



CLEPA
*European Association of
Automotive Suppliers*

Informal document No. GRB-48-5
(48th GRB, 1-3 September 2008,
agenda item 4)

**CLEPA presentations
supporting justification of
formal document
GRB 2008/5, proposing
amendments to R59.**



Content

1. Sound absorbing fibrous materials
2. Noise reduction systems with variable geometry
3. New driving-by test of R51 in R59
4. Particularities for automatic transmission
5. Static noise test



1. Presentation on sound absorbing fibrous materials.

Introduction of the concept of component design family.

Influence of the various silencer characteristics on the fibrous material life expectancy.

References : § 2.4. and § 6.4.



Current legislation

- Exhaust systems containing fibrous materials
- Wool retention should be demonstrated by:
 - Continuous road operation for 10.000 km
 - Conditioning on a engine bench
 - Conditioning by pulsation (2500 cycles)



Proposal for new Regulation

- § 2.4. Definition of the concept of a «design family» based on all the relevant design characteristics.
 - § 2.4. (a) through (f) take into account these relevant characteristics as discussed during previous GRB meeting
- § 6.4. Testspecifications.
 - The testspecifications remain unchanged but must not be repeated for noise reduction systems belonging to the same design family. As requested by GRB a more clear and simple formulation of the text is proposed.



2. Presentation on the implications of ASEP within R59.

- Introduction of the concept of
« noise reduction systems with variable geometry »
- Report on an extensive measurement campaign concerning normal type approved replacement systems.

- Introduction of the concept of noise reduction systems with variable geometry.
 - Many examples have been demonstrated to the GRB over the last two years which clearly show that the technology of noise reduction systems with a variable geometry may have a very positive contribution to exhaust noise abatement.
 - But, by inverting the valve commands in the examples which were shown, a very negative result could also be achieved.
 - Therefore, CLEPA proposes that for replacement exhaust systems, containing components with variable geometry, the technical service shall always request to verify the acoustic noise reduction functionality by effectively performing the ASEP tests.



- Report on an extensive measurement campaign concerning normal type approved replacement systems.
 - CLEPA has done measurements on 19 type approved replacement noise reduction systems. These systems do not contain any special devices and are approved according to the current R59 regulation.
 - The following data resume the results concerning both the OE and the replacement noise reduction systems.
 - The results show that all these systems without exception pass the latest criteria of both the G/F and OICA proposals.
 - Therefore, CLEPA proposes that for systems not containing any variable geometry it is sufficient that the manufacturer provides a statement of compliance with ASEP.



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3. Presentation on the application in R59 of the new driving-by test method of R51.



Conditions of measurement

- Tyres
 - The use of special noisy tyres is not allowed in the comparison test because of the potential acoustical masking effect on the exhaust noise. Only tyres which are tyre noise approved and which are in line with the legal requirements for in traffic use are acceptable for the comparison test.
- Environmental temperature
 - No limitation on the minimum environmental temperature has been set. The influence of temperature on exhaust noise contribution being minimal for comparison testing.



Conditions of measurement

- **Measurement accuracy**
 - The current R59 regulation results in some practical inconsistencies and confusions with regard to the measurement accuracy and rounding off practice to the nearest integer dB(A) value.
CLEPA proposes a simplified and uniform rule, taking into account the 1 dB(A) measurement inaccuracy.
- **Test vehicle acceptability**
 - A vehicle is acceptable as a test vehicle if it satisfies the requirements for COP. This rule will bring R59 in line with directive 70/157/EEC as amended.



Conclusion

- The new driving-by test method R51.03 and the current test method R51.02 so far have shown practically identical relevance when applied to the comparison test between OE and replacement parts in R59.



4. Presentation about the particularities of automatic transmission for the drive-by test in R59.



Automatic transmission

	Gear lock	No gear Lock
OEM	72.2	73.8
Type approved replacement system	72.6	74.0
Unacceptable replacement system	78,3	78,8

Values in dB(A)



Automatic transmission

- When the test vehicle is tested with an automatic transmission with non-locked gear ratios and the replacement silencer manufacturer is not in a position to prevent a shiftlock during testing, the vehicle may be tested in its normal condition of use. Downshifting may then occur. The back to back comparison test will however give similar results.

If in these conditions, the noise level of the test vehicle becomes higher than COP, the technical service will decide about the vehicle representativity.

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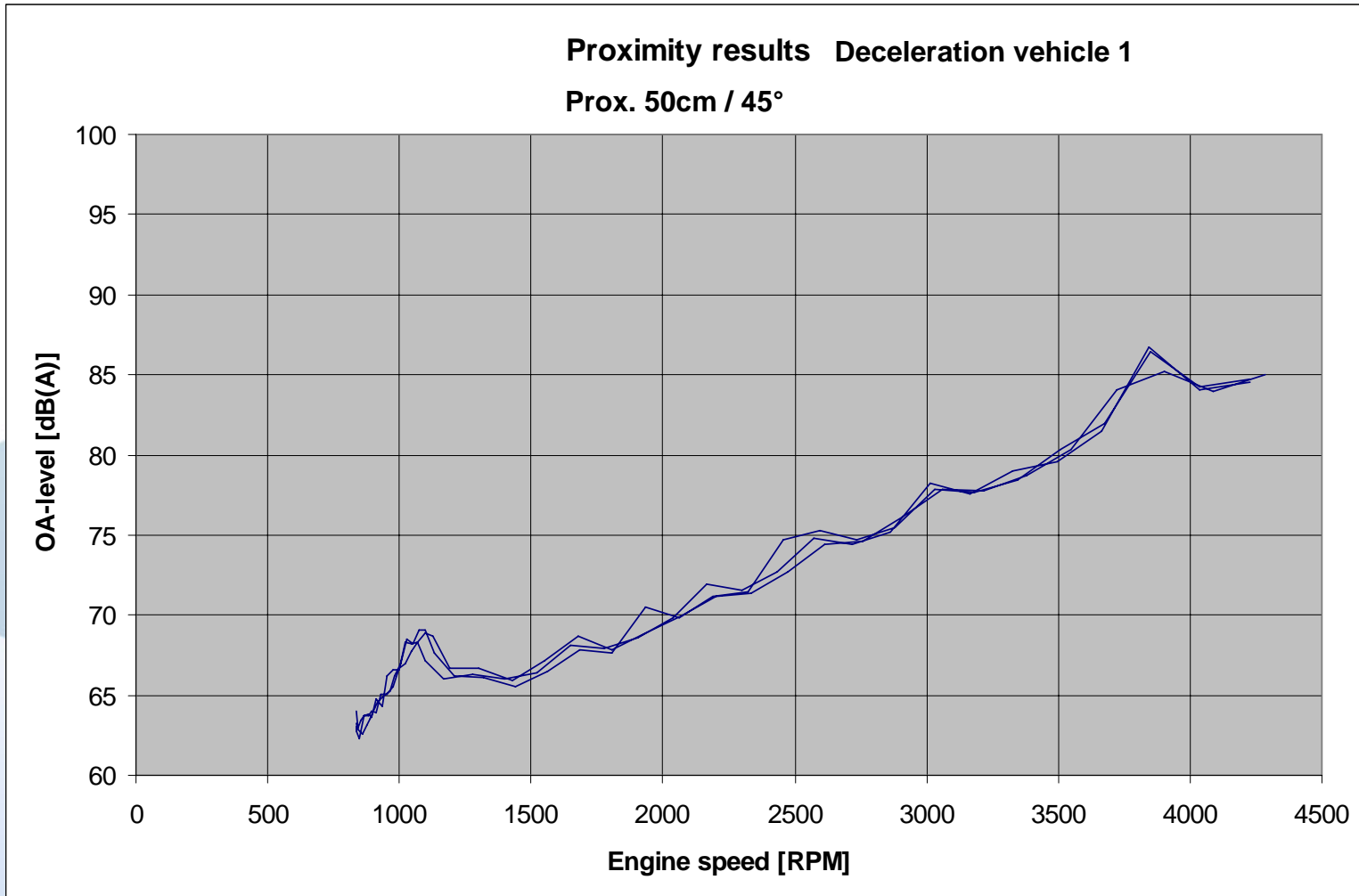


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5. Justification for the CLEPA amendment proposal of the static noise test procedure in R59.

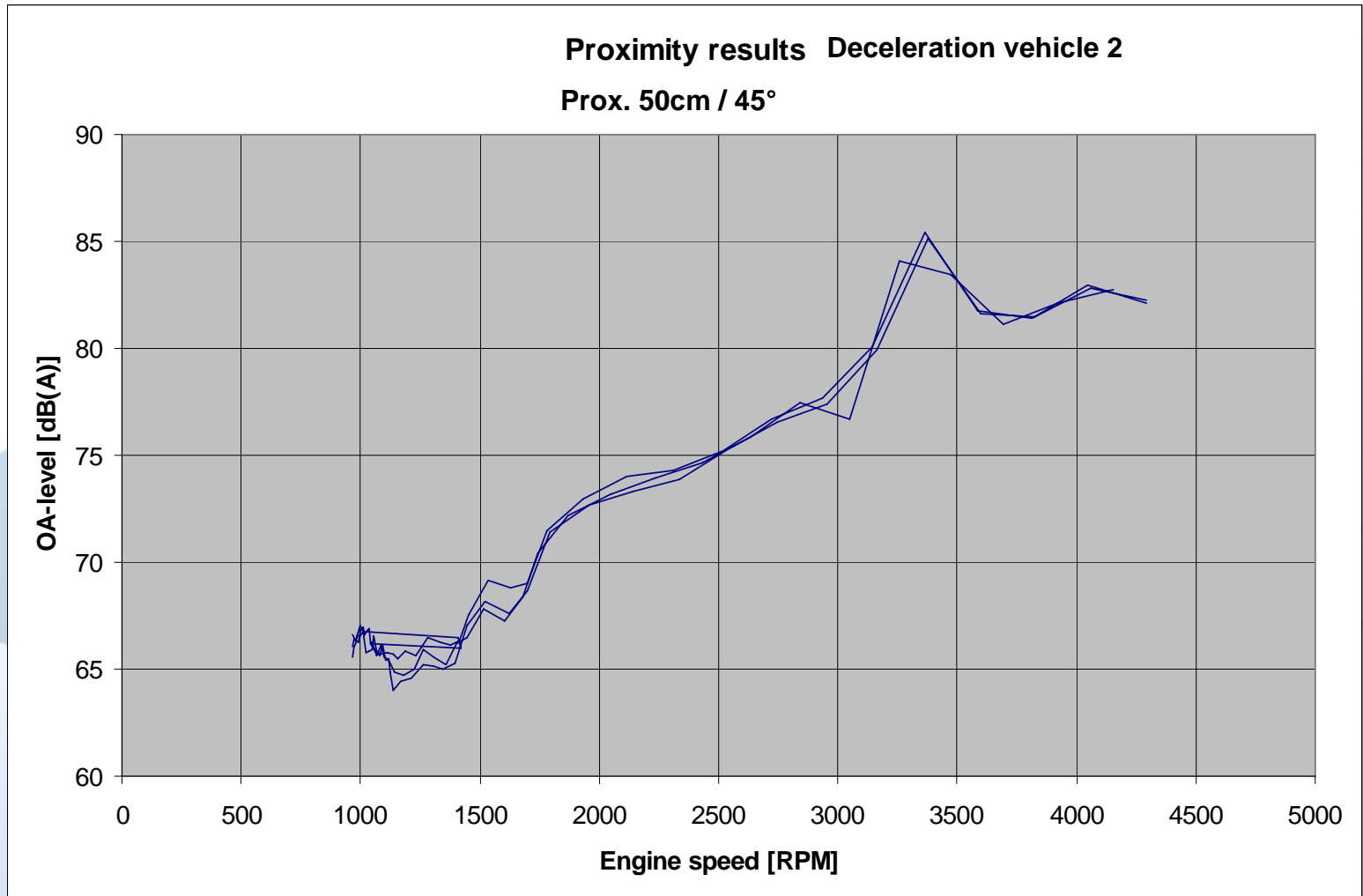


Static noise test



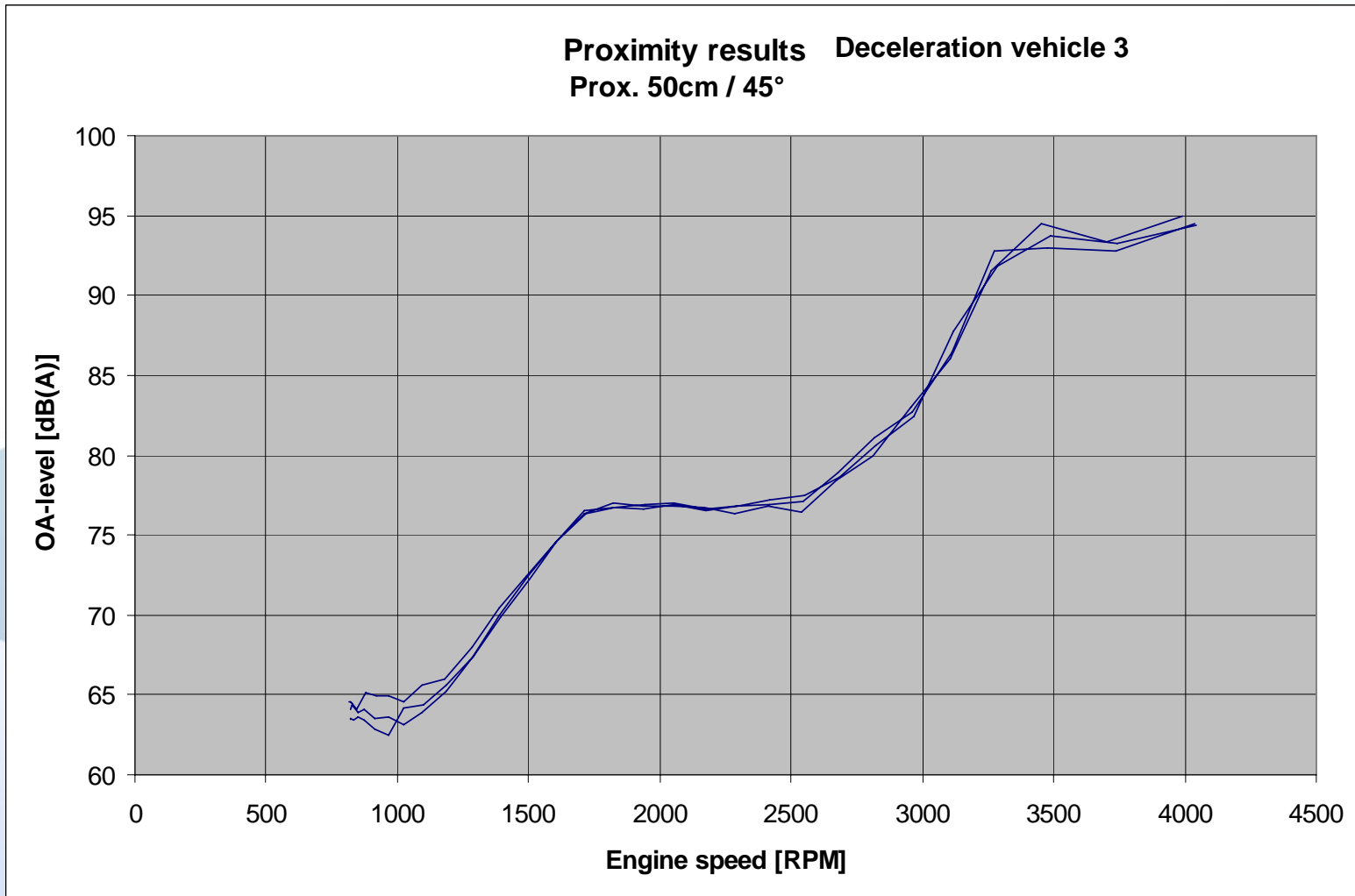


Static noise test





Static noise test





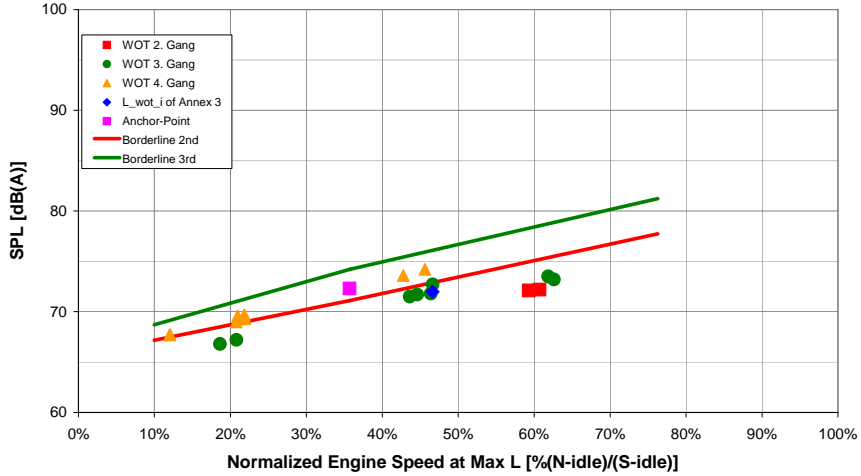
Static noise test

- Further to the test results presented by CLEPA during last GRB, the previous graphs illustrate the poor reproducibility of the current static noise test. CLEPA proposes to take into account this poor reproducibility by introducing a 2 dB(A) uniform tolerance on the comparison. The current test procedure however will not be modified.

Vehicle A	1.9l	93kW / 4000RPM	PMR= 68.64kW/t	Diesel	MT	L urban OE 72	L urban RE 72	L WOT i OE 72,0	L WOT i RE 72,9
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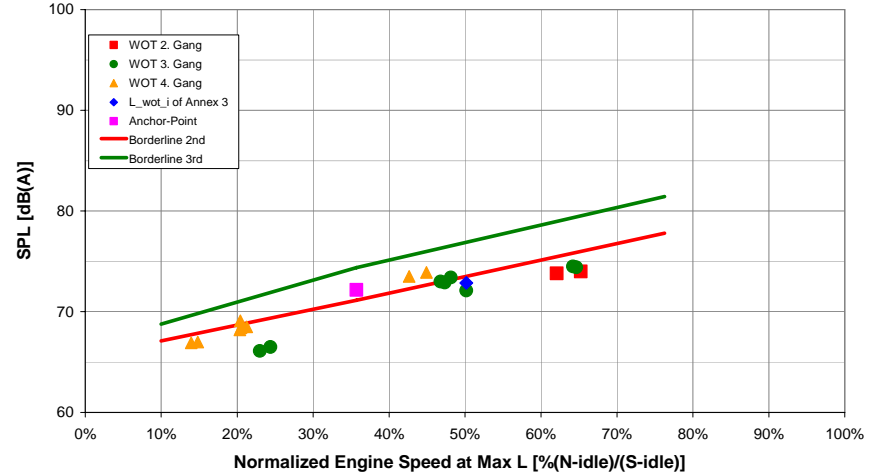
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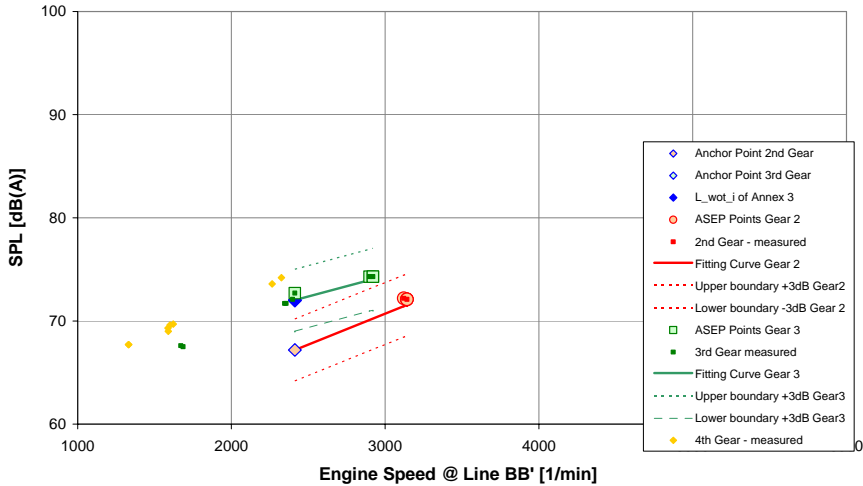
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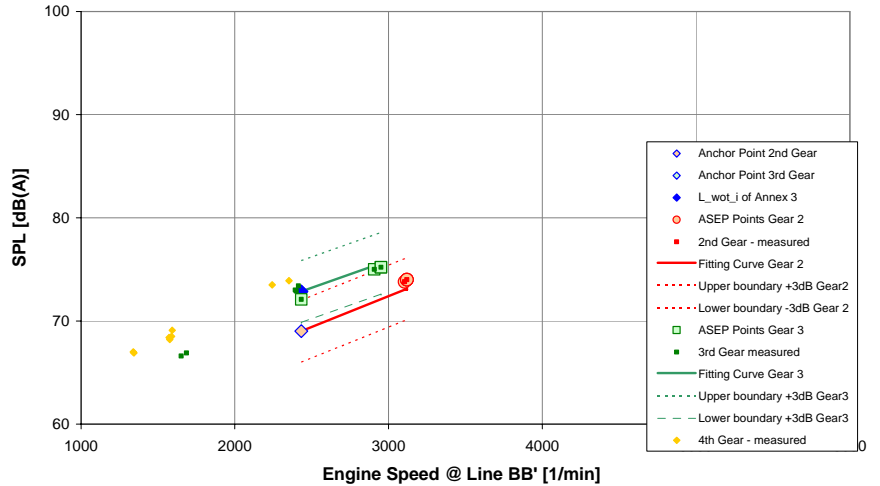
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OICA Concept (Reference N@BB')



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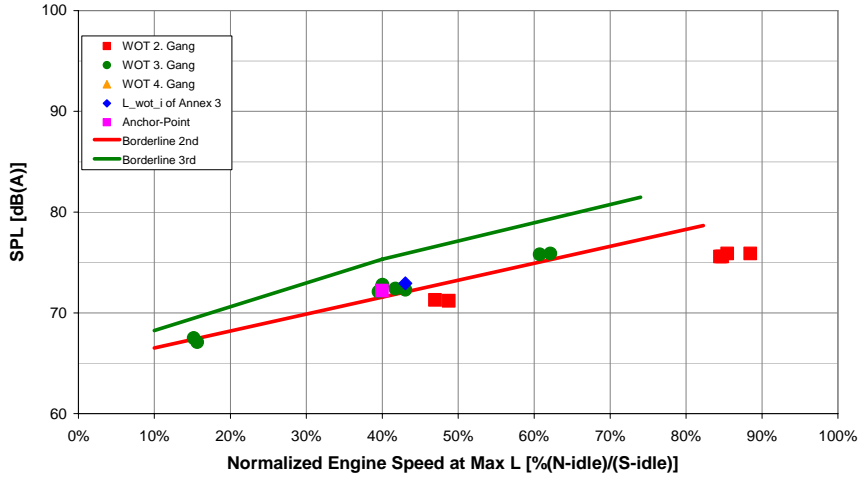
OICA Concept (Reference N@BB')



Vehicle B	1.6l	68kW / 4000RPM	PMR= 52.9kW/t	Diesel	MT	L urban OE 73	L urban RE 73	L WOT i OE 72,9	L WOT i RE 73,1
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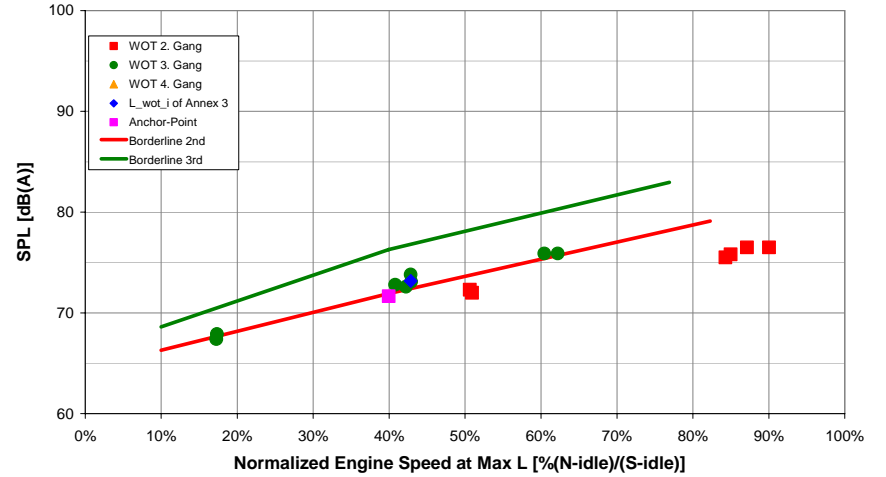
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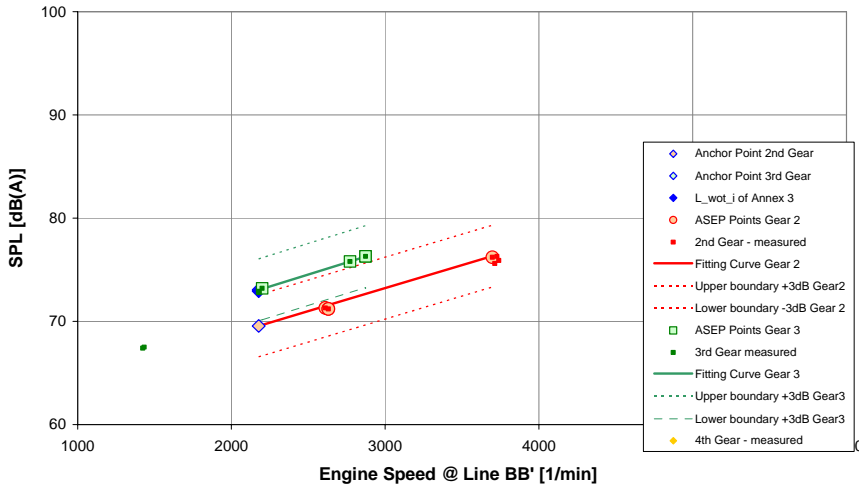
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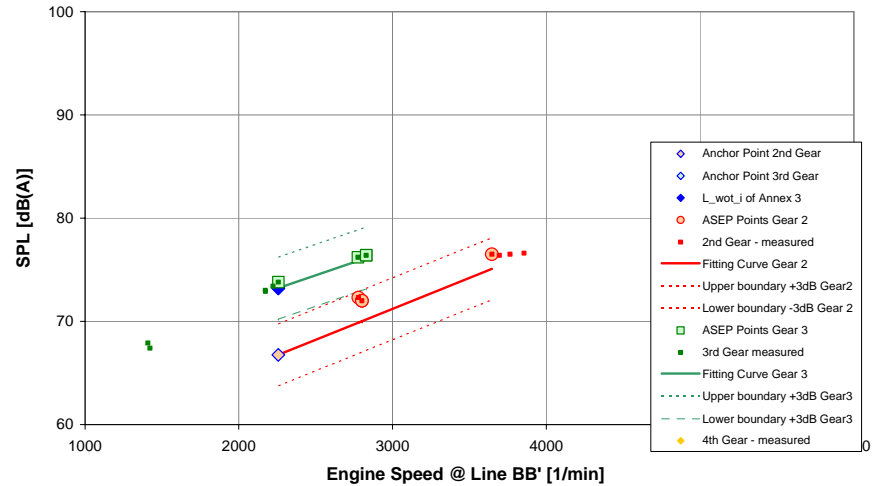
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OICA Concept (Reference N@BB')



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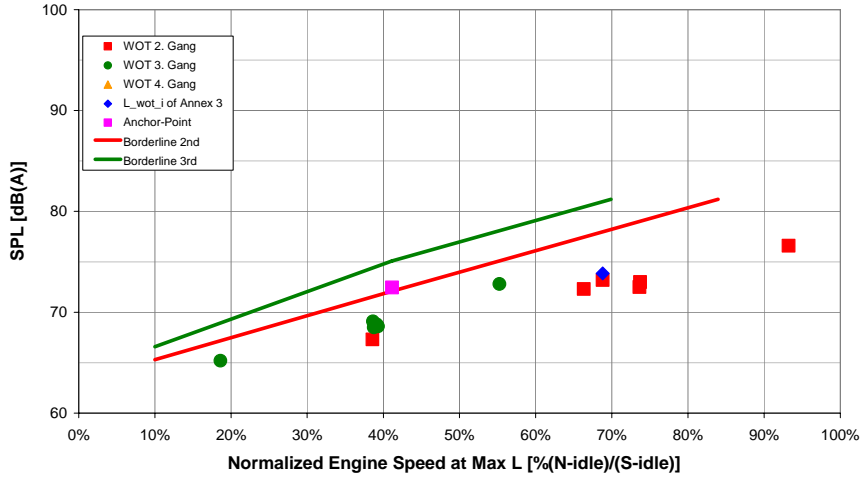
OICA Concept (Reference N@BB')



Vehicle C	1.4l	55kW / 5200RPM	PMR= 49.30kW/t	Petrol	MT	L urban OE 70	L urban RE 70	L WOT i OE 73,9	L WOT i RE 72,6
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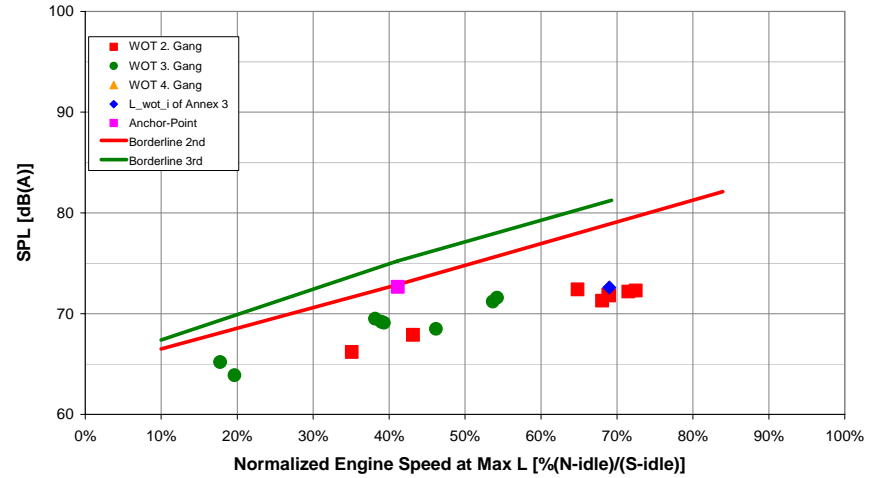
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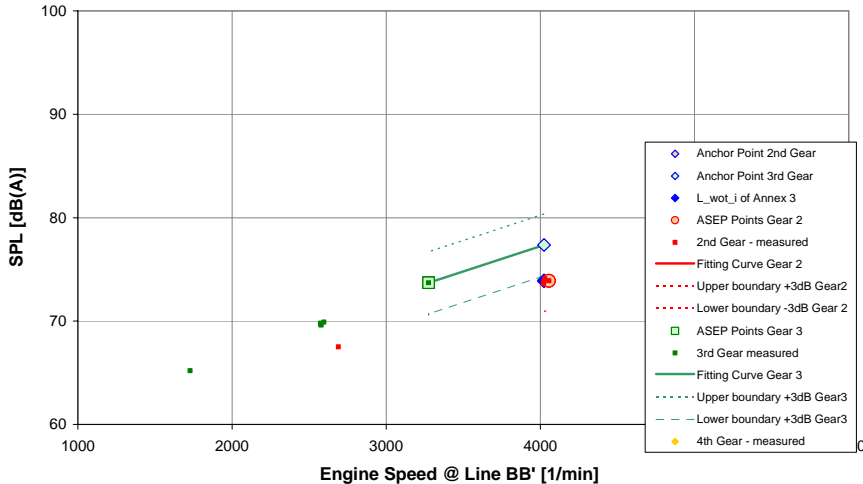
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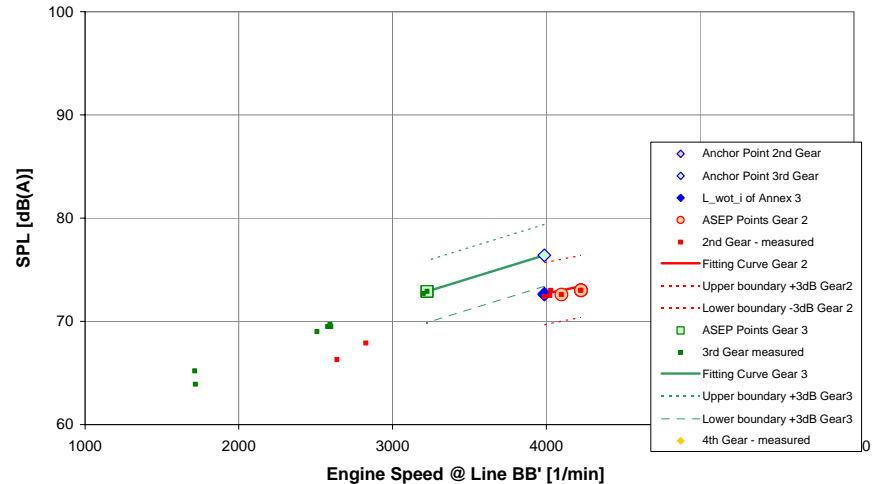
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OICA Concept (Reference N@BB')



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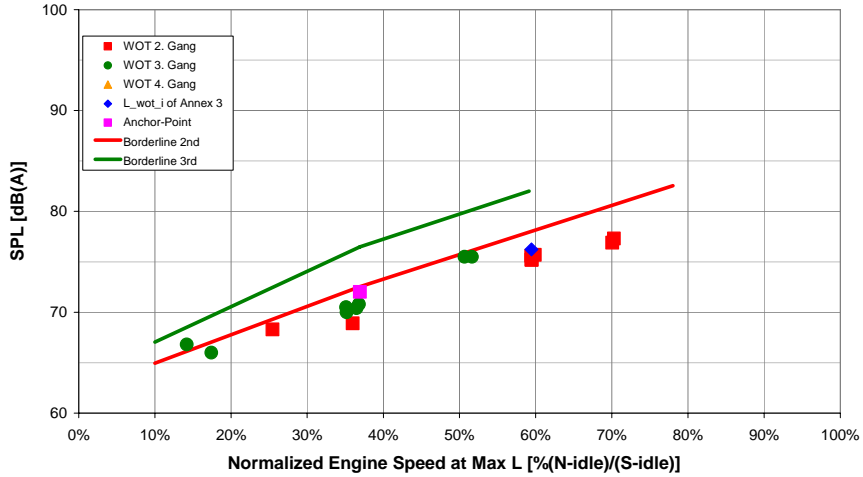
OICA Concept (Reference N@BB')



Vehicle D	1.4l	57.5kW / 6000RPM	PMR= 63.50kW/t	Petrol	MT	L urban OE 73	L urban RE 73	L WOT i OE 76,2	L WOT i RE 77,5
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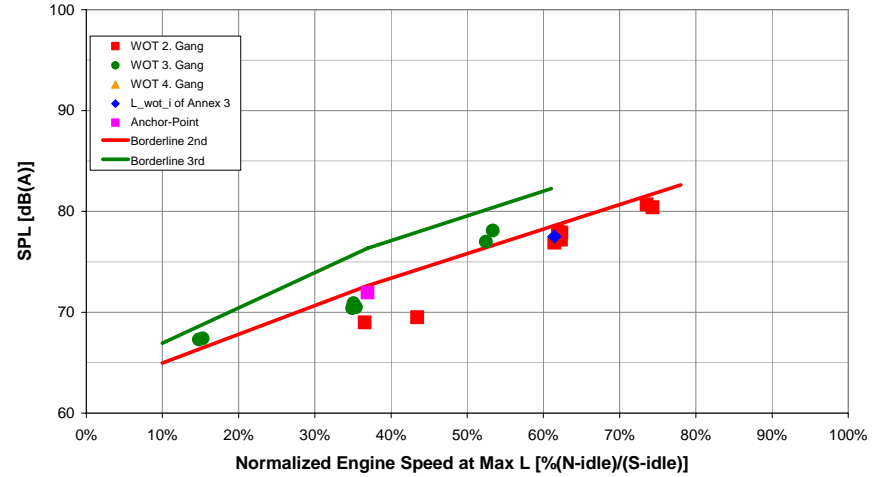
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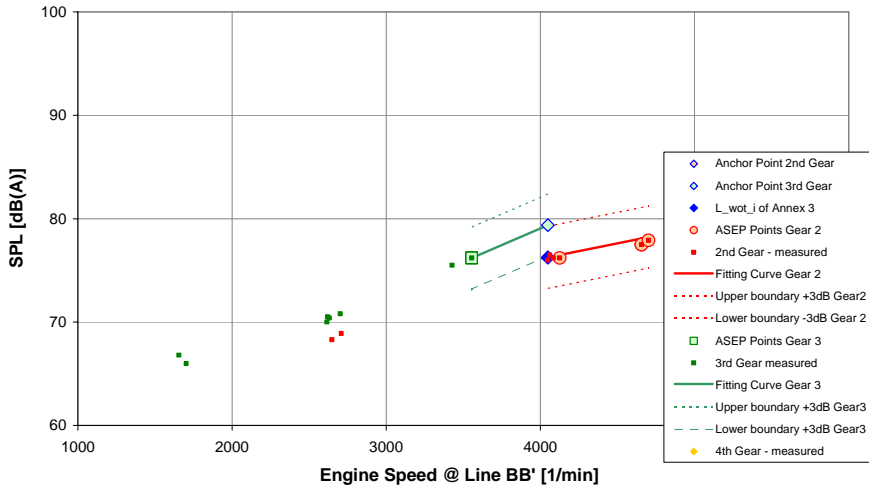
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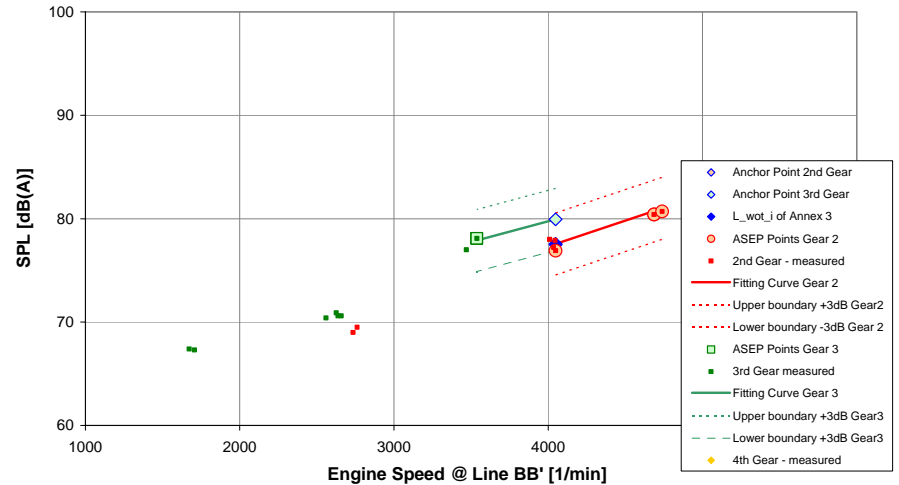
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OICA Concept (Reference N@BB')



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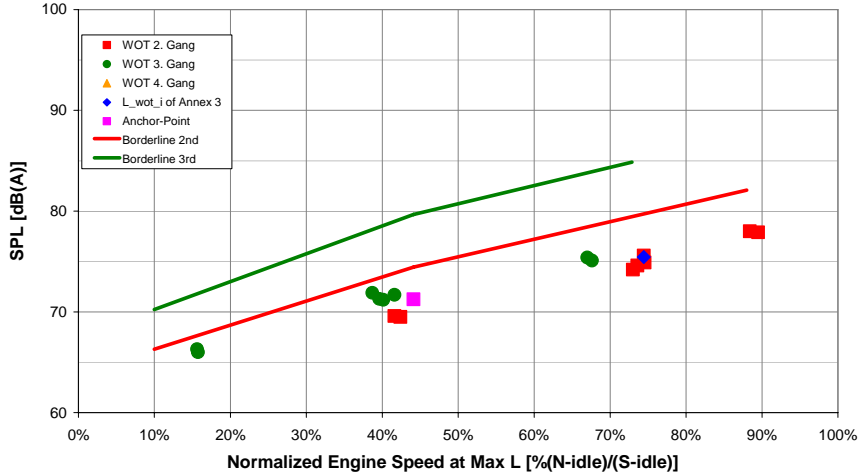
OICA Concept (Reference N@BB')



Vehicle E	1.8l	44kW / 4800RPM	PMR= 41.90kW/t	Diesel	MT	L urban OE 73	L urban RE 73	L WOT i OE 75,5	L WOT i RE 75,2
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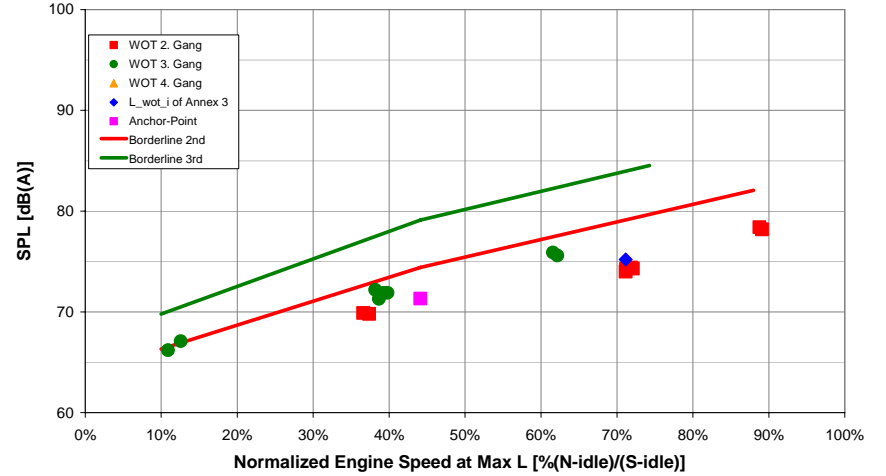
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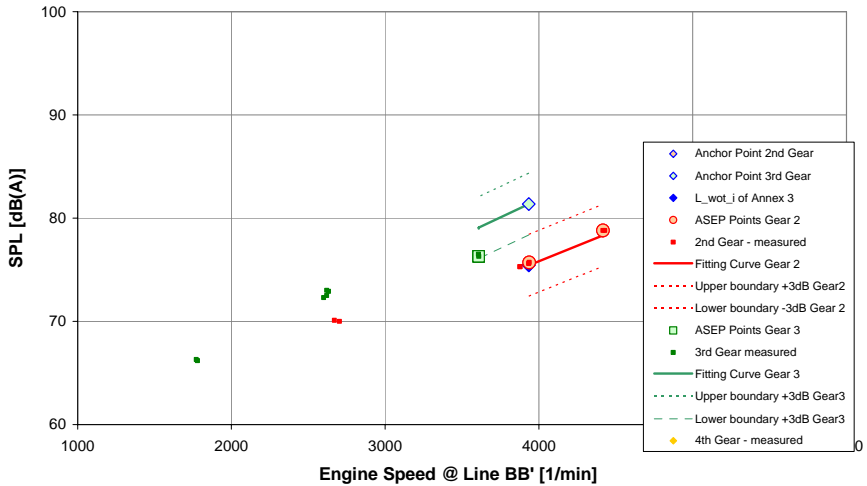
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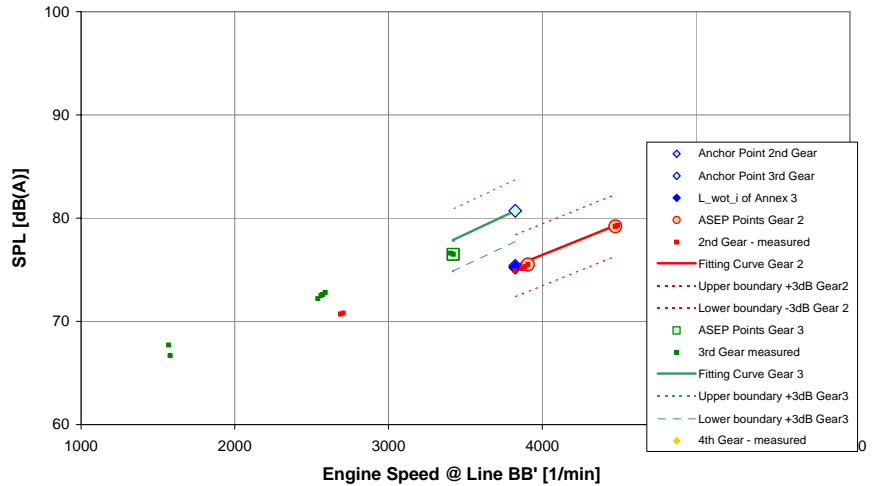
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OICA Concept (Reference N@BB')



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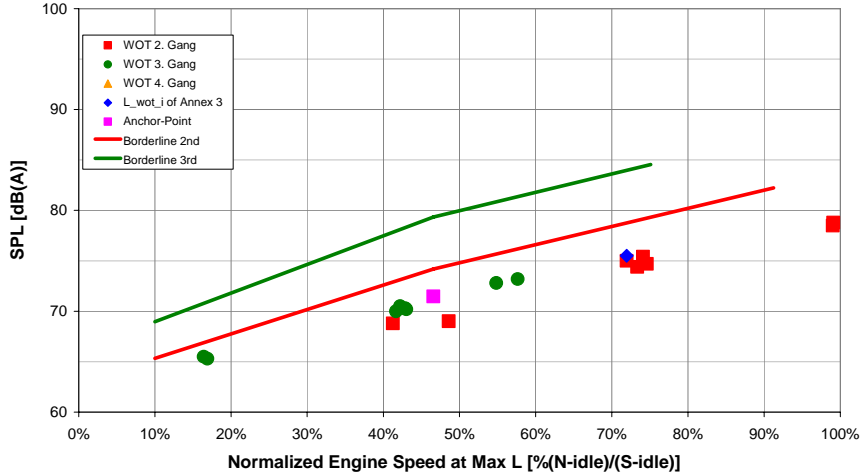
OICA Concept (Reference N@BB')



Vehicle F	1.3l	37kW / 5000RPM	PMR= 37.00kW/t	Petrol	MT	L urban OE 75	L urban RE 76	L WOT i OE 75,5	L WOT i RE 75,9
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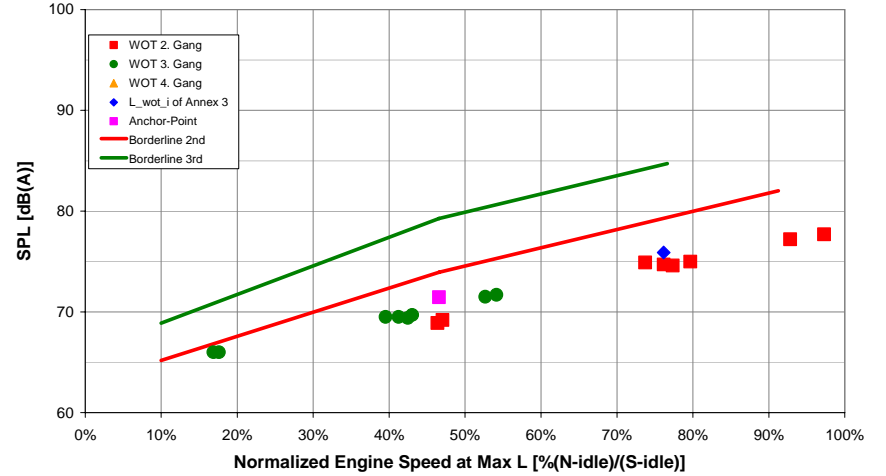
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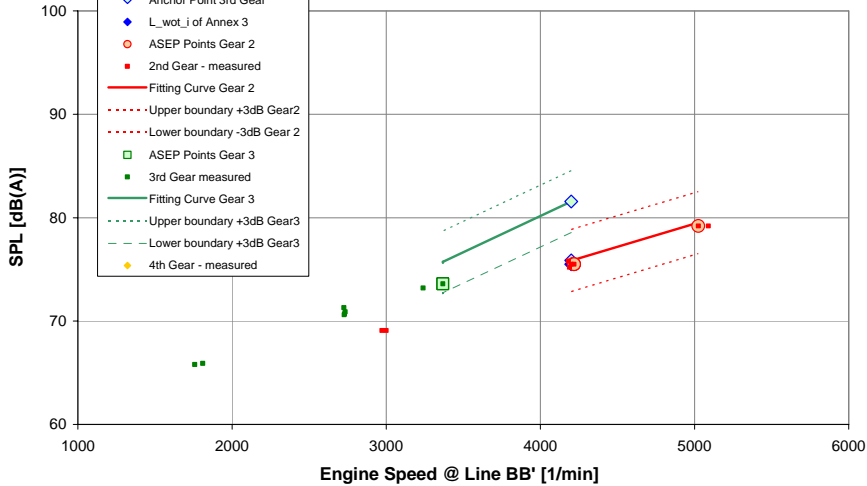
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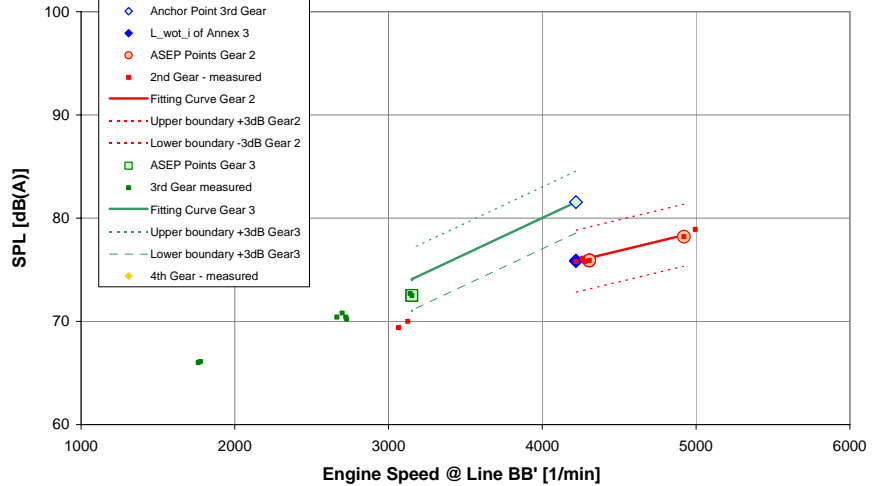
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OICA Concept (Reference N@BB')



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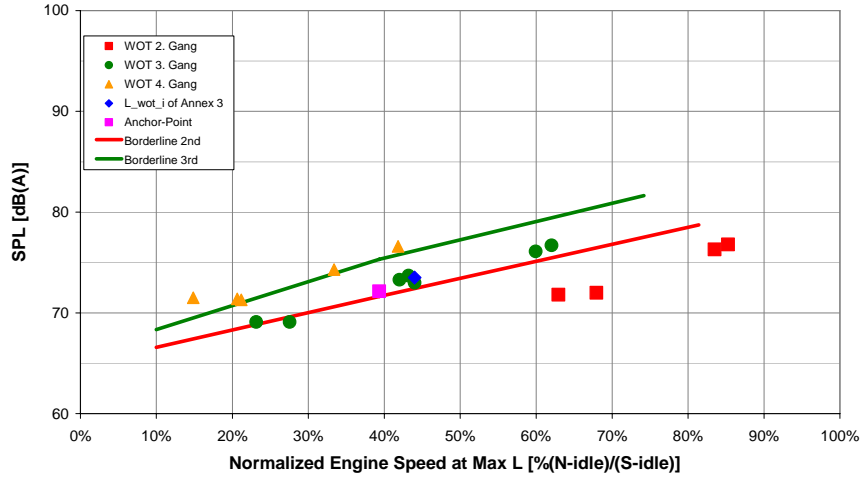
OICA Concept (Reference N@BB')



Vehicle G	2.0l	85kW / 4000RPM	PMR= 54.80kW/t	Diesel	MT	L urban OE 73	L urban RE 72	L WOT i OE 73,5	L WOT i RE 73,3
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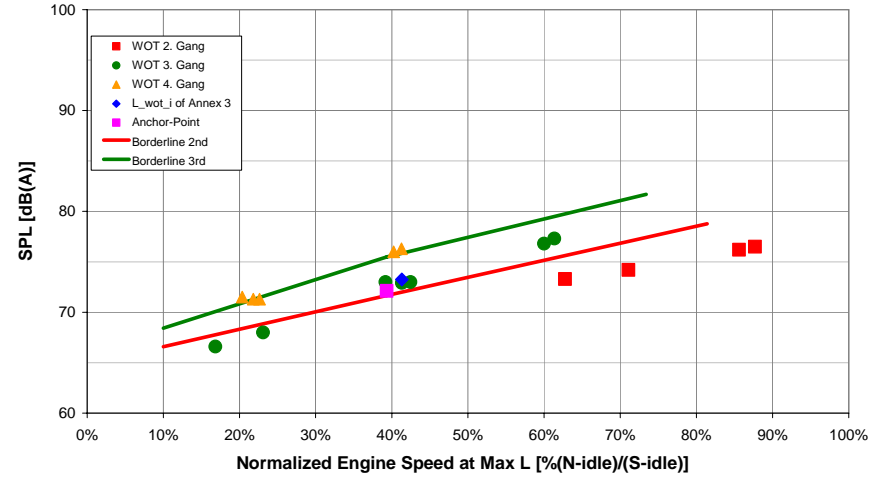
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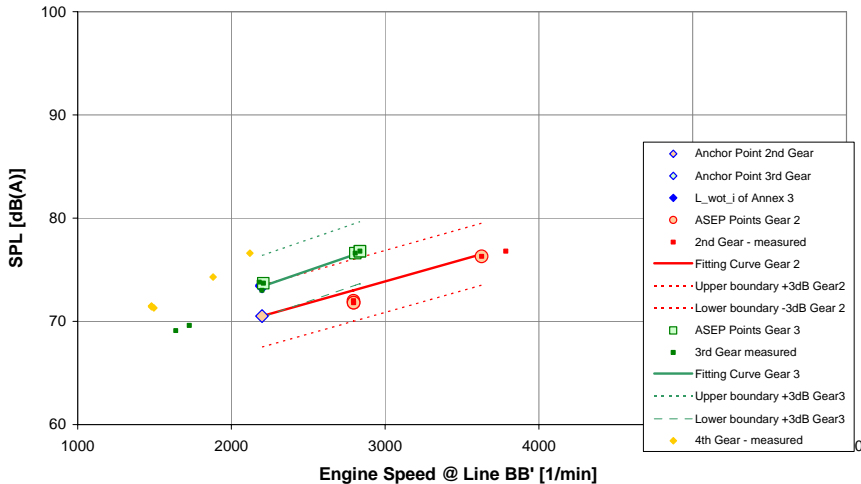
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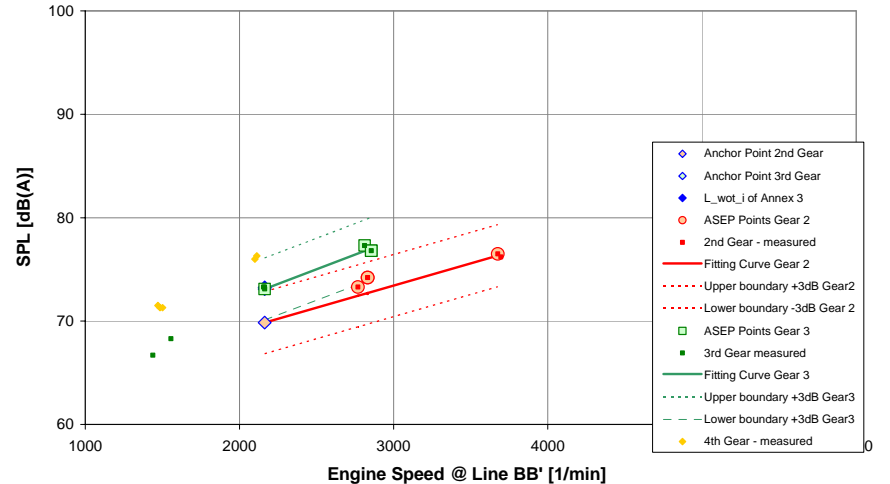
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OICA Concept (Reference N@BB')



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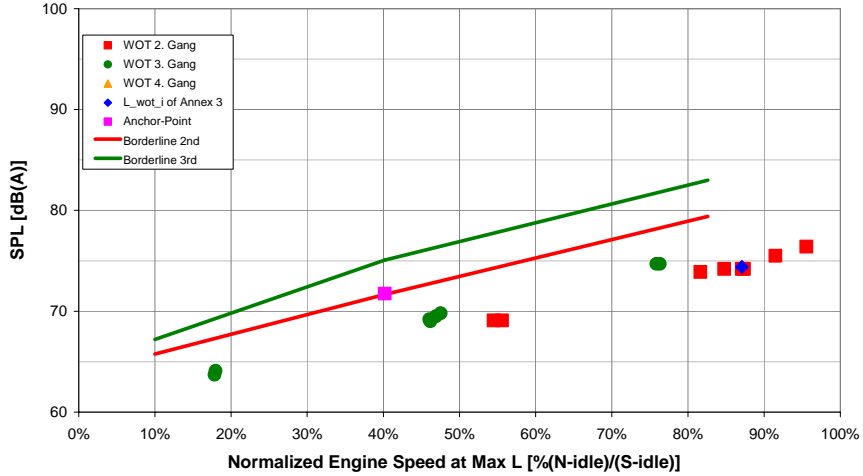
OICA Concept (Reference N@BB')



Vehicle H	1.9l	55kW / 4200RPM	PMR= 52.10kW/t	Diesel	MT	L urban OE 71	L urban RE 70	L WOT i OE 74,4	L WOT i RE 74,4
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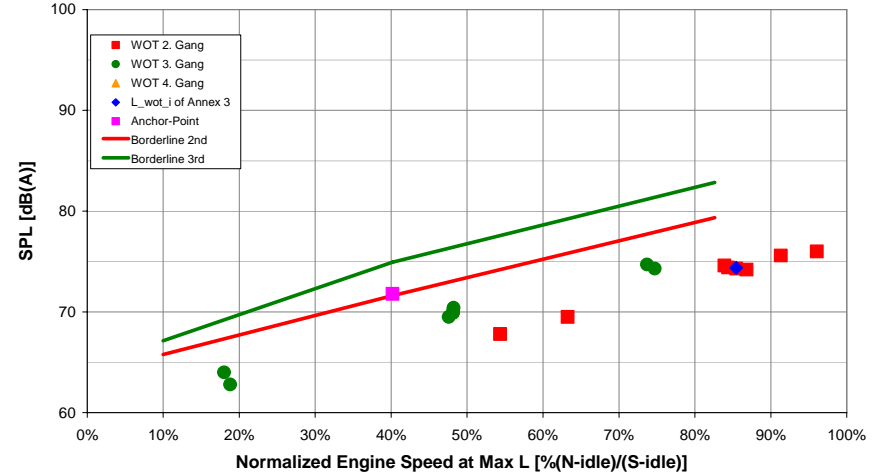
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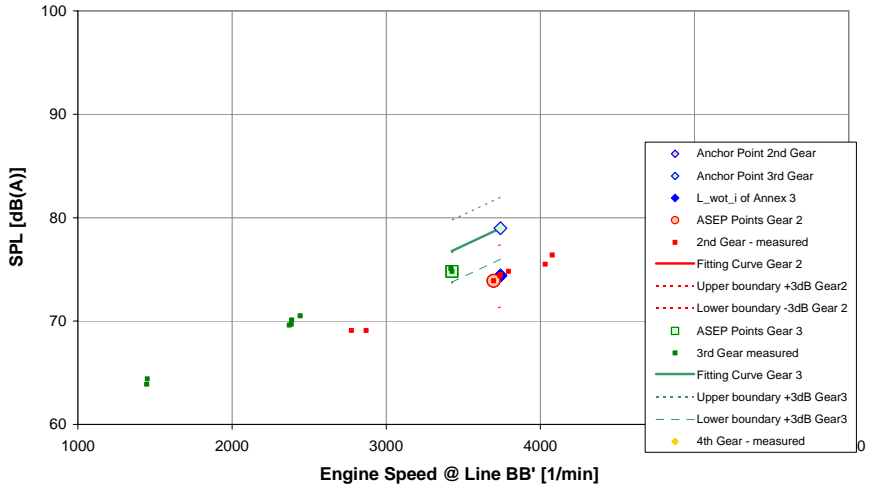
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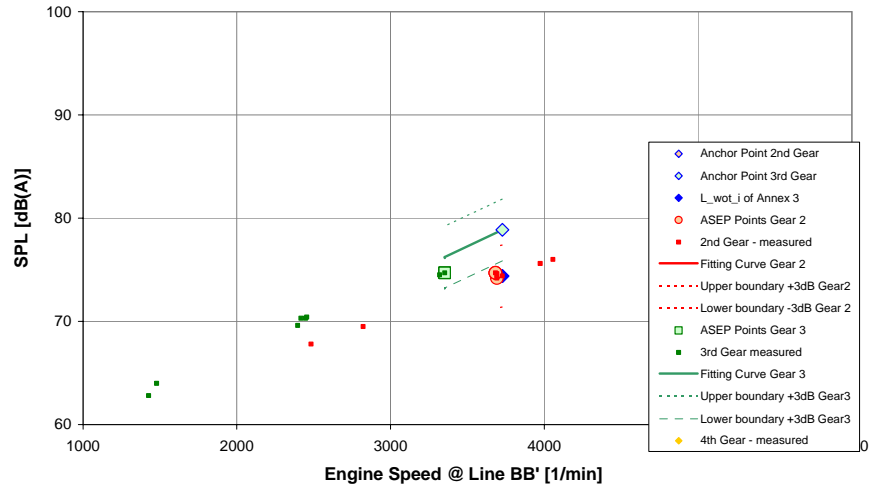
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OICA Concept (Reference N@BB')



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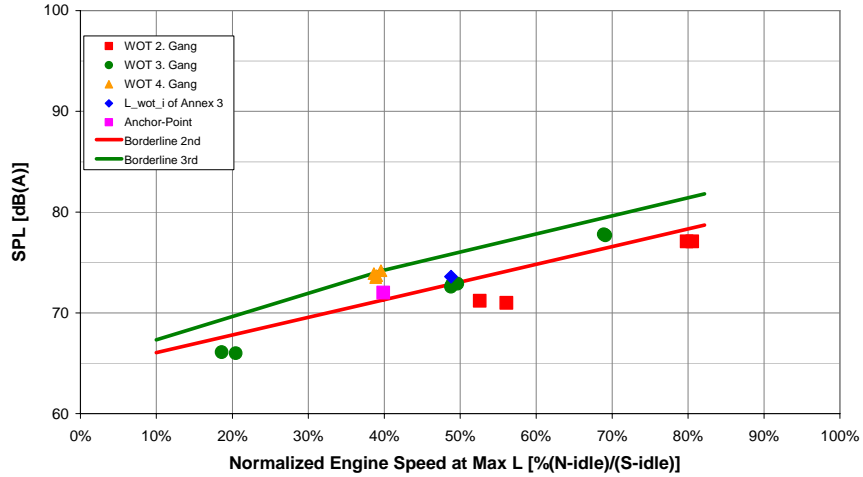
OICA Concept (Reference N@BB')



Vehicle J	2.5l	90kW / 4200RPM	PMR= 53.10kW/t	Diesel	MT	L urban OE 73	L urban RE 73	L WOT i OE 73,6	L WOT i RE 73,2
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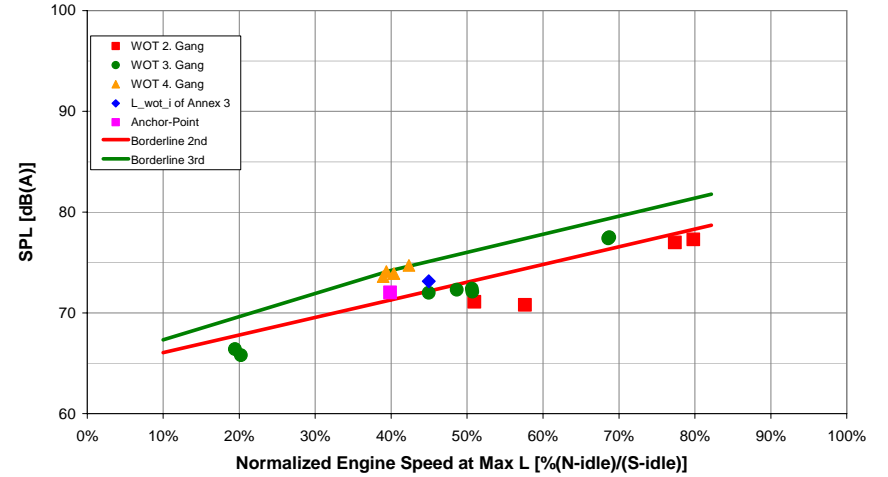
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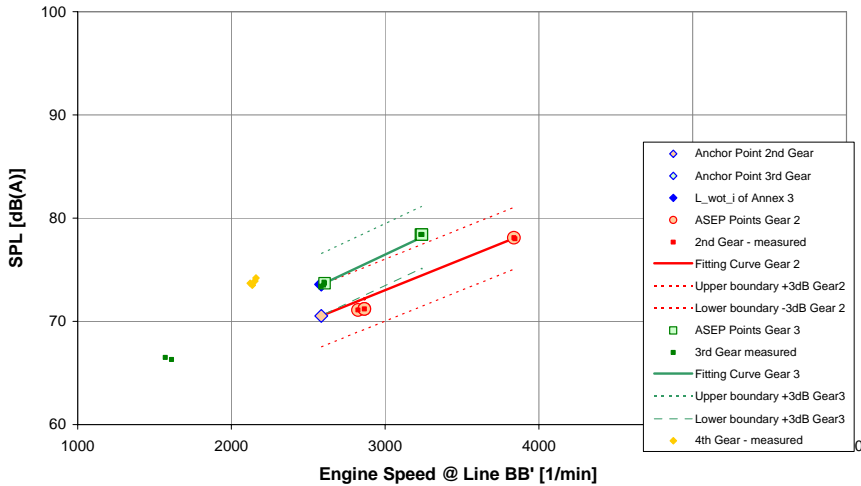
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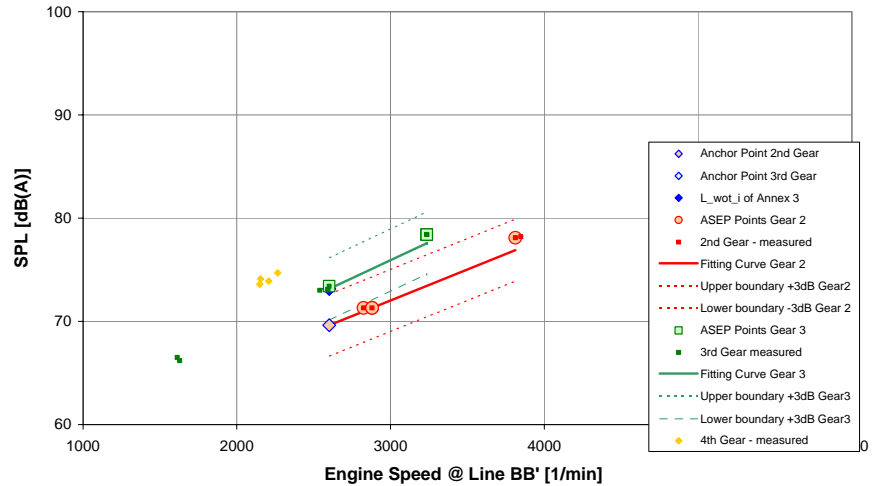
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OICA Concept (Reference N@BB')



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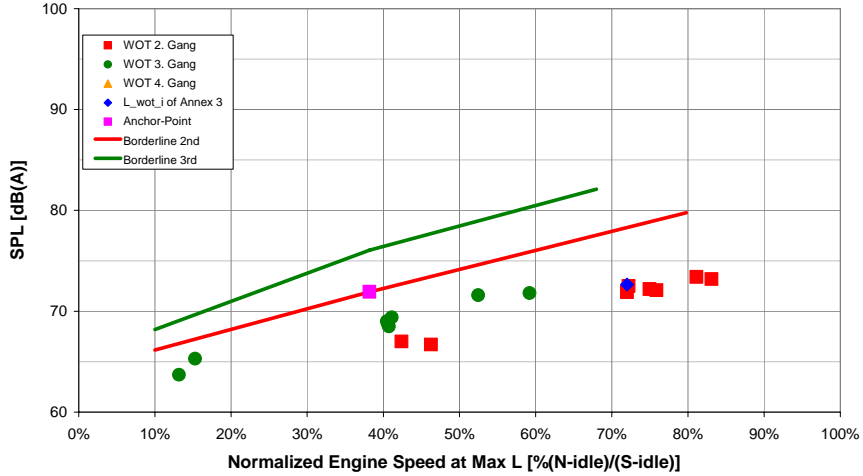
OICA Concept (Reference N@BB')



Vehicle K	1.7l	74kW / 4400RPM	PMR= 58.70kW/t	Diesel	MT	L urban OE 71	L urban RE 71	L WOT i OE 72,7	L WOT i RE 73,7
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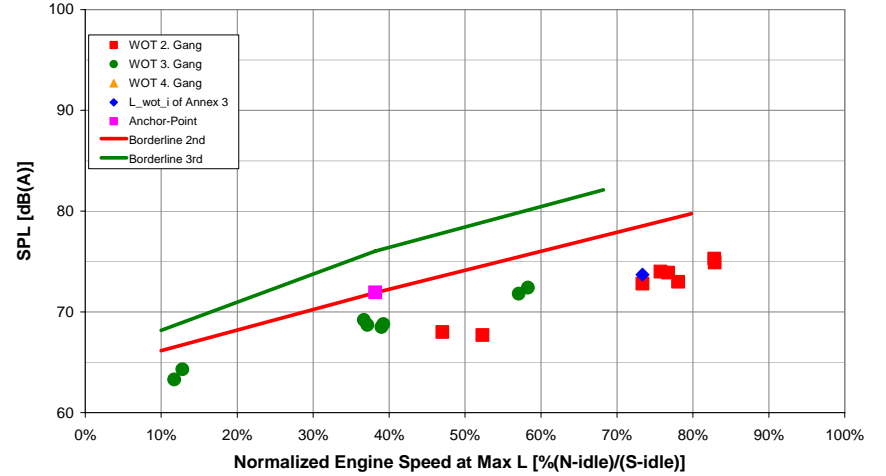
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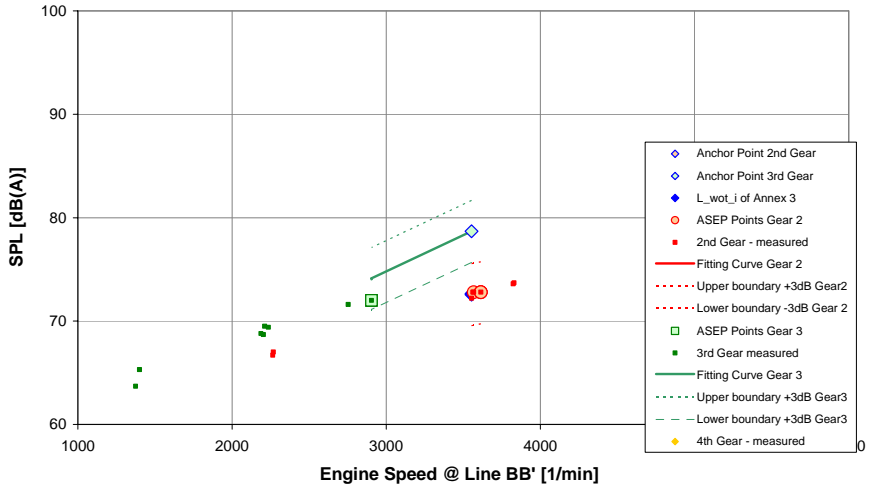
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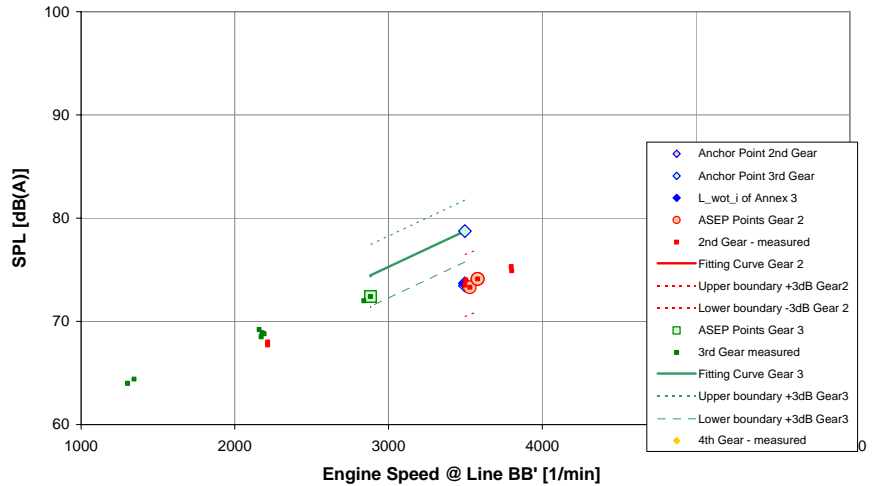
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OICA Concept (Reference N@BB')



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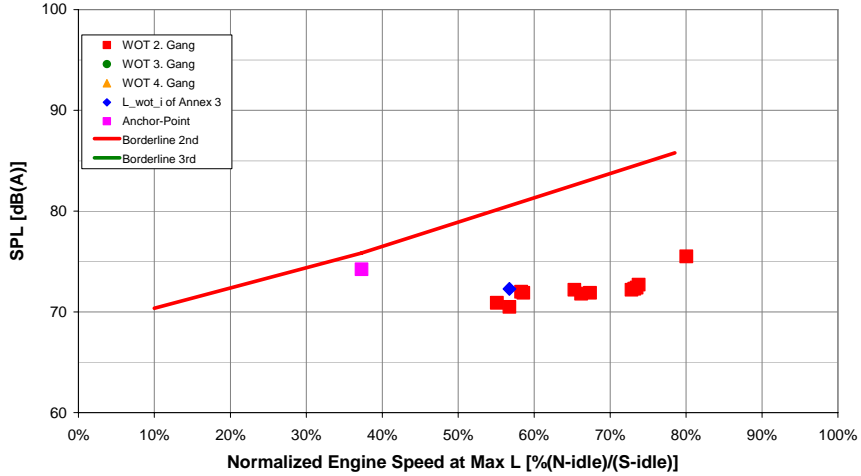
OICA Concept (Reference N@BB')



Vehicle L	1.4l	66kW / 5600RPM	PMR= 62.10kW/t	Petrol	AT	L urban OE 71	L urban RE 70	L WOT i OE 72,3	L WOT i RE 71,4
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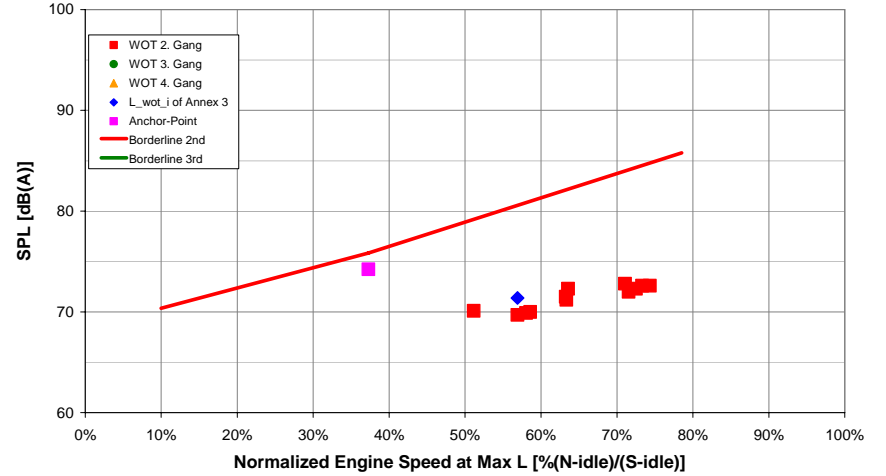
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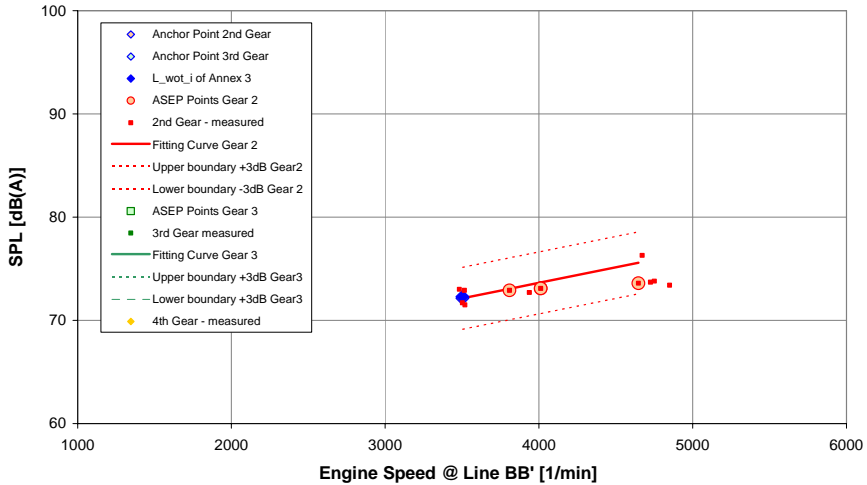
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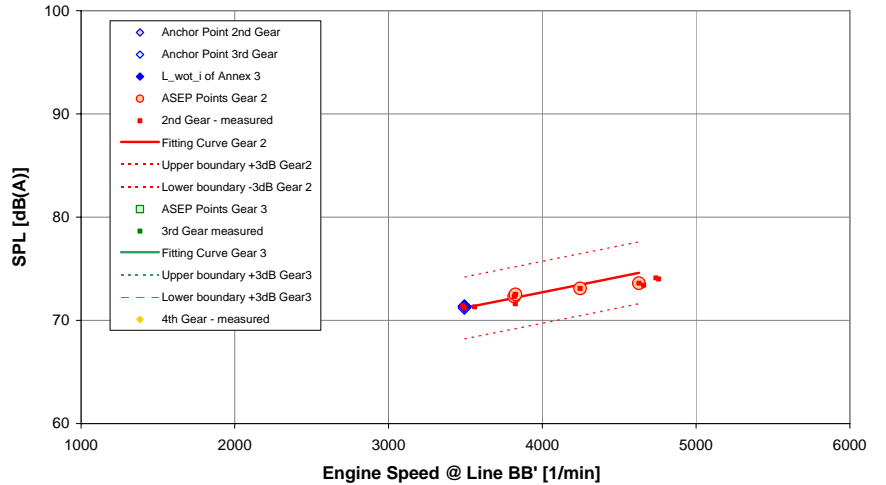
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OICA Concept (Reference N@BB')



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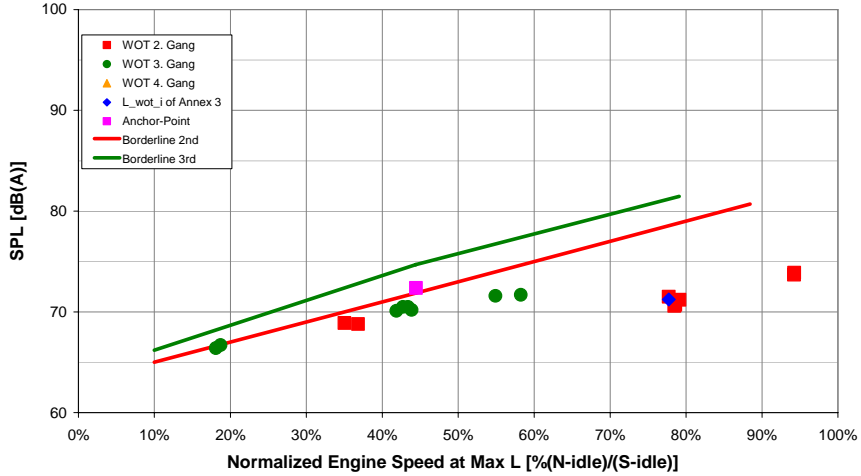
OICA Concept (Reference N@BB')



Vehicle M	1.2l	33kW / 5000RPM	PMR= 41.30kW/t	Petrol	MT	L urban OE 70	L urban RE 70	L WOT i OE 71,2	L WOT i RE 70,9
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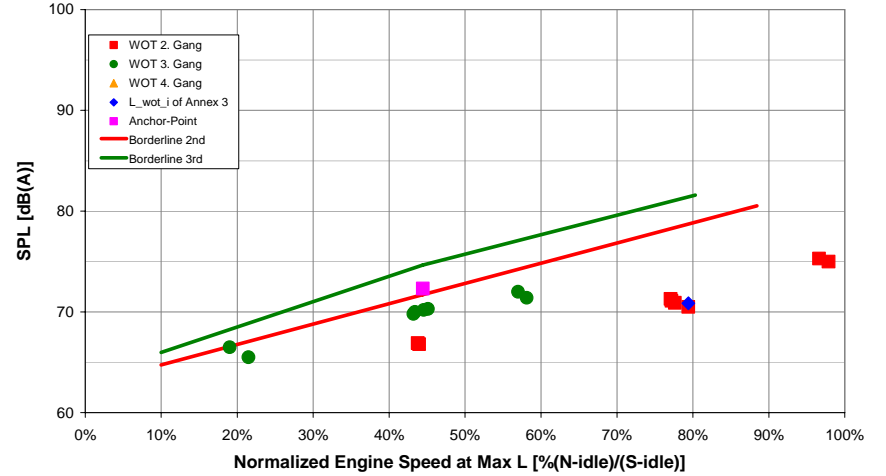
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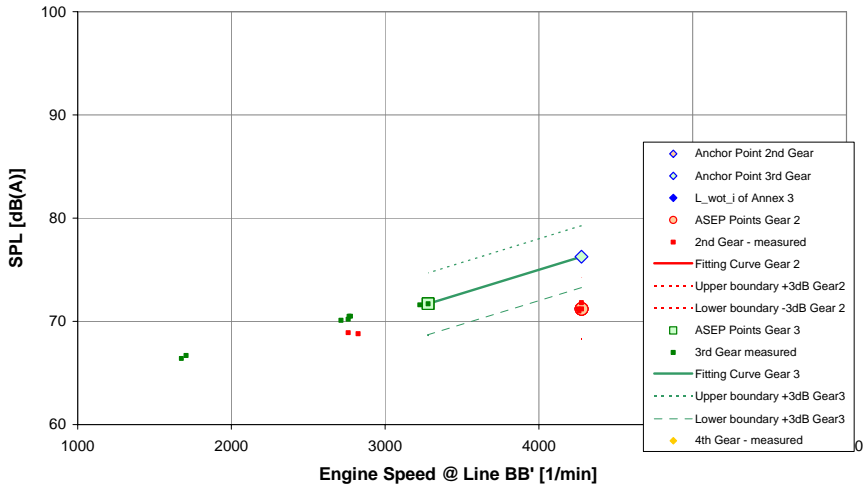
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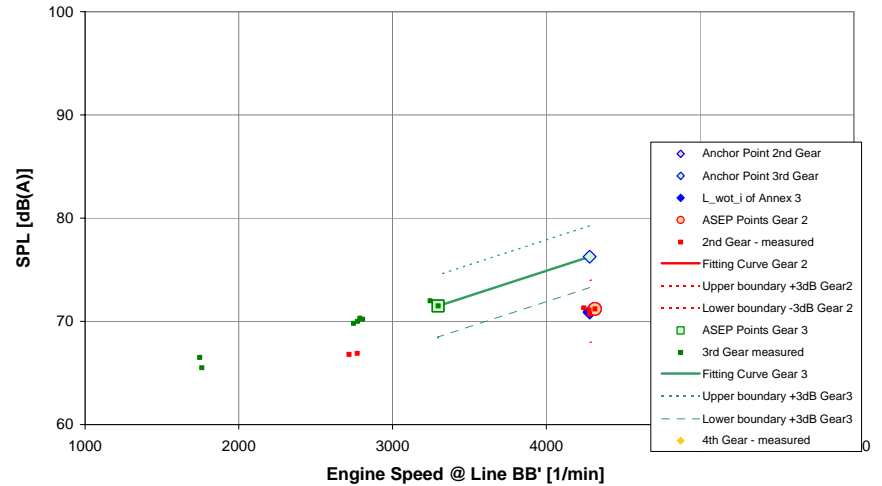
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OICA Concept (Reference N@BB')



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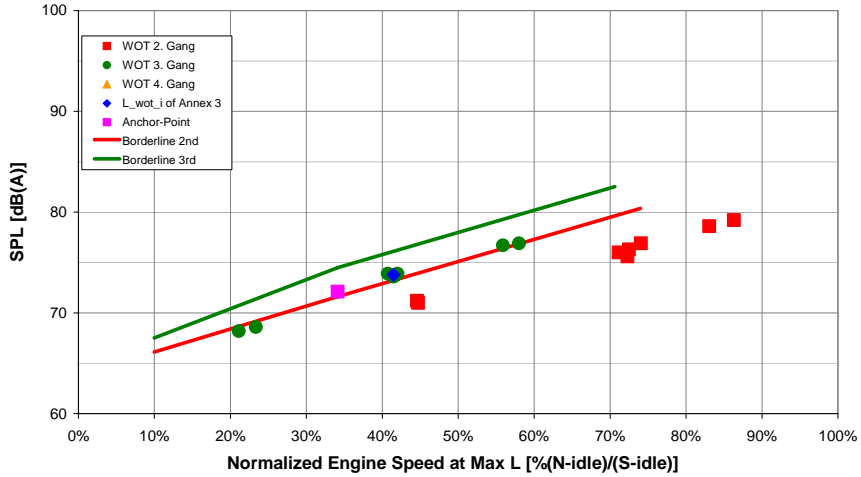
OICA Concept (Reference N@BB')



Vehicle N	2.0l	85kW / 5200RPM	PMR= 76.20kW/t	Petrol	MT	L urban OE 73	L urban RE 73	L WOT i OE 73,8	L WOT i RE 73,1
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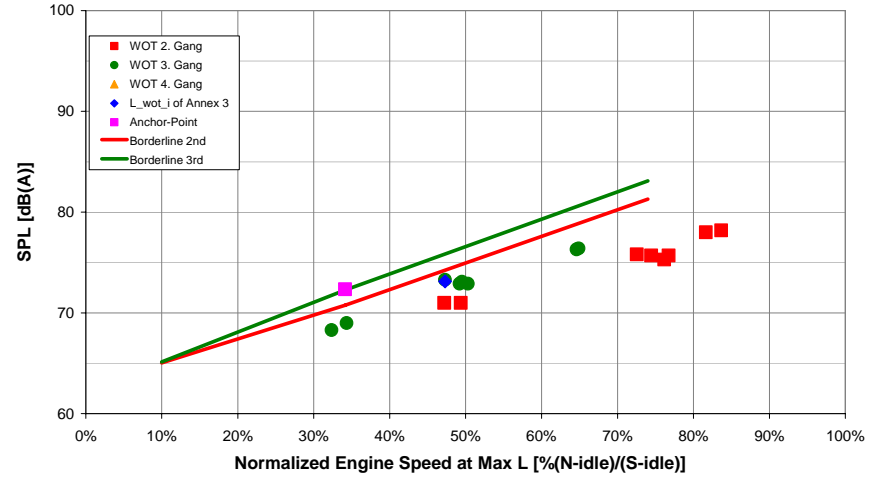
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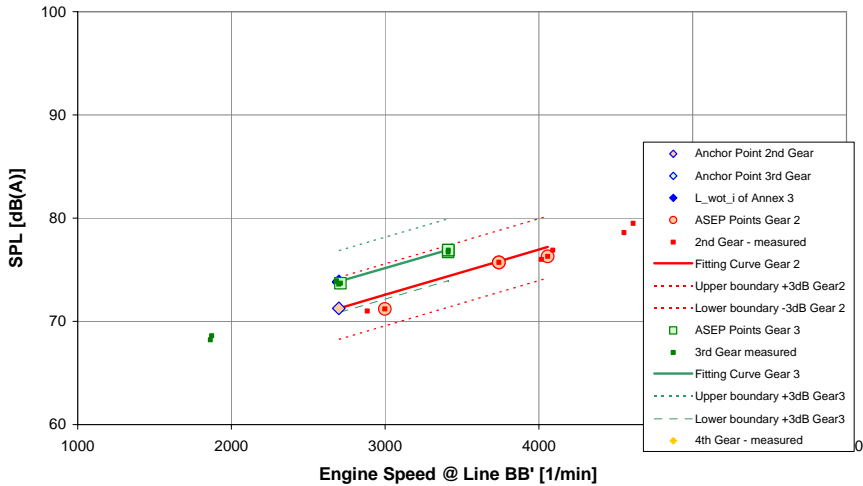
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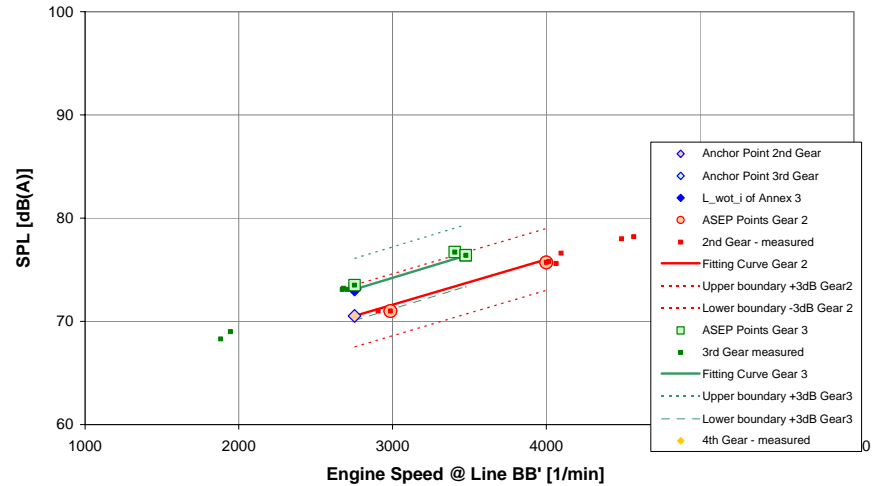
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OICA Concept (Reference N@BB')



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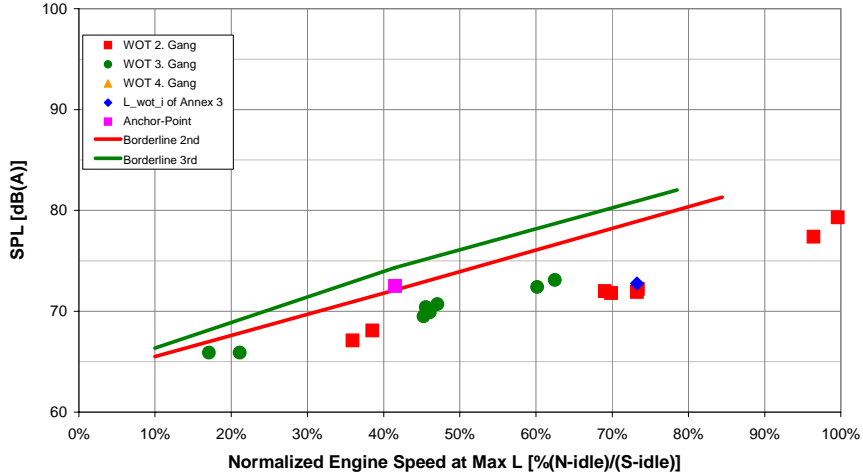
OICA Concept (Reference N@BB')



Vehicle O	1.1l	44kW / 5200RPM	PMR= 48.40kW/t	Petrol	MT	L urban OE 71	L urban RE 71	L WOT i OE 72,8	L WOT i RE 73,7
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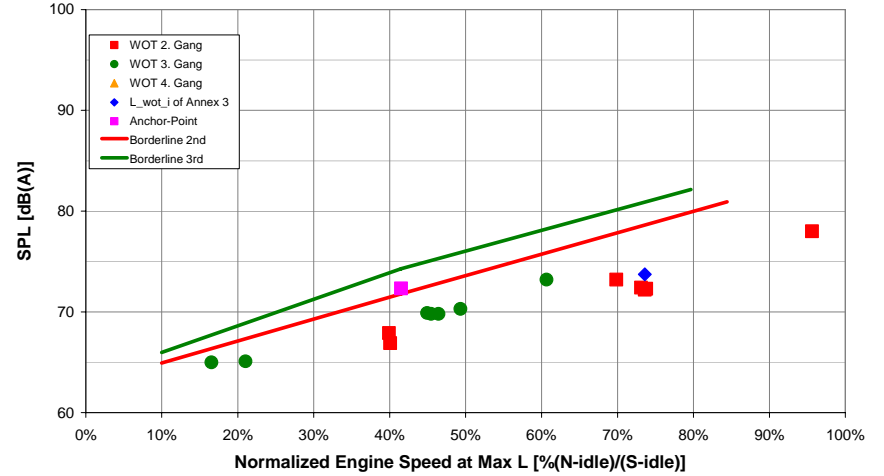
OE

D/F Proposal Feb. 2008 (Reference N@Lmax)



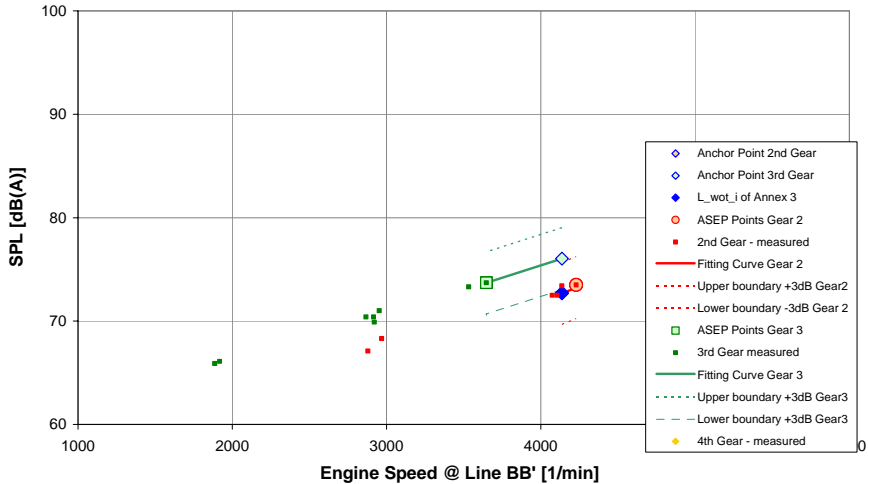
Replacement

D/F Proposal Feb. 2008 (Reference N@Lmax)



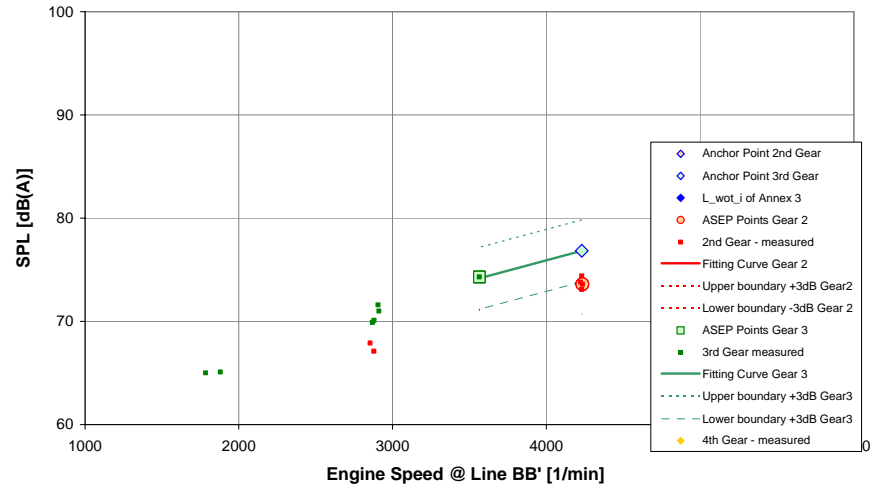
OE

OICA Concept (Reference N@BB')



Replacement

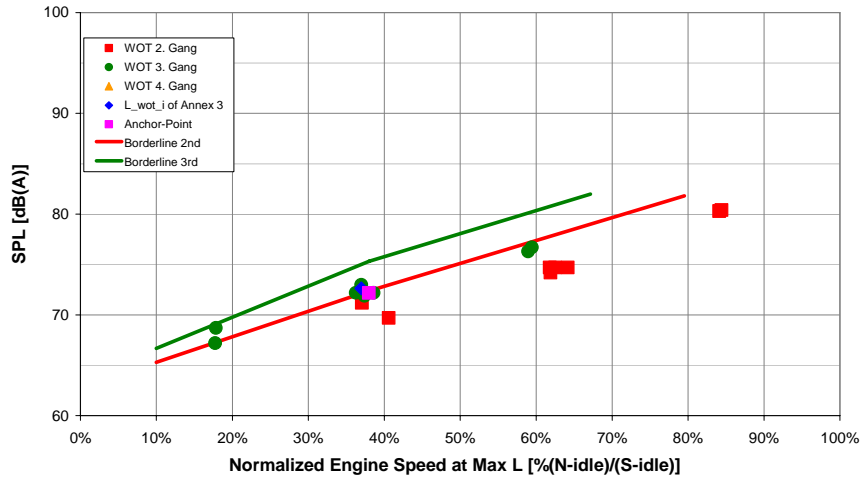
OICA Concept (Reference N@BB')



Vehicle P	1.4l	55kW / 5500RPM	PMR= 59.50kW/t	Petrol	MT	L urban OE 72	L urban RE 73	L WOT i OE 72,6	L WOT i RE 73,0
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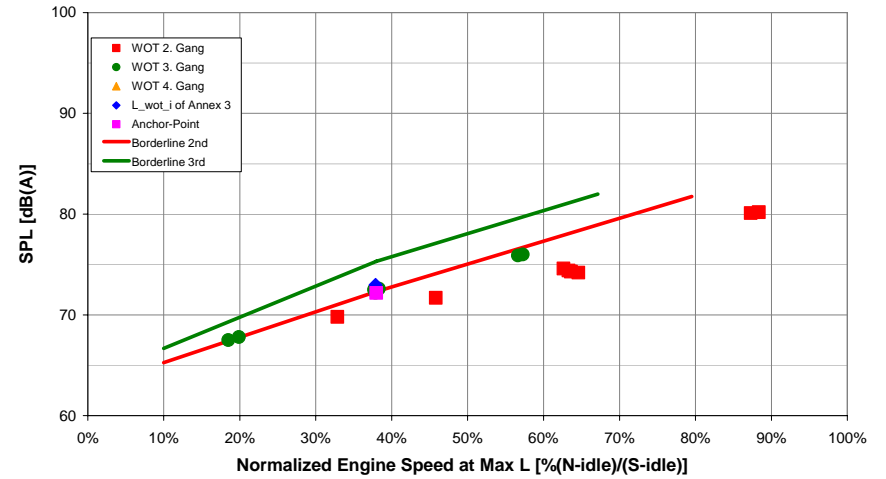
OE

D/F Proposal Feb. 2008 (Reference N@Lmax)



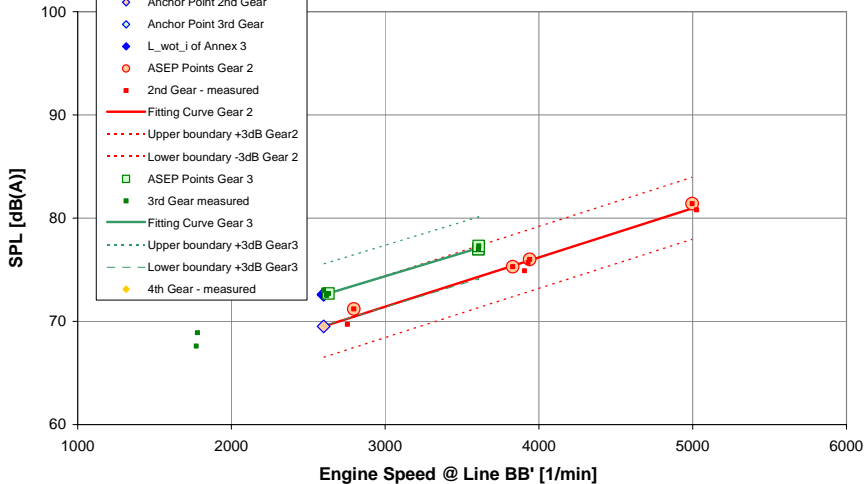
Replacement

D/F Proposal Feb. 2008 (Reference N@Lmax)



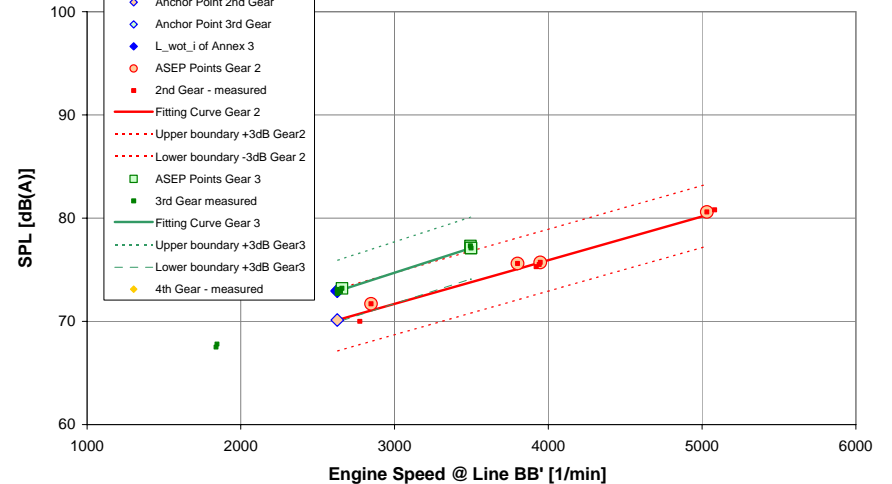
OE

OICA Concept (Reference N@BB')



Replacement

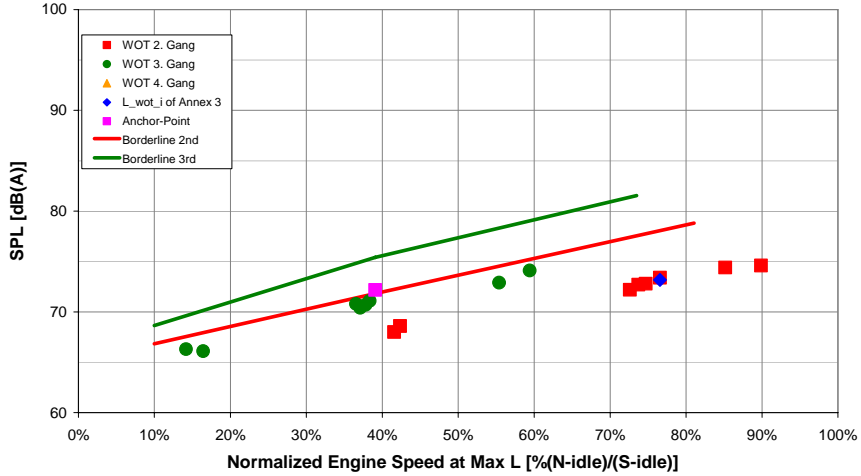
OICA Concept (Reference N@BB')



Vehicle Q	1.9l	74kW / 4000RPM	PMR= 55.60kW/t	Diesel	MT	L urban OE 71	L urban RE 72	L WOT i OE 73,2	L WOT i RE 73,3
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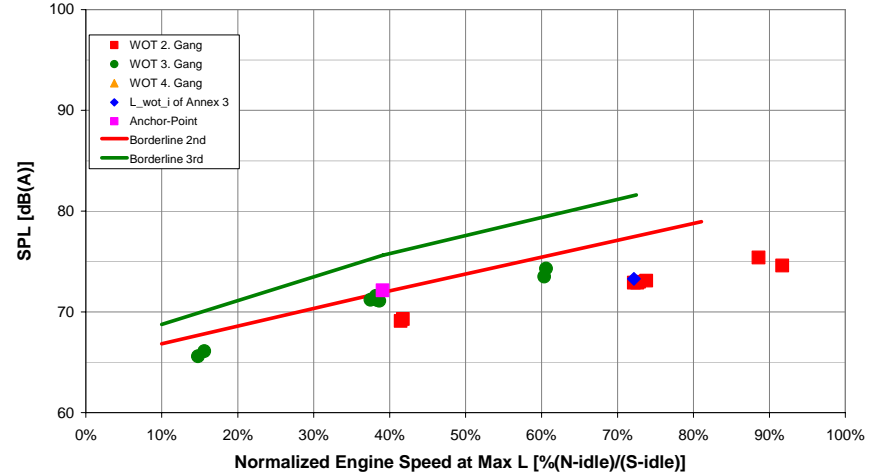
OE

D/F Proposal Feb. 2008 (Reference N@Lmax)



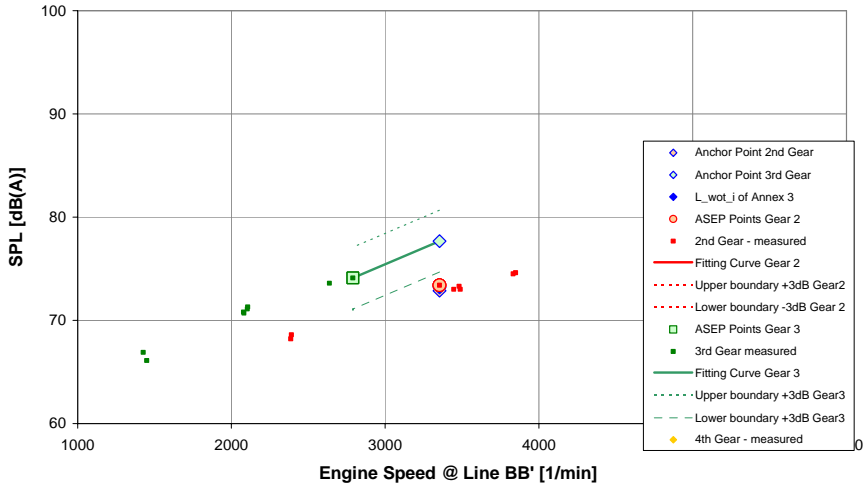
Replacement

D/F Proposal Feb. 2008 (Reference N@Lmax)



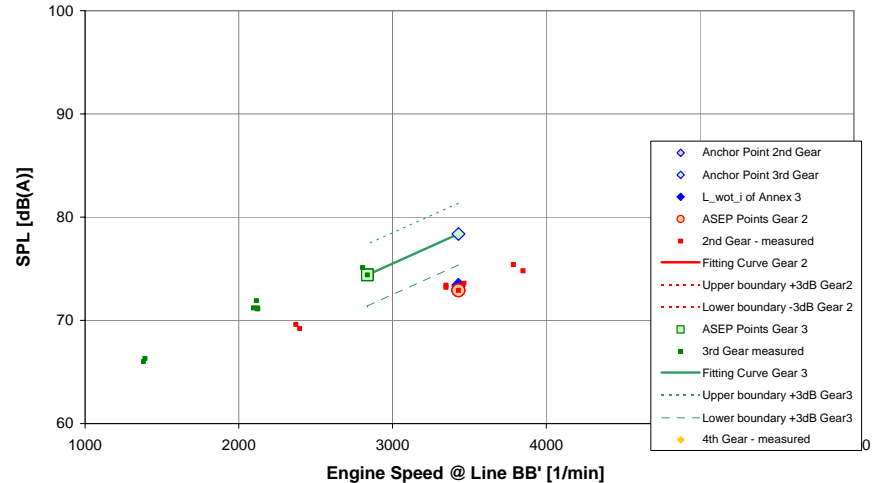
OE

OICA Concept (Reference N@BB')



Replacement

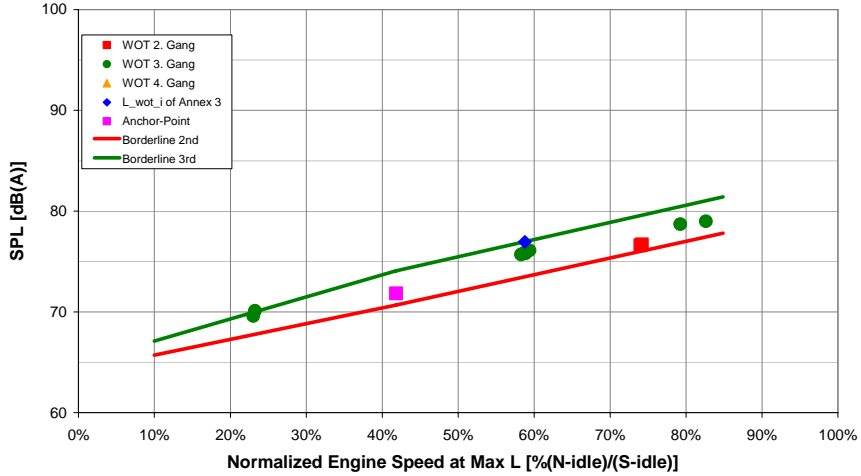
OICA Concept (Reference N@BB')



Vehicle R	2.2l	95kW / 4000RPM	PMR= 47.50kW/t	Diesel	MT	L urban OE 76	L urban RE 76	L WOT i OE 77,0	L WOT i RE 76,8
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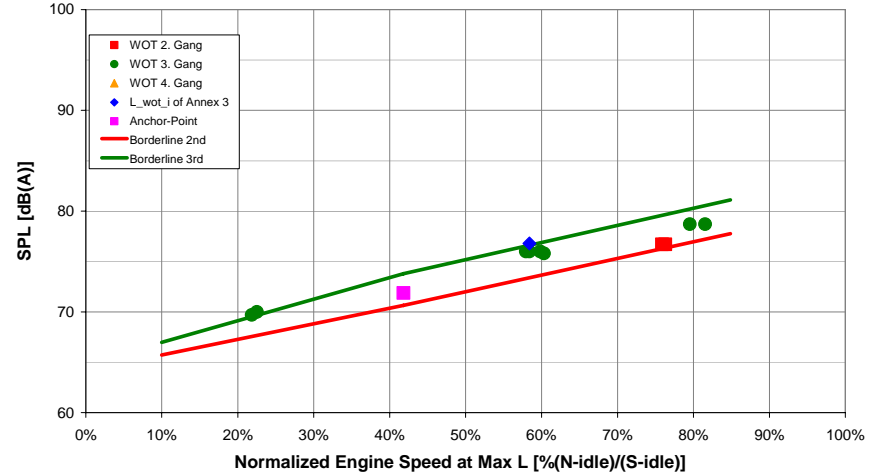
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D/F Proposal Feb. 2008 (Reference N@Lmax)



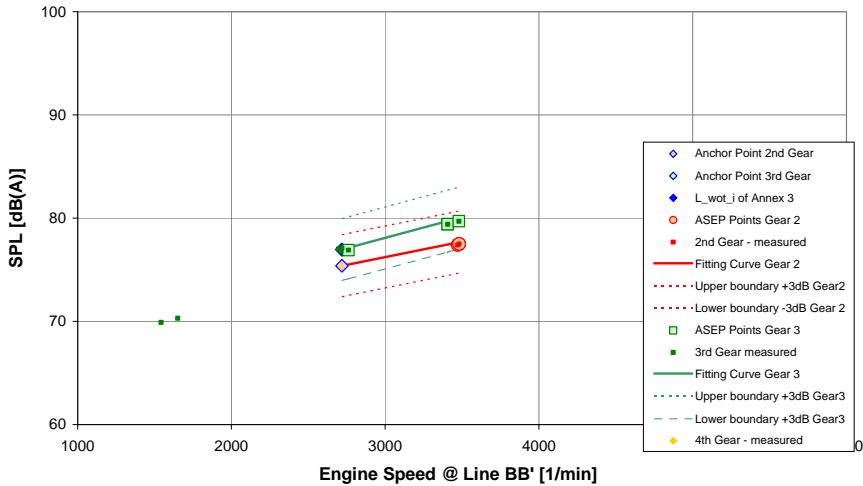
Replacement

D/F Proposal Feb. 2008 (Reference N@Lmax)



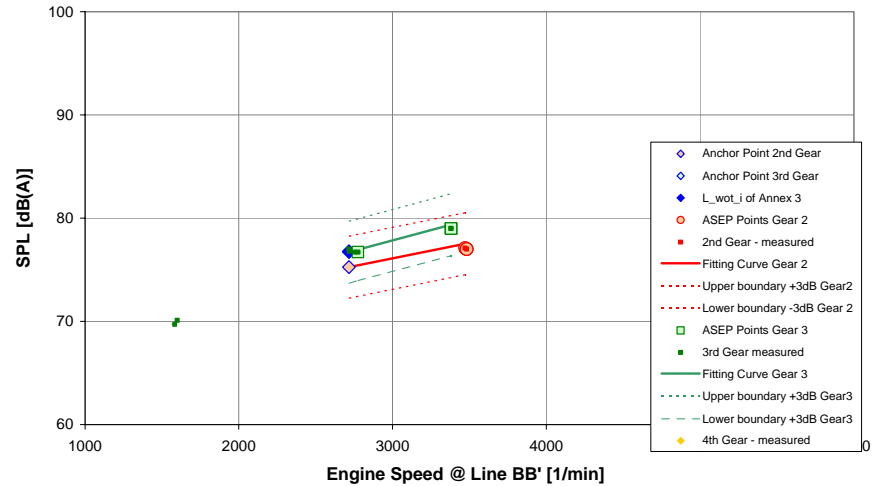
OE

OICA Concept (Reference N@BB')



Replacement

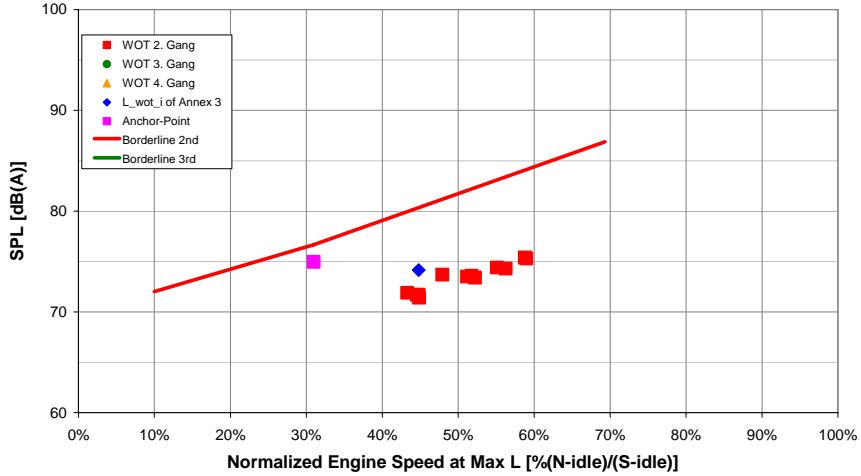
OICA Concept (Reference N@BB')



Vehicle S	2.9l	147kW / 6000RPM	PMR= 95.50kW/t	Petrol	AT	L urban OE 70	L urban RE 71	L WOT i OE 74,2	L WOT i RE 74,8
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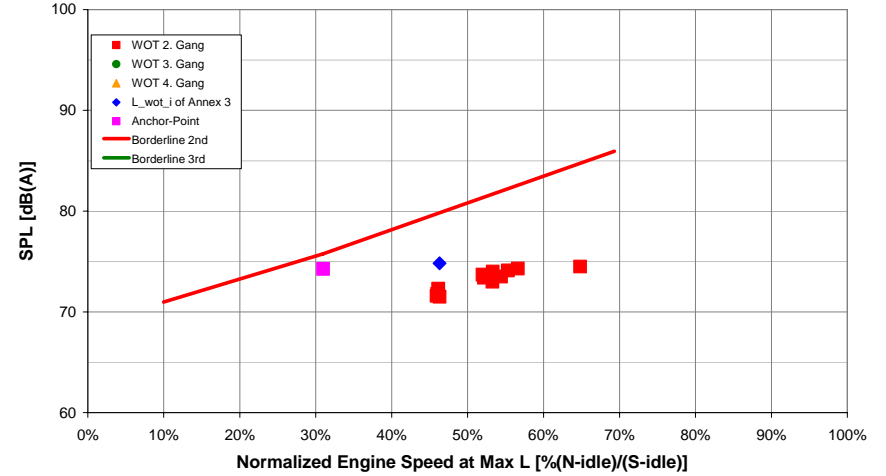
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D/F Proposal Feb. 2008 (Reference N@Lmax)



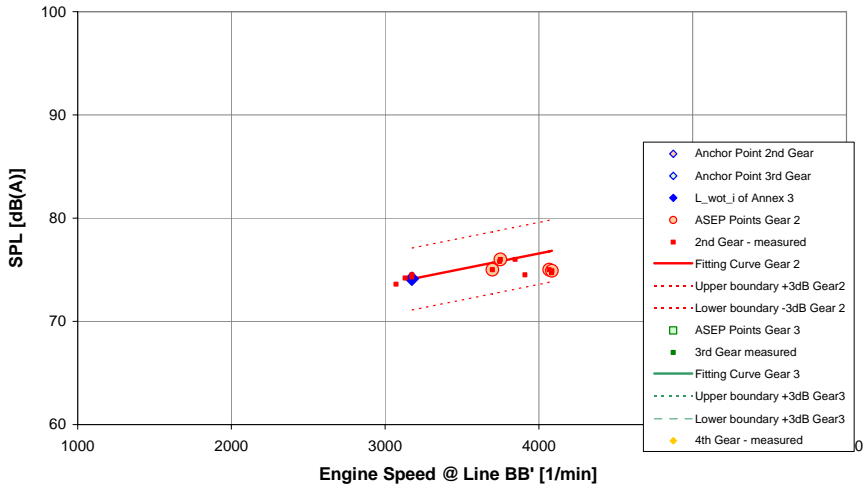
Replacement

D/F Proposal Feb. 2008 (Reference N@Lmax)



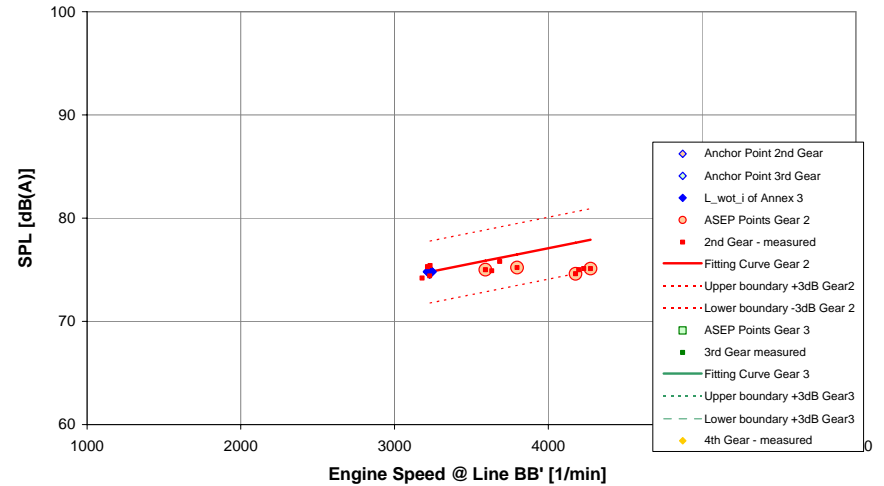
OE

OICA Concept (Reference N@BB')



Replacement

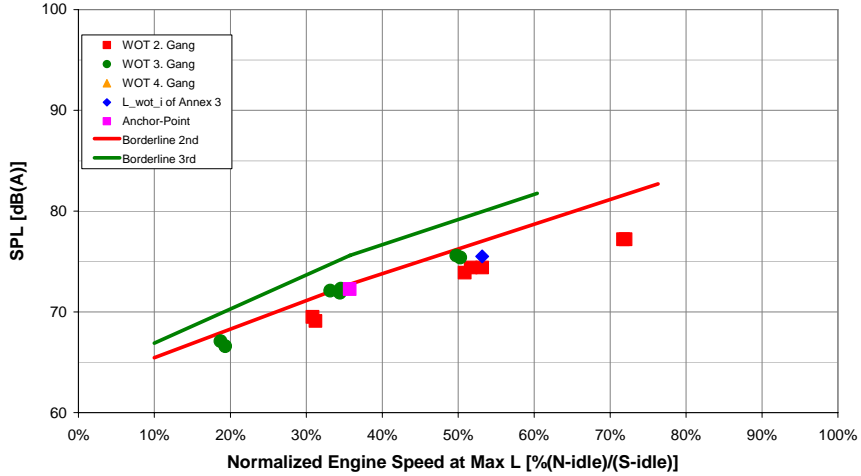
OICA Concept (Reference N@BB')



Vehicle T	1.8l	85kW / 6000RPM	PMR= 68.50kW/t	Petrol	MT	L urban OE 73	L urban RE 73	L WOT i OE 75,5	L WOT i RE 74,7
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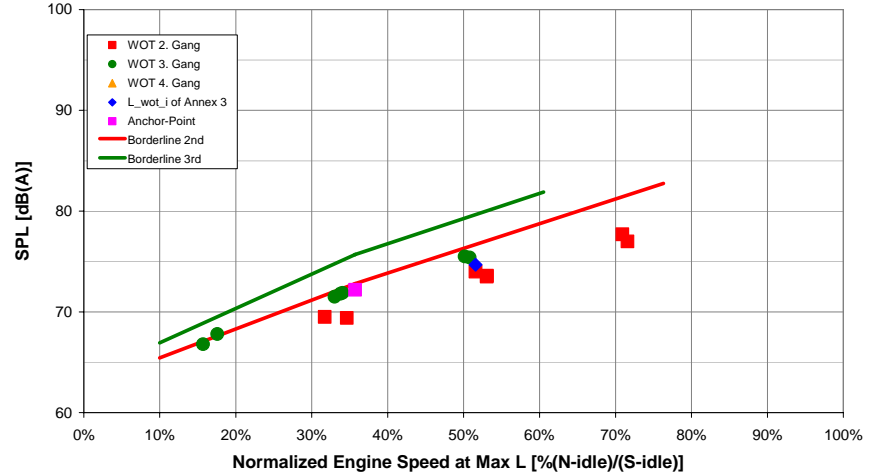
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D/F Proposal Feb. 2008 (Reference N@Lmax)



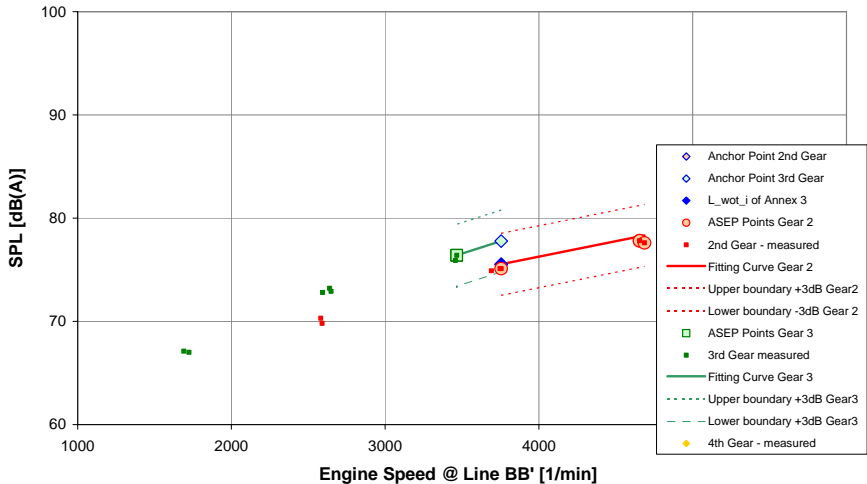
Replacement

D/F Proposal Feb. 2008 (Reference N@Lmax)



OE

OICA Concept (Reference N@BB')



Replacement

OICA Concept (Reference N@BB')

