

IMMA answers to the 13th IWG ASEP comments

History

- Sept. 2016: [GRB-64-23e-Rev.1](#) (Chair) *Revised draft Terms of Reference of IWG ASEP*. Note: R41 excluded
- Sept 2017: GRB-66-12 by Germany: problems with noise emissions from L-cat:
 - NORESS
 - “Grey Areas”
- March 2018, at (EU) MCWG, ACEM presented 1st ASEP concept in reaction to the 1st Euro 5 noise study, proposing to enlarge the test range, any gear, any throttle.
- Sept 2018, GRB/68:
 - German proposal for 02 Series of amendments for R92 introducing ASEP for NORESS (adopted March WP.29)
 - IMMA proposal for supplement 7 to R41/04, making ASEP mandatory (adopted at March WP.29),
 - Annex III to the report of GRB-68: Revised ToR now also including R41
- Sept 2018: [ASEP-09-05](#) IMMA inputs, including proposal to revise R41-ASEP, in line with above ‘contour’
- Nov 2018: ASEP-10-07: IMMA model study:
 - “Starting a completely new ASEP approach (currently not engineered for motorcycles) will need new limits as well and is not expected to meet the timeline”
 - “In the meantime, IMMA will cooperate in the further development of the model to make it suitable for motorcycles, for consideration at a later date”
- Jan 2019, on the side of GRB/69, IMMA presented 1st draft proposal for ASEP revision towards Real-Driving ASEP (ASEP 2.0) informally to stakeholders
- Apr. 2019: [ASEP-11-06](#) & [ASEP-11-05](#) (IMMA) R41 RDN ASEP 2.0 proposal, in line with above ‘contour’
- July 2019: [ASEP-12-07](#) rev2 (IMMA) MC_ASEP_2-0 rev1
- Sept 2019: [ASEP-13-05](#) (IMMA) *R41-05 amendment proposal, draft ASEP 2.0-rev1*

Timeline: Euro 5

2019	2020	2021	2022	2023	2024
	Euro 5, 2nd study	Co-decision			
	* (Entry into force Euro 5)	EC proposals			* Entry into force Euro 5+
	GRB/71	GRB/72	GRB/73	GRB/74	

2nd Euro 5 noise study about to start

Acknowledgement & acceptance of ASEP 2.0 is necessary A.S.A.P for inclusion in the 2nd Euro 5 study

Target Entry into force = together with the 2nd Euro 5 stage (Emissions & OBD-II)

+ external (EU public) pressure for stricter noise regulation

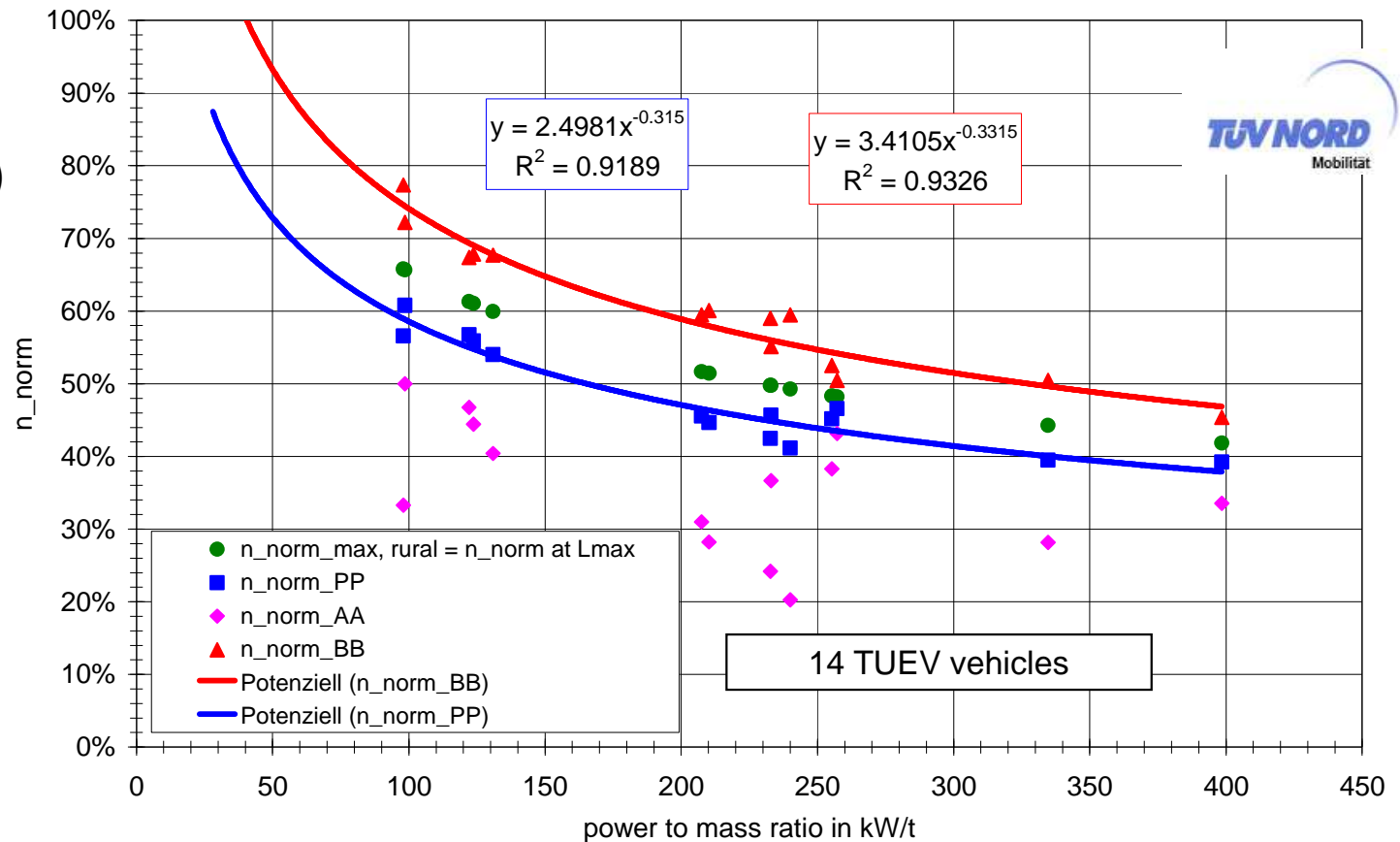
Limited time to explore drastic changes in procedure or limits

'real world' coverage of the R41 ASEP2.0 proposal

ASEP range Real world coverage: Vehicle & test details

Proposal for a method to determine L_{rural}

Citation from material of
6th Informal group on R41,
Geneva, 24 April 2006
(No. 05-R41WG-06-Annex1)



According to survey of real-world's traffic in Germany, the most typical rpm in actual operation is $S \cdot 80\%$ (PMR=100) even in rural area.

ASEP range Real world coverage: Vehicle & test details

vehicle ID	38	39	40	41	48	51	61	64	65	80	81	85
type	sport	cruizer	naked	cruizer	tourer	On/Off	On/Off	classic	sport	sport	naked	tourer
Engine type	L4	V2	B2	V2	B2	L1	V2	L2	V2	L4	L4	L4
PMR(kW/t)	335	120	167,7	117	210,2	126,6	130,7	222	283,3	389,1	139,3	186,9
Maximum vehicle speed	286	150	187	165	0	142	168	0	0	275	0	205
Rated engine rpm(min-1)	9500	6500	7000	5200	7250	7800	8000	9100	9000	12500	11000	10500

max speed in run	207,9	147,9	154,3	149,4	122,6	159	99,05	109	128,4	102,1	72,89	78,7
max rpm in run	10527	6250	6817	4776	7680	7680	4785	6570	7960	4586	6597	4913
location	DE, FR, IT	DE, FR, IT	DE	DE, IT	USA	USA	DE, NL	FR, IT	FR, IT	JP	JP	JP

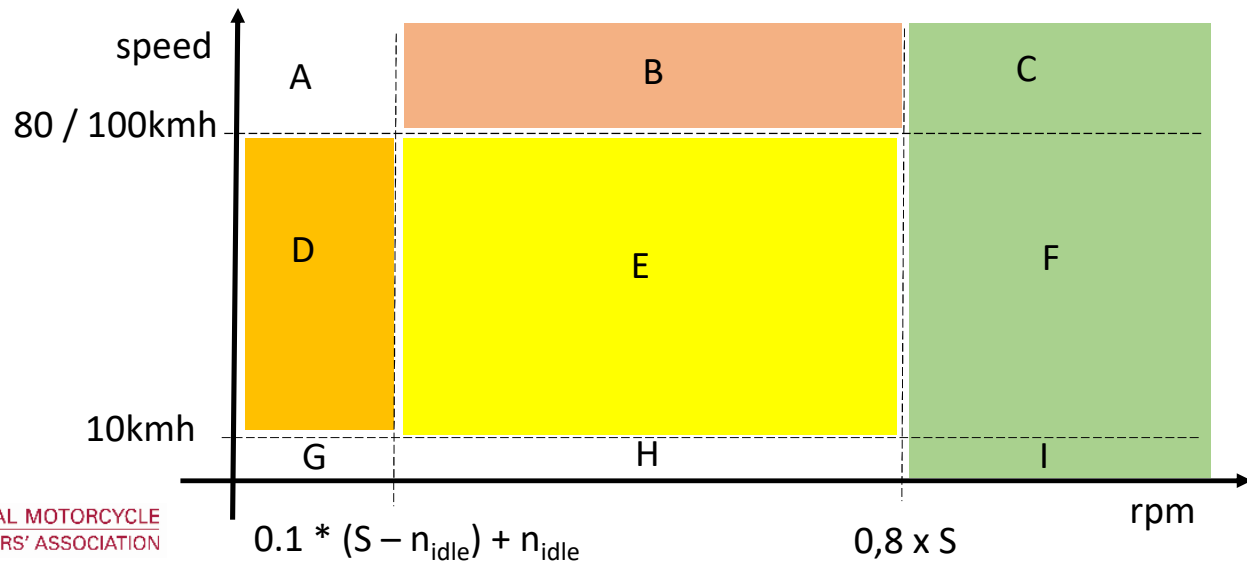
min_n_ASEP	2075	1775	1825	1645	1850	1905	1925	2035	2025	2375	2225	2175
Max_n_ASEP	7600	5200	5600	4160	5800	6240	6400	7280	7200	10000	8800	8400
ASEP Max speed	100	80	100	80	100	80	80	100	100	100	80	100

Not all 'gentle'
driving styles

ASEP range Real world coverage (% time):

vehicle ID	38	39	40	41	48	51	61	64	65	80	81	85	Average
A low rpm/ highway speeds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
B mid rpm/ highway speeds	12,2	12,5	19,8	28,7	0,5	18,7	2,7	0,0	0,0	0,0	0,0	0,1	7,9
C high rpm/ highway speeds	0,0	3,2	3,1	0,0	0,0	0,9	0,0	0,0	0,0	0,0	0,0	0,0	0,6
D low rpm/urban& extra urban speed	13,9	3,3	6,1	12,2	6,4	4,3	13,6	33,2	21,0	24,8	26,6	35,1	16,7
E ASEP coverage	71,6	79,1	68,9	56,9	87,0	71,6	78,4	51,0	72,4	68,2	61,7	58,2	68,7
F high rpm/urban& extra urban speed	0,0	0,0	0,1	0,0	0,1	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0
G low rpm/low speed	2,1	1,6	1,8	1,8	4,1	2,9	4,9	15,5	5,5	5,6	10,7	6,6	5,3
H mid rpm/low speed	0,2	0,3	0,3	0,3	1,9	1,5	0,4	0,3	1,7	1,3	1,0	0,1	0,7
I high rpm/low speed	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

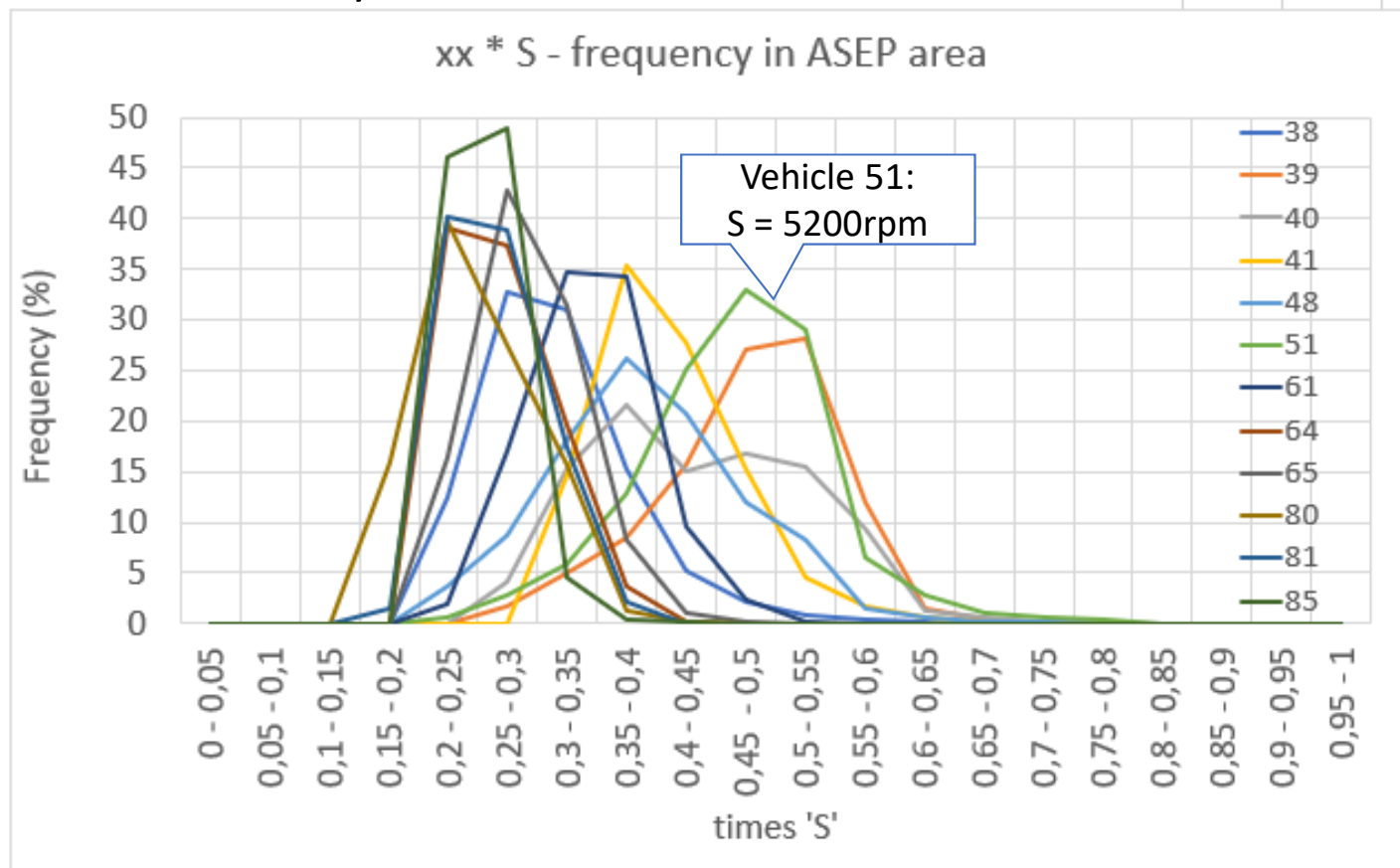
ASEP are has major coverage of 'real driving'



Other 'larger' coverage parts are not in critical areas: Low Rpm or highway speeds

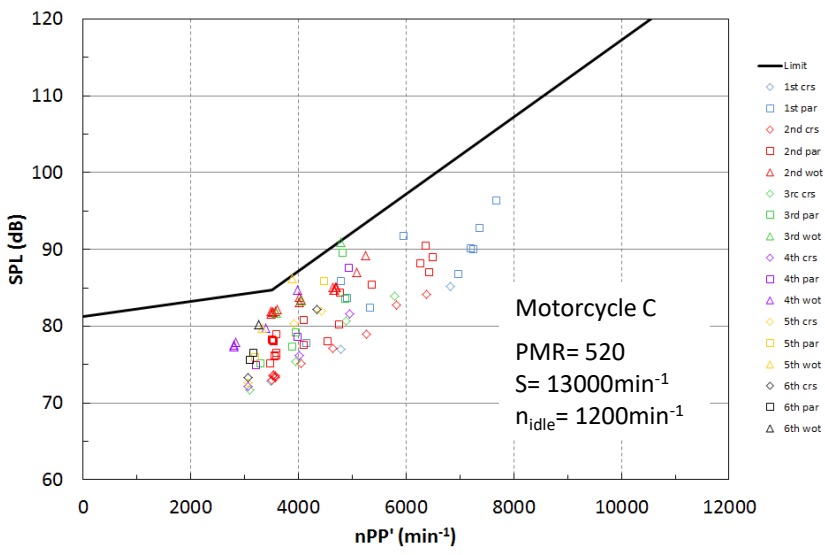
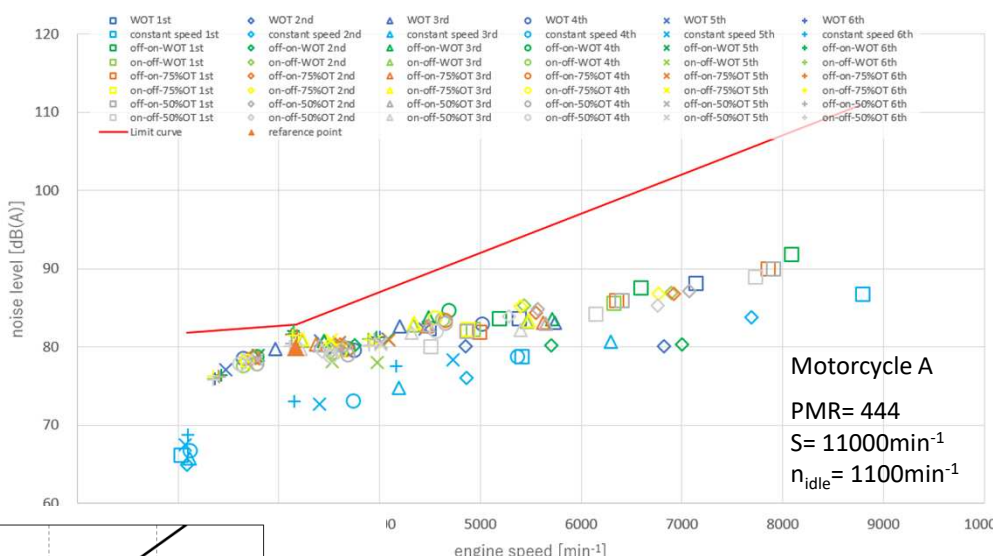
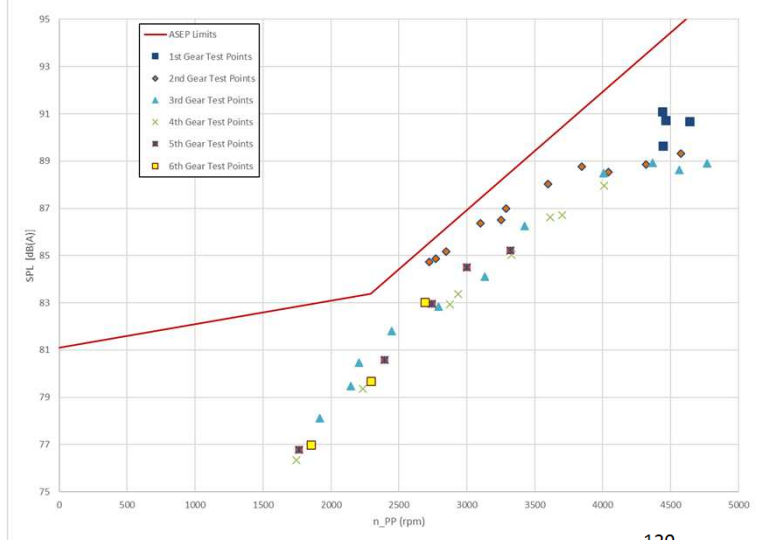
Low share of > 0,8 x S

ASEP range Real world coverage: RPM frequency analysis (% time within ASEP)



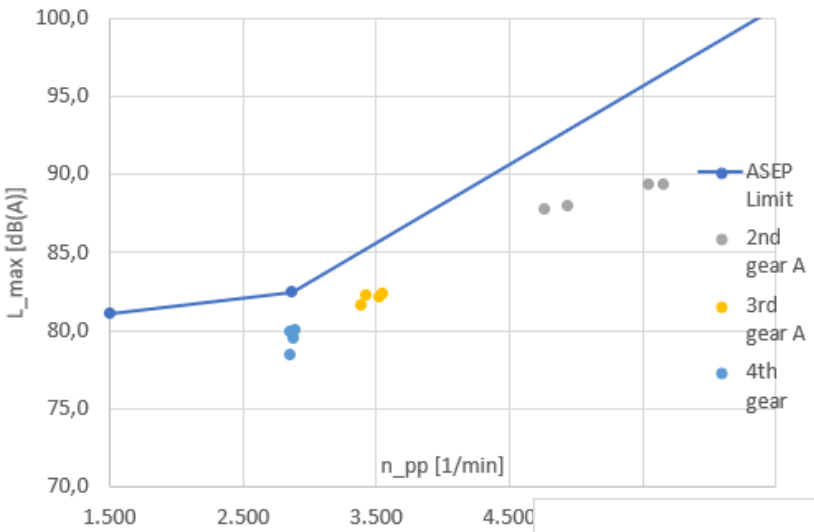
Real world driving: little time spent at high RPM

Linear behavior & 5dB/1000rpm

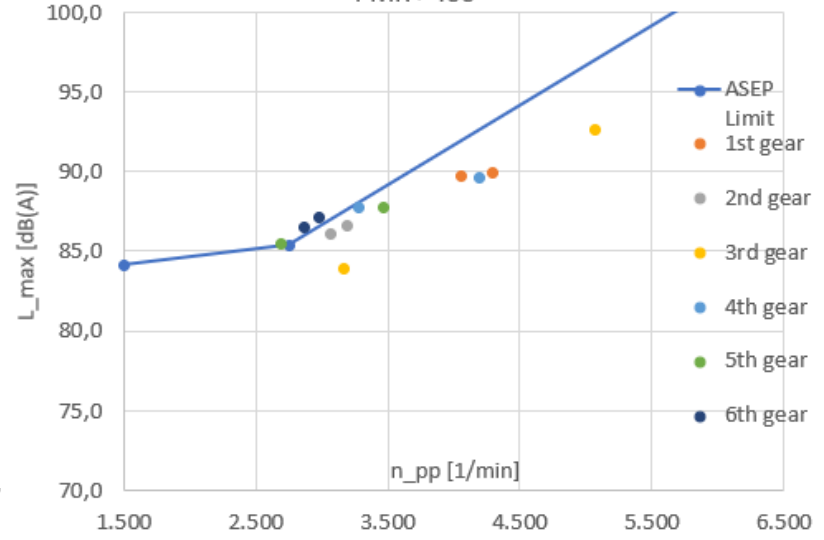


Linear behavior & 5dB/1000rpm

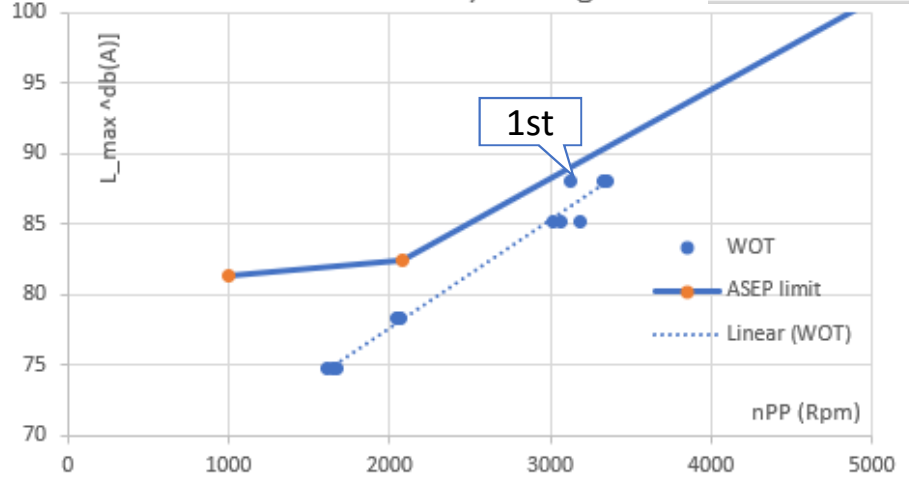
PMR 250



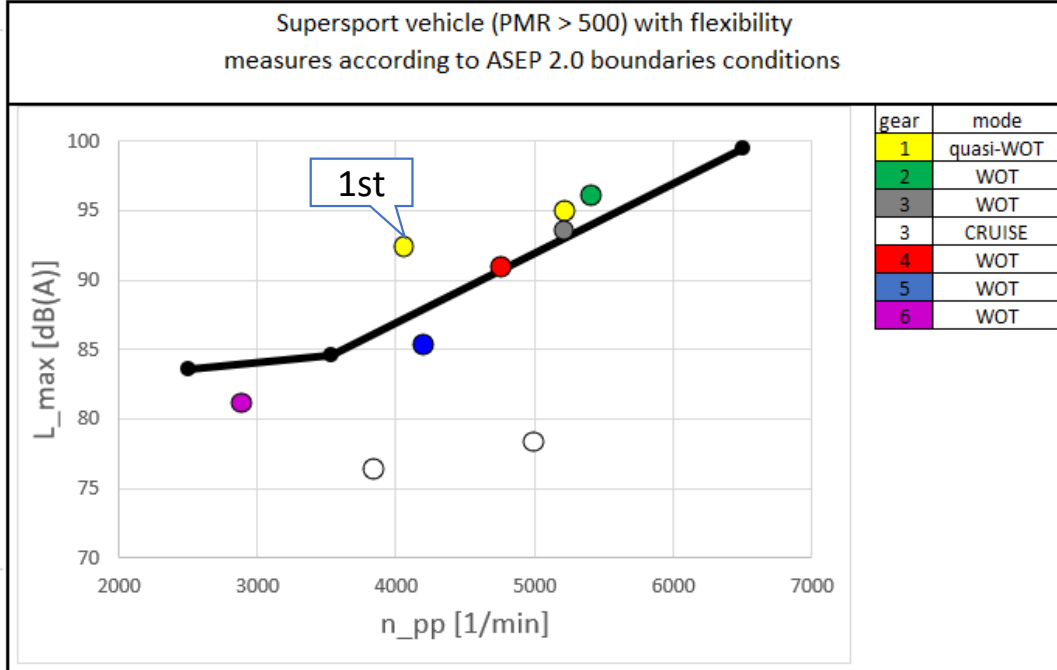
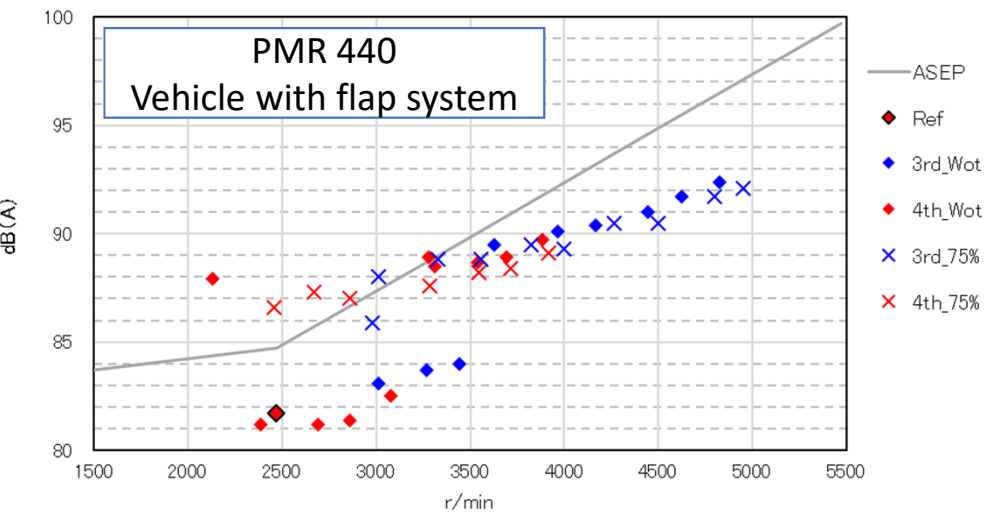
PMR >400



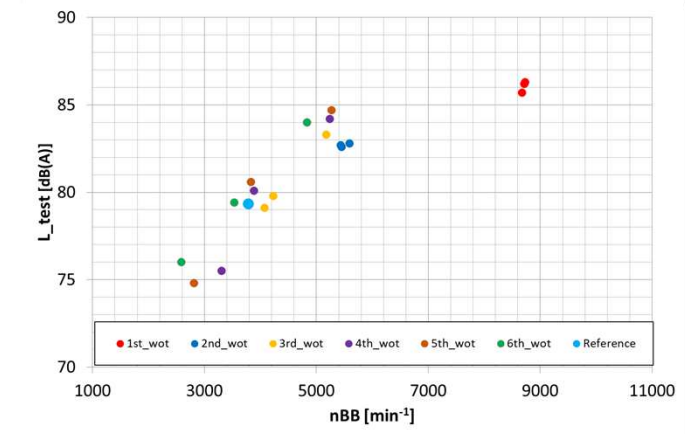
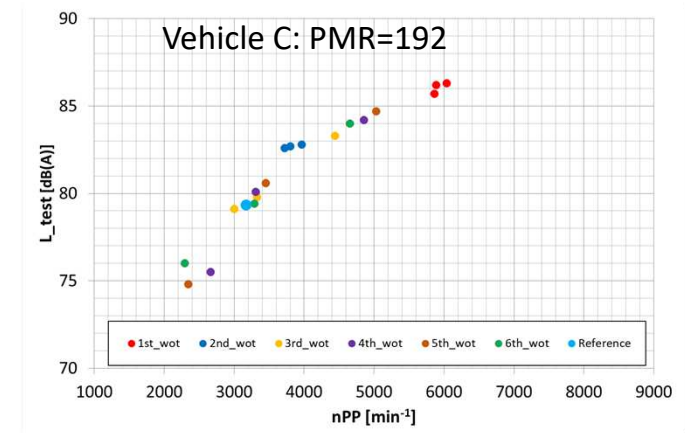
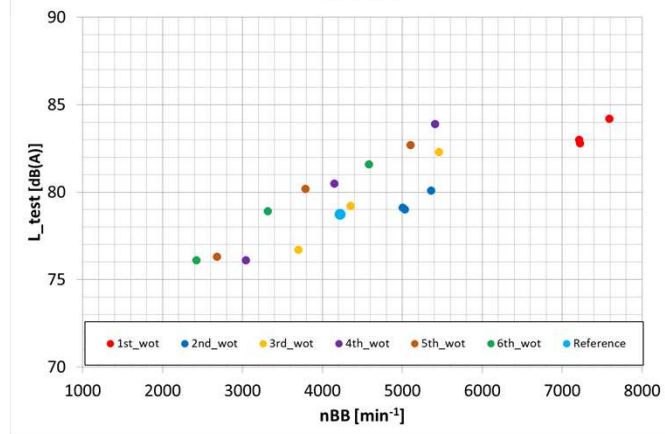
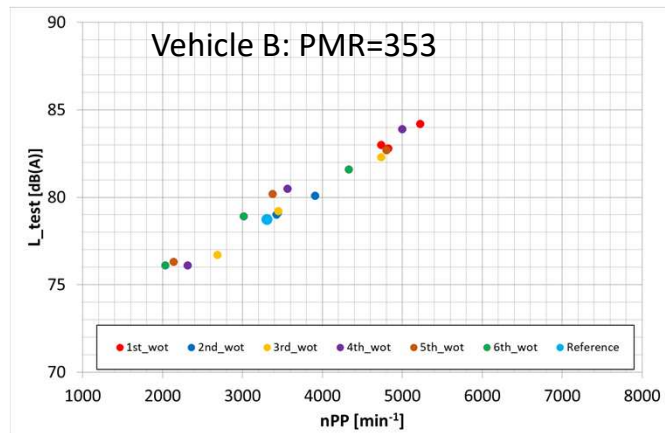
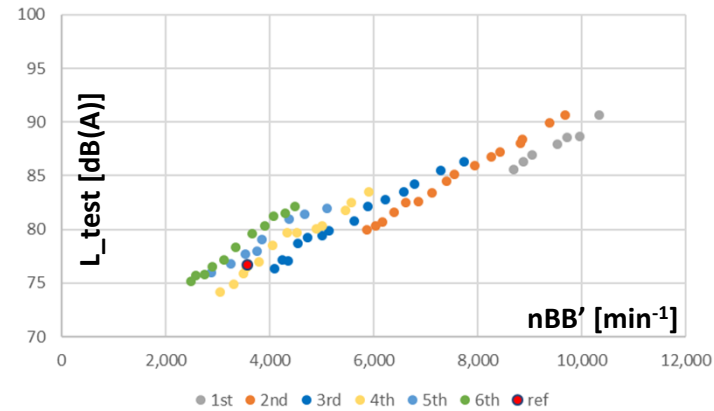
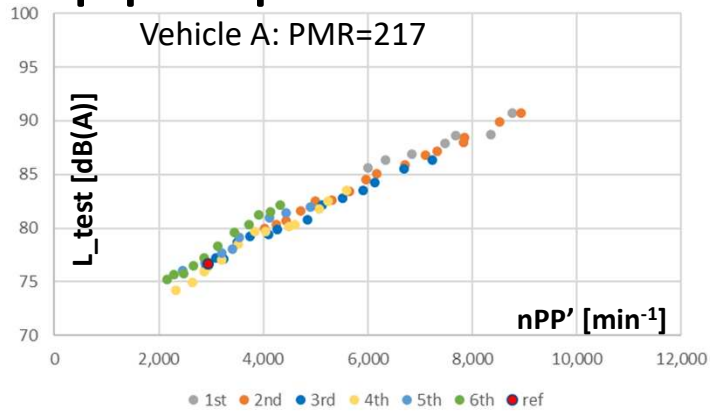
PMR 165, touring



Linear behavior & 5dB/1000rpm



Appropriateness of nPP:

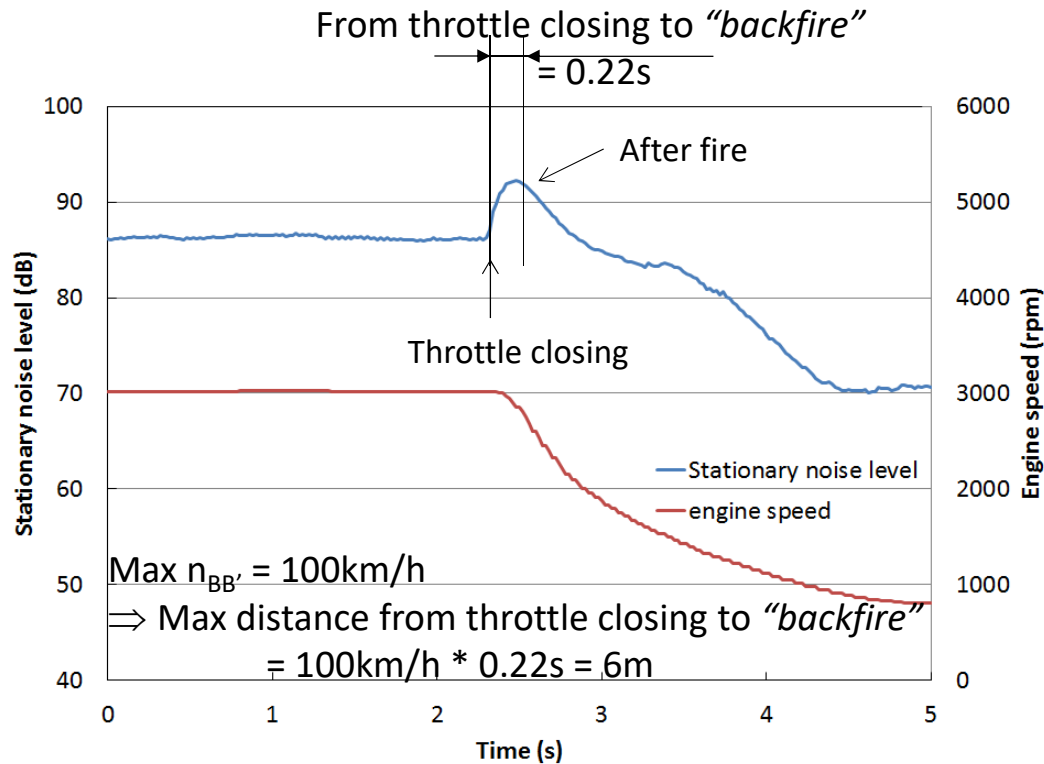


nPP' shows higher correlation

As agreed in 13th Informal Group on R41 (Geneva, 23-24 April 2009) - Minutes 03-R41WG-09a2e

backfire:

- Example: “Backfire” at stationary noise test



“BB’ + 10m” is sufficient for measuring “Backfire” during acceleration tests

Thank you