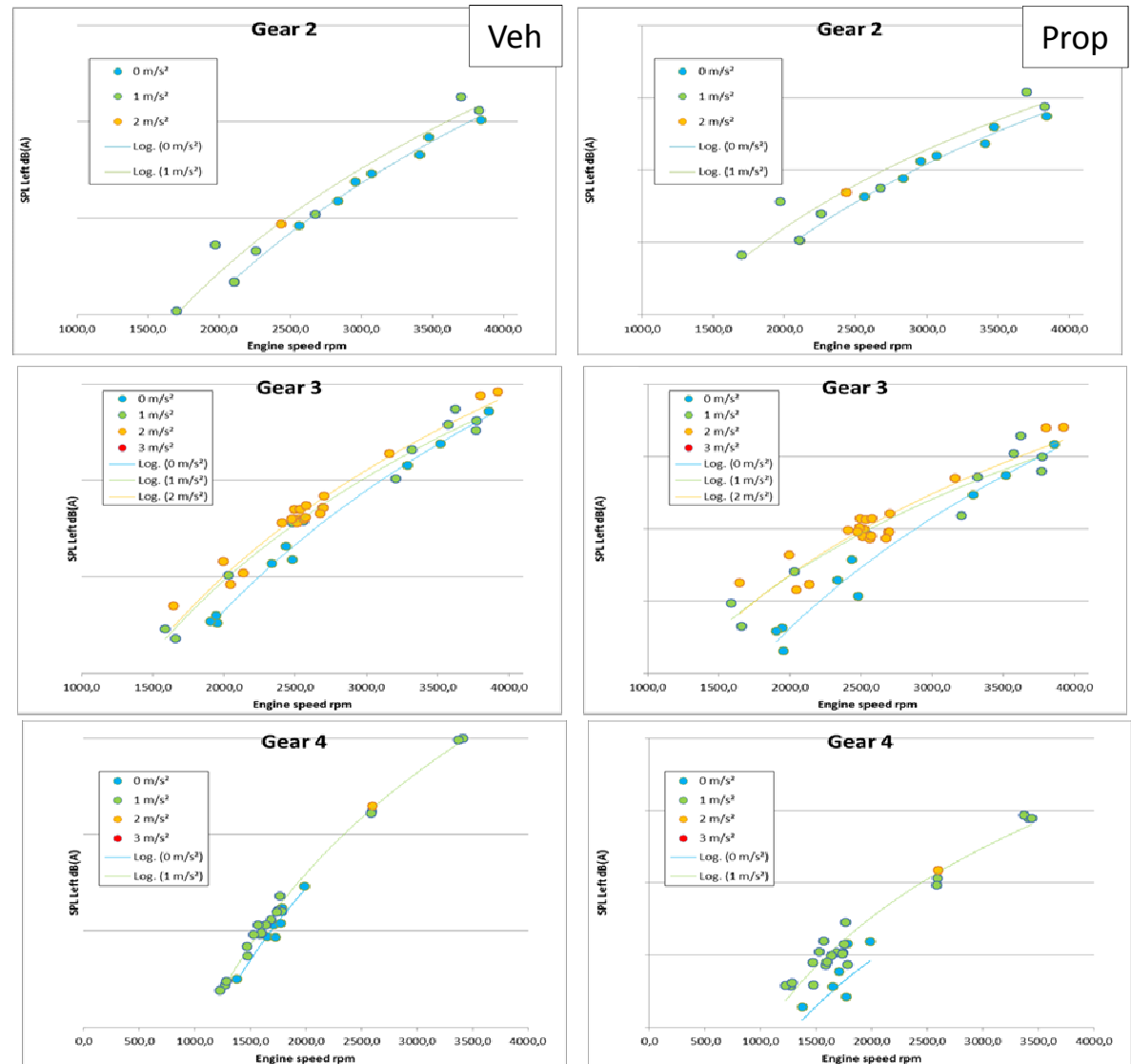


Preliminary results

The cloud : Analysis (locked cdt)

- Crs to Wot on gear 2, 3 to 4

Total vehicle + propulsion sound level

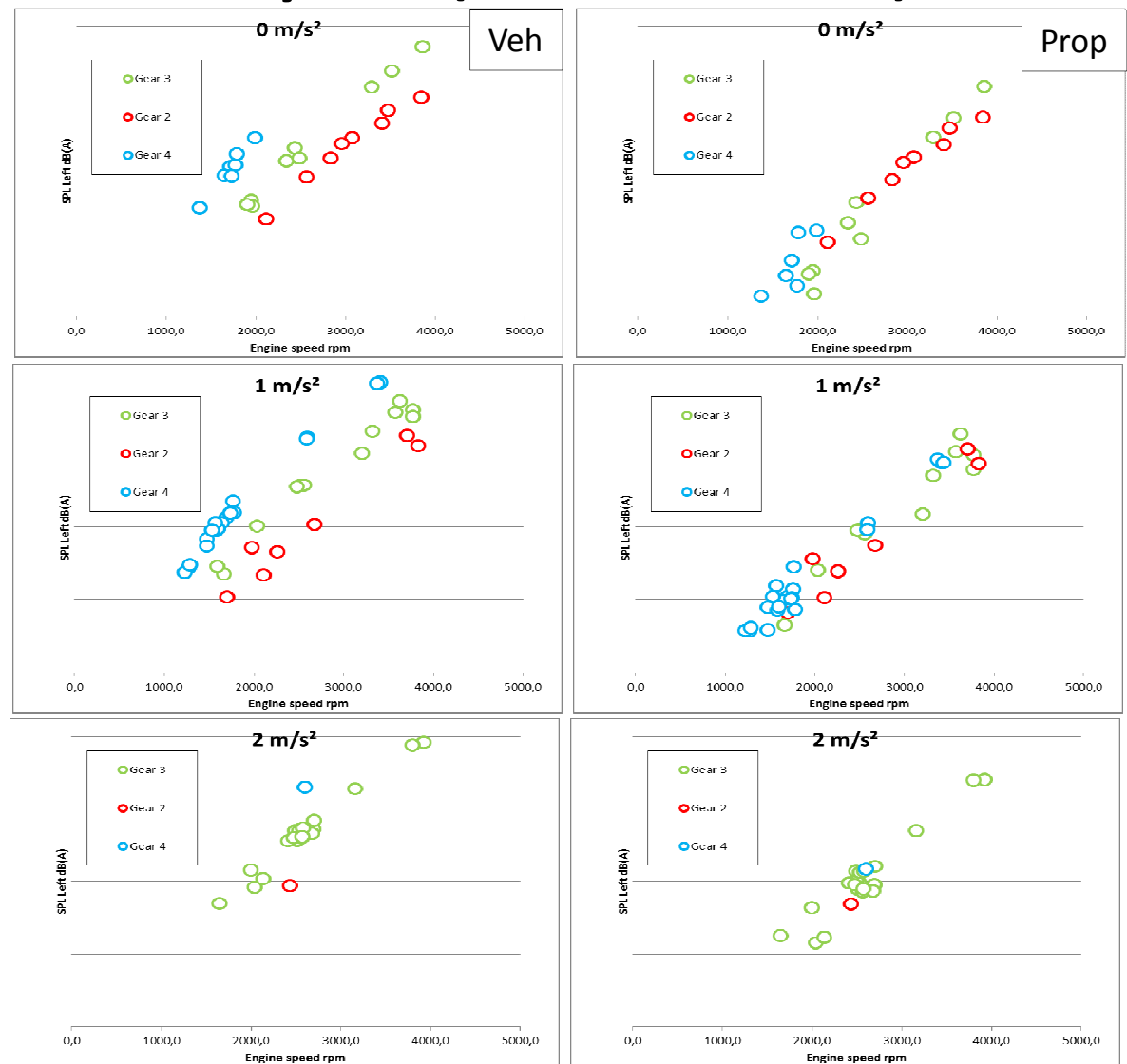


Preliminary results

The cloud : Analysis (locked cdt)

- Crs to Wot on gear 2, 3 to 4

**Total vehicle +
propulsion sound
level**

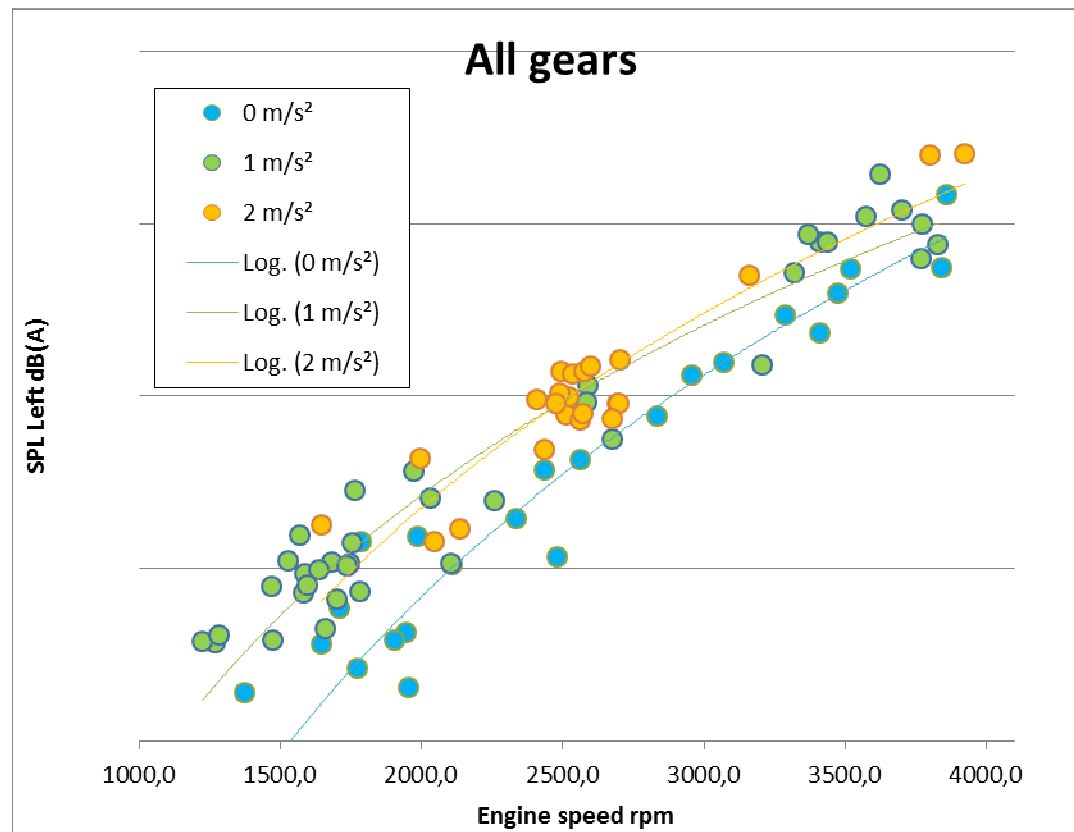


Preliminary results

The cloud : Analysis (locked cdt)

- Crs to Wot on gear 2, 3 to 4

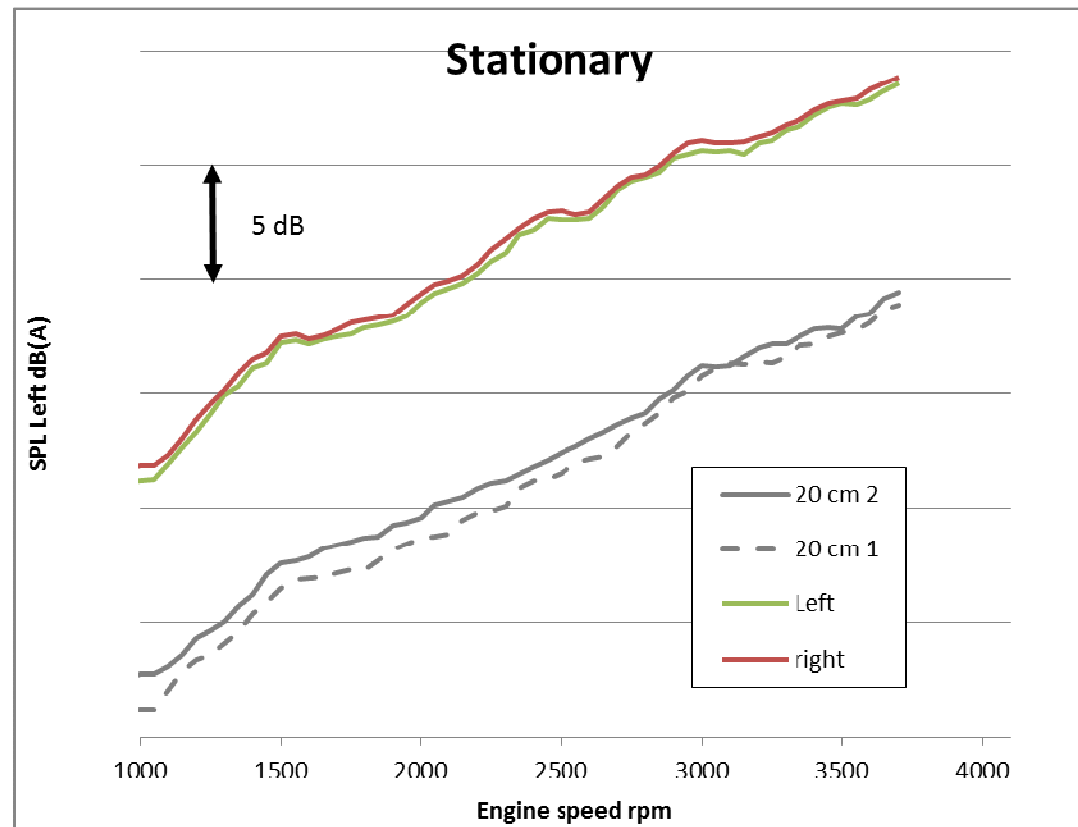
Propulsion sound level



Preliminary results

Stationary

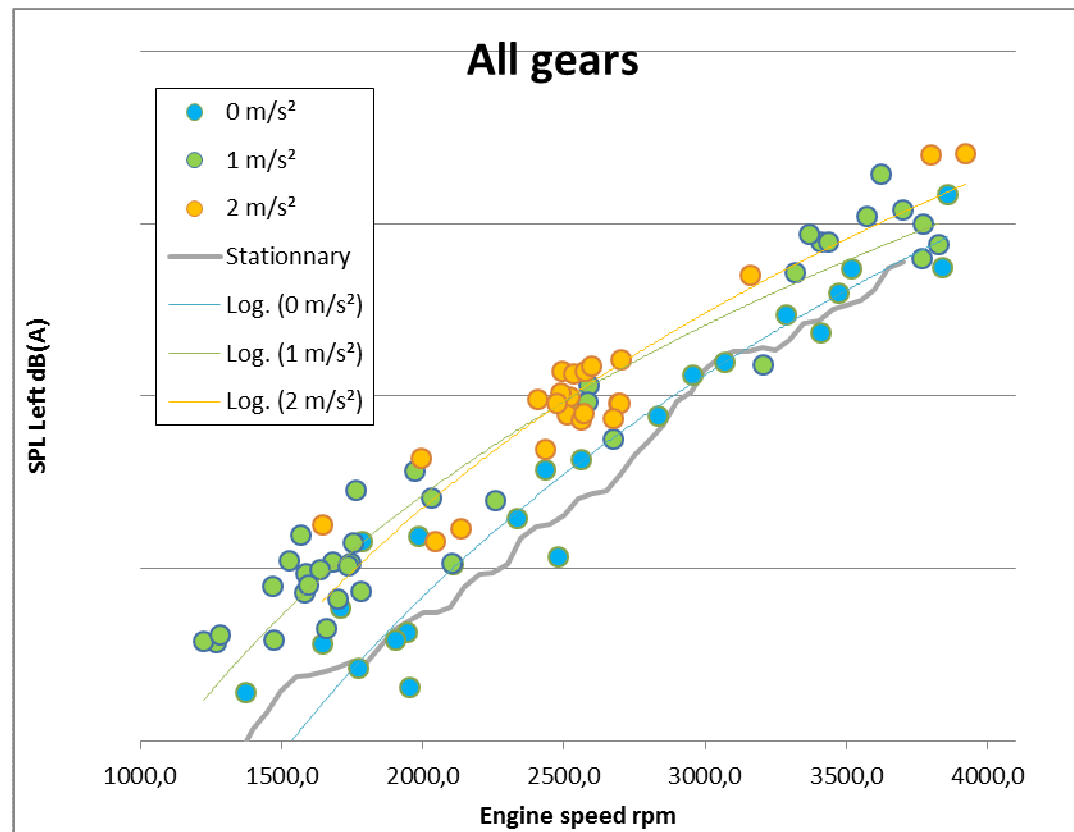
- Stationary was perform 2 times (with repetitions) :
 - right + 20 cm
 - Left + 20 cm



Preliminary results

Stationary

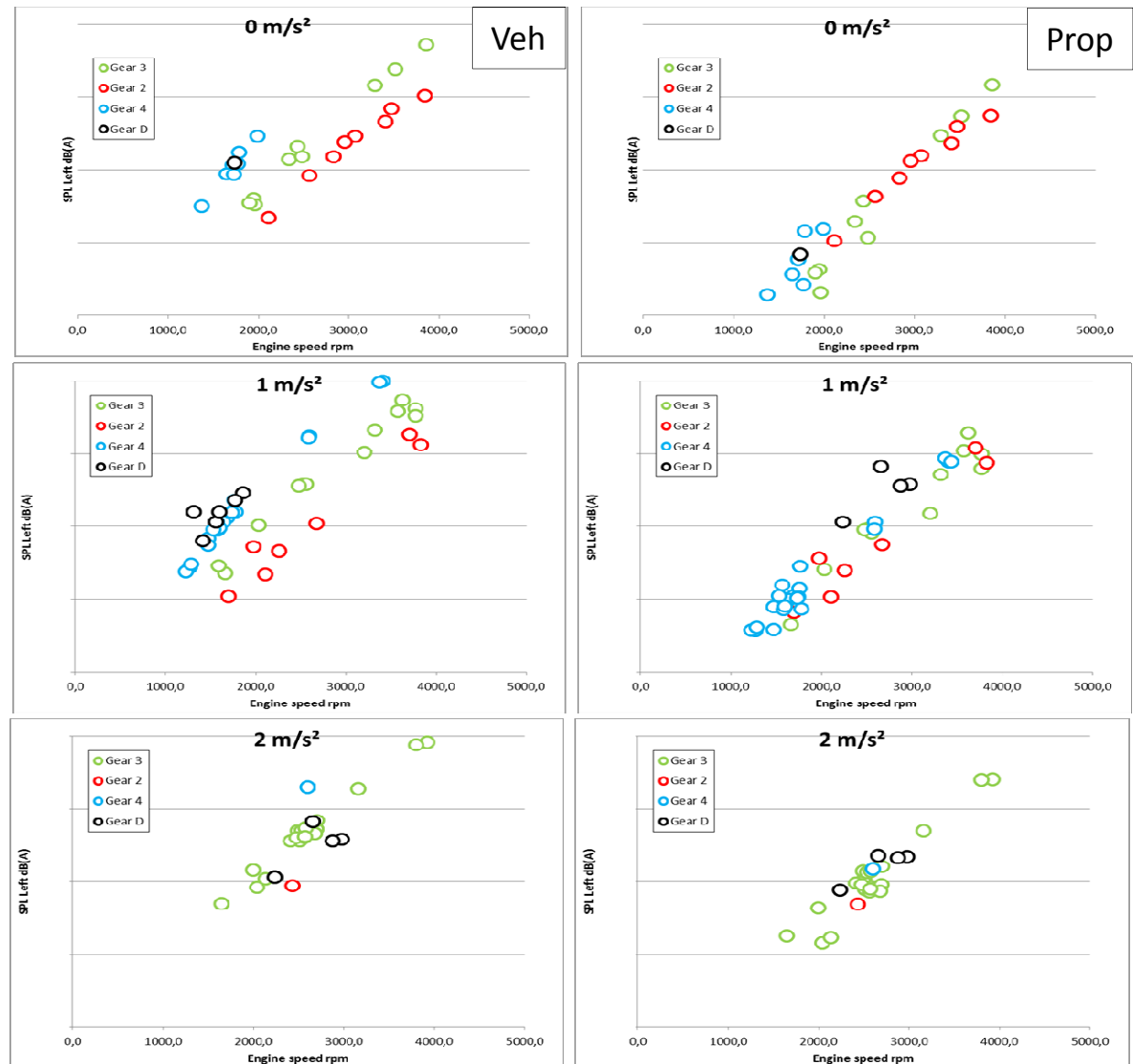
- Crs to Wot on gear 2, 3 to 4
Propulsion sound level



Preliminary results

The cloud : Non locked conditions

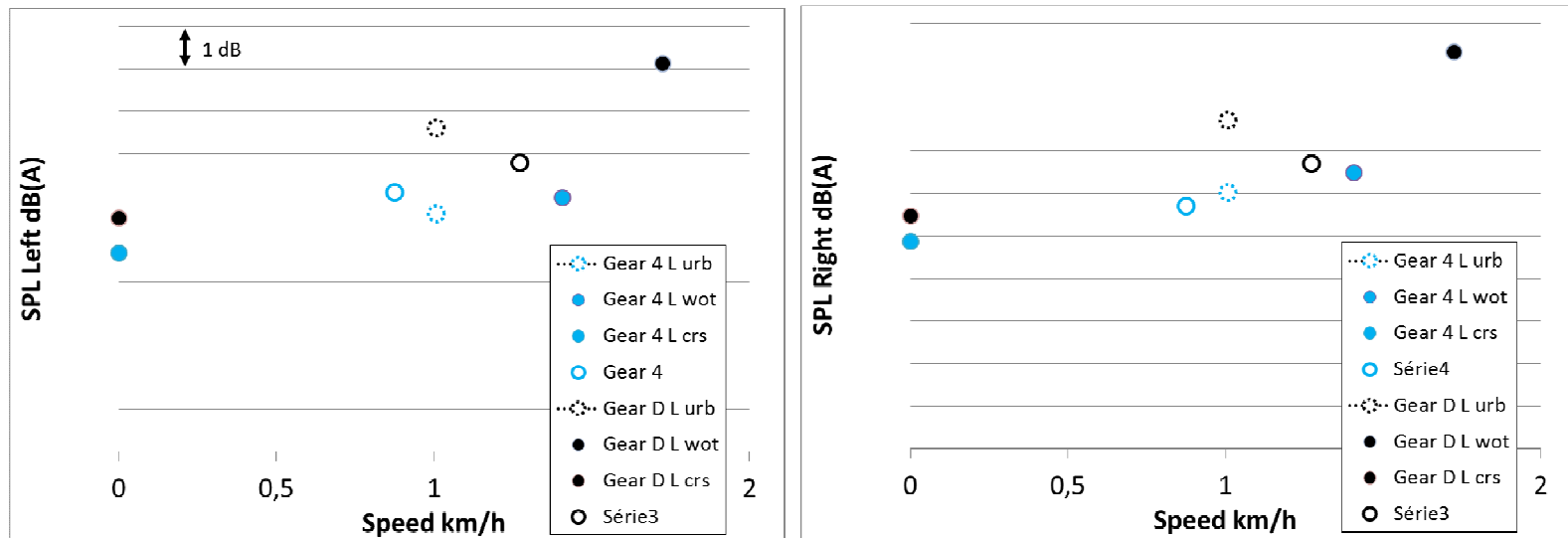
- Crs to Wot on gear 2, 3 to 4 total vehicle + propulsion sound level



First test Results

Partial throttle : Annex 3 issue

- Comparison between :
 - L_{urb} calculed from L_{wot} and L_{crs} on locked condition
 - L_{urb} calculed from L_{wot} and L_{crs} on non-locked condition
 - L partial throttle



→ Deviation between calculated and measured partial throttle levels is higher for non-locked condition than locked condition.

Conclusions

- Test Program is applicable with some difficulties for partial throttle and non-locked conditions. Furthermore, it could be time consuming.
- The way to analyze the cloud has to be define to interpret consistency of results, single vehicle model and “abnormal” deviations.
- Partial throttle for Annex 3 seems to be applicable.
- Partial throttle testing method should be more described for application.