

Transmitted by the expert from Germany

Informal document No. GRB-44-4
(44th GRB, 4-6 September 2006
agenda item 1.2.1.3.)

The French/German ASEP proposal

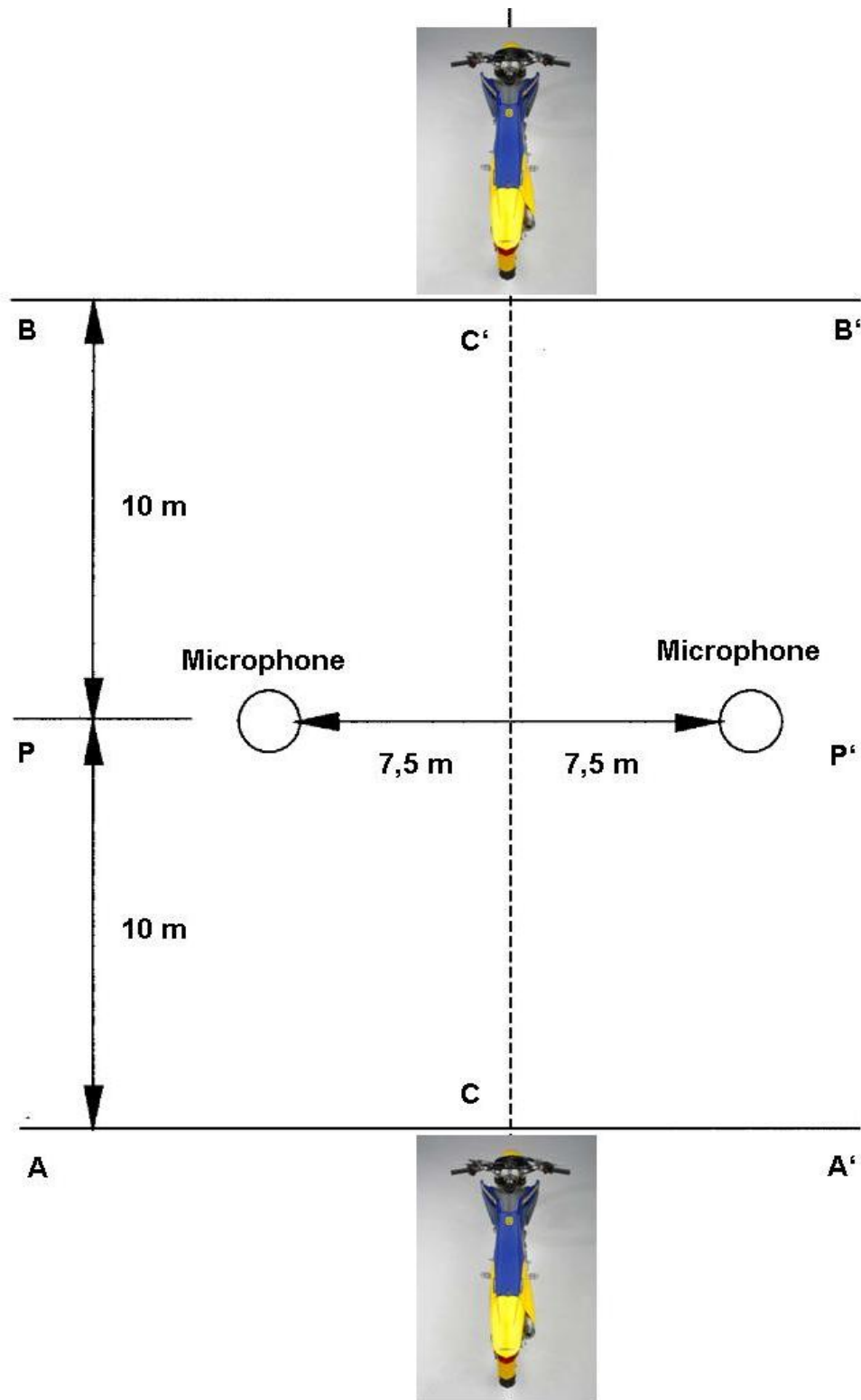
05.09.2006

The Noise model

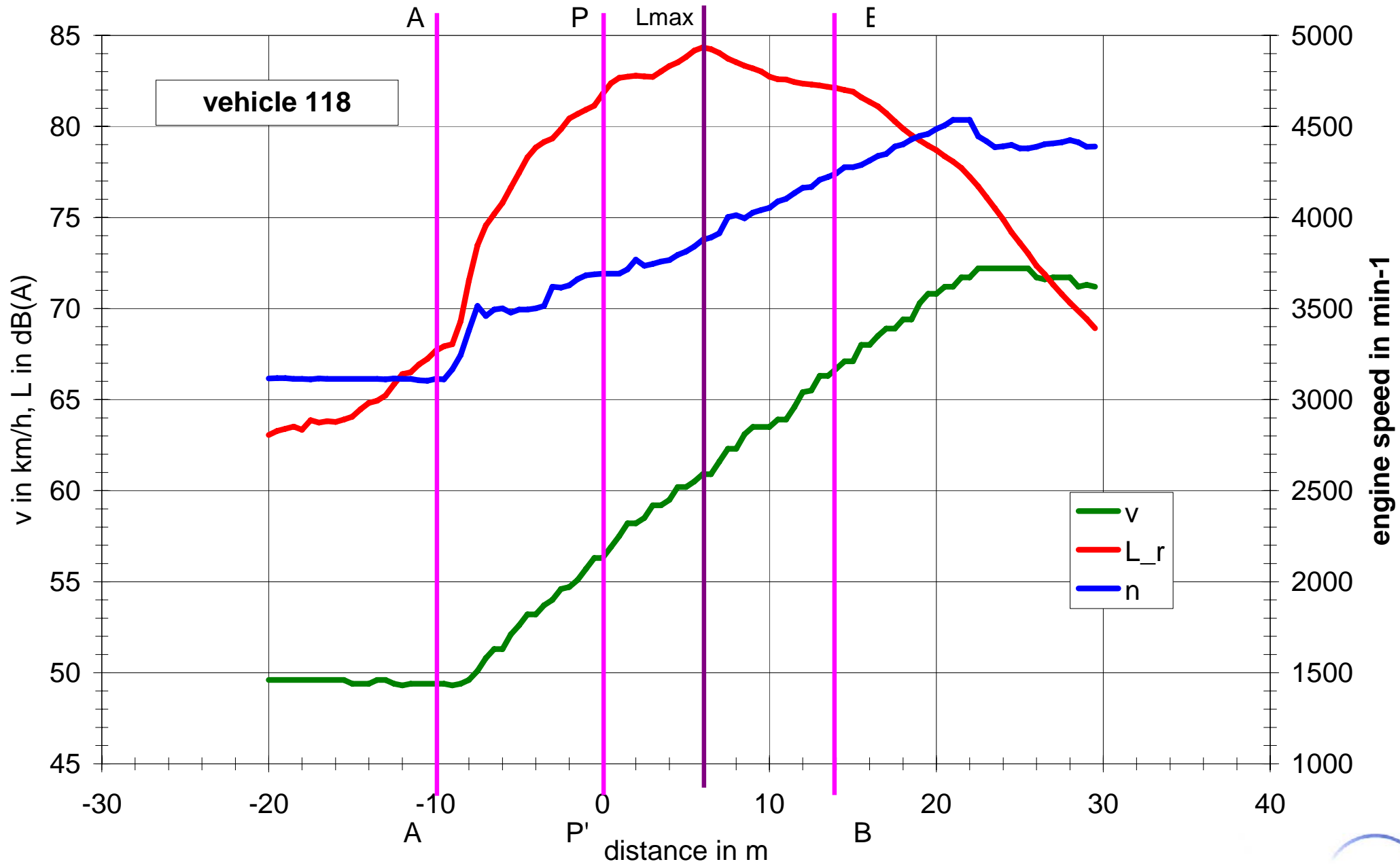
- $L_{\text{tyre}} = L_{\text{tyre_ref}} + a * \log(v/v_0)$
 - $L_{\text{tyre_ref}} = L_{\text{tyre}}(v_0)$
 - $v_0 = 50 \text{ km/h}$
- $L_{\text{prop}} = L_{\text{prop_ref}} + b * (n - n_0)$
 - $L_{\text{prop_ref}} = L_{\text{prop}}(n_0)$
 - n_0 is determined by engine speed in gear i of Annex 3 at 50 km/h
 - $L_{\text{prop_ref}}$ is determined by L_{wot} of annex 3 in gear i
 - $b = 6/1000$, if $n > n_0$
 - $b = 3/1000$, if $n < n_0$
- $L_{\text{prop_ref}}$ is calculated using the following equation:
 - $L_{\text{prop_ref}} = 10 * \log(10^{(0.1 * L_{\text{wot_i}})} - 10^{(0.1 * L_{\text{roll_50}})})$
- $L_{\text{ASEP_F}}(v, n) = 10 * \log(10^{(0.1 * (L_{\text{prop_ref}} + b * (n - n_0)))} + 10^{(0.1 * L_{\text{tyre_ref}} + a * \log(v/v_0))}) + 2 \text{ dB(A)}$

It is an open question whether n and v should be related to the microphone plane PP' , to L_{max} or to the end of the test track BB' .

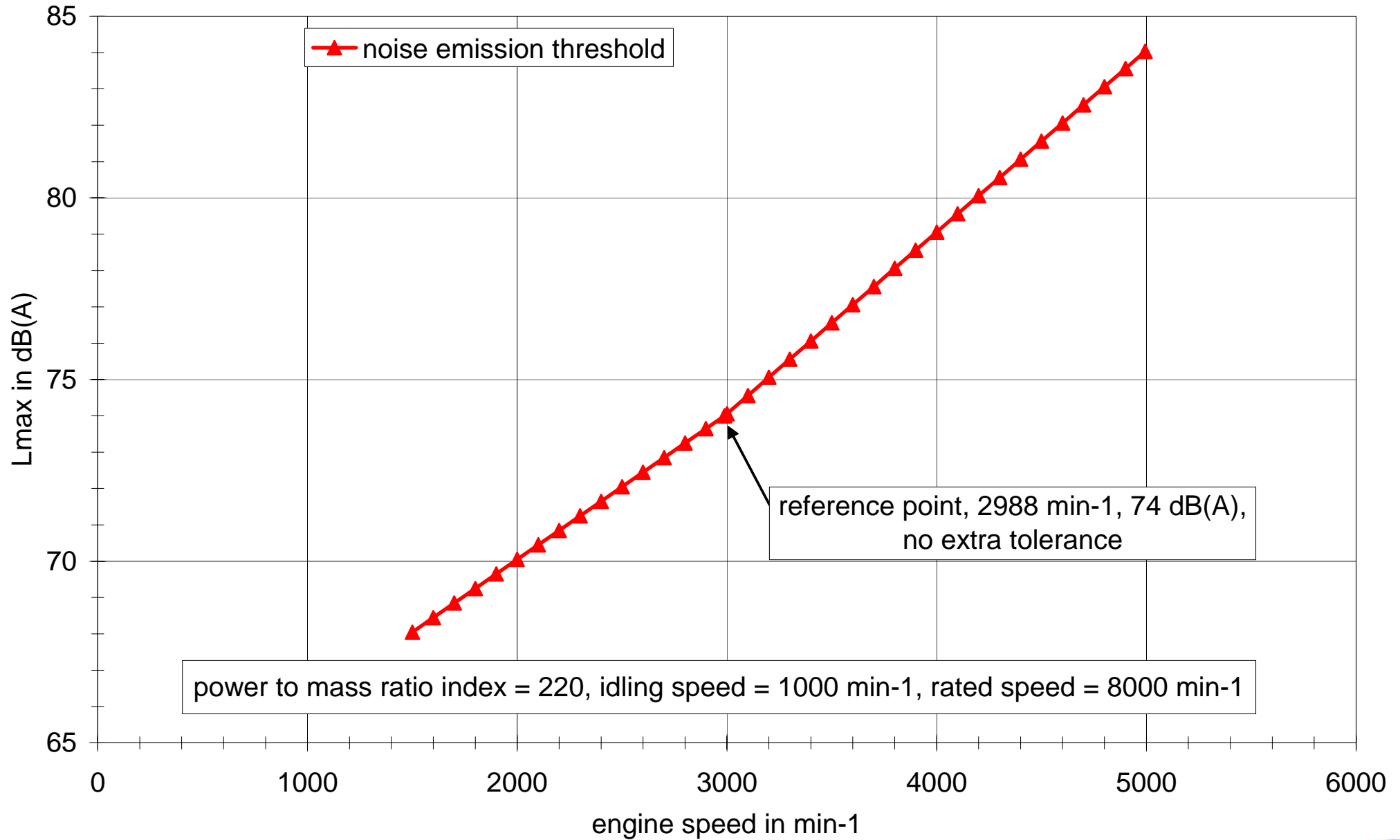
Test track



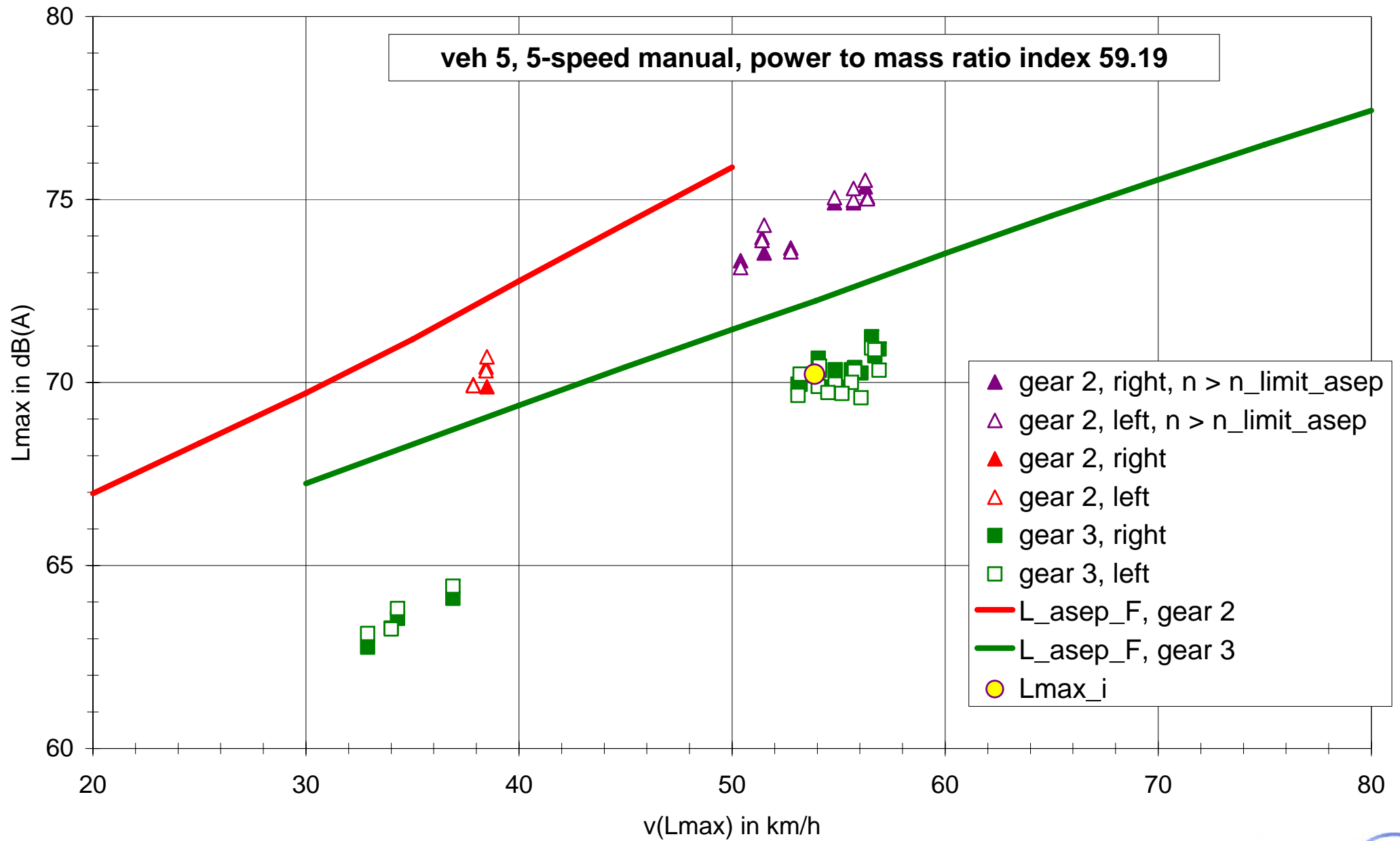
Results for vehicles with manual transmission



Propulsion noise limit curve



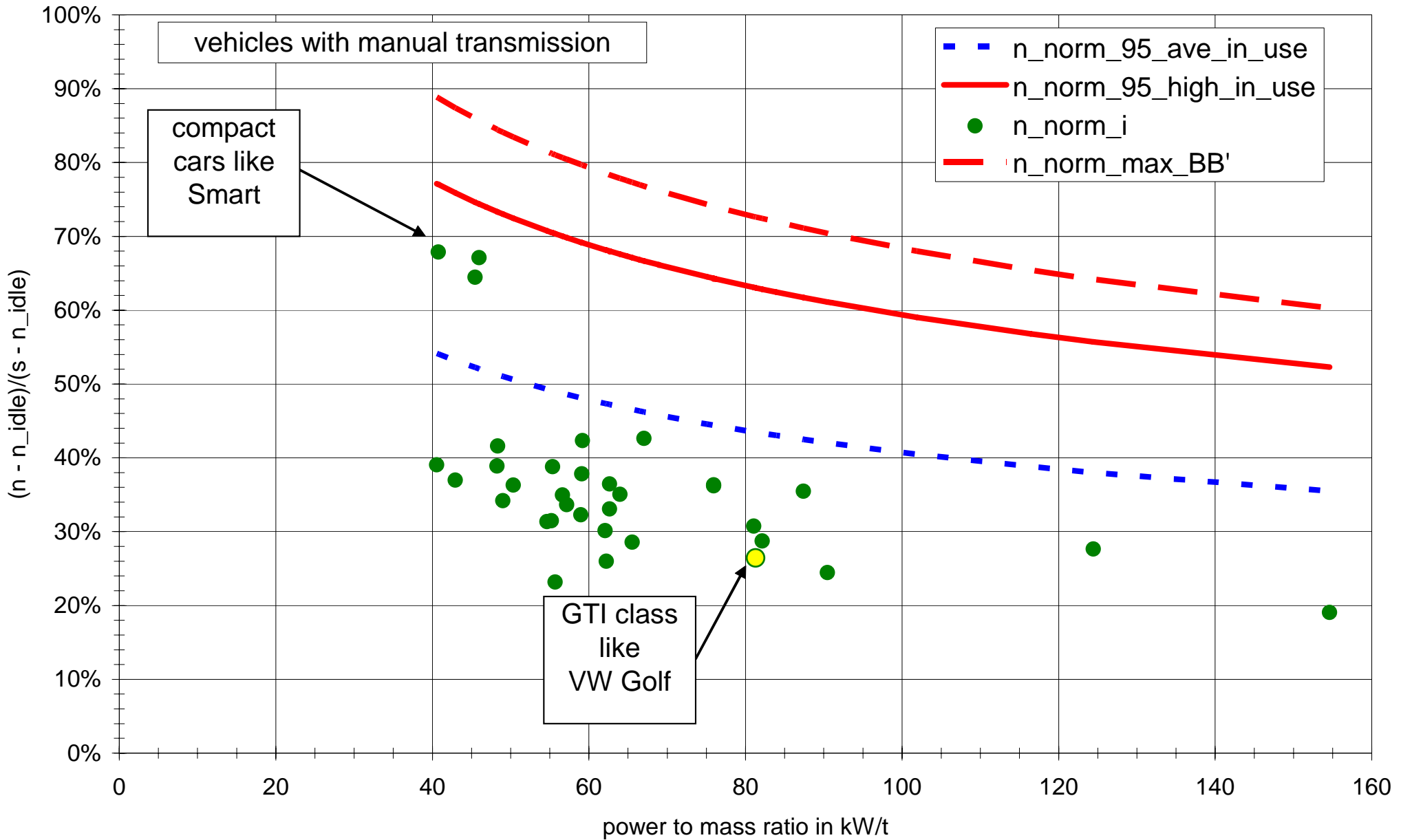
Example



Test area limitations

- Vehicle speeds between 20 km/h ($v_{AA'}$) and 70 km/h ($v_{BB'}$)
- Engine speeds at BB' up to $2,6 * pmr^{-0,29} * (s - n_{idle}) + n_{idle}$, but not more than $0,9 * (s - n_{idle}) + n_{idle}$
 - with s – rated engine speed in min-1,
 - n_{idle} – idling speed in min-1
 - $pmr = P_n \text{ in kW} / (m_0 \text{ in kg} + 75) * 1000$
- pmr is the power to mass ratio index. This is the rated power of the vehicle (P_n) in kW di-vided by the kerb mass of the vehicle (m_0) in kg + 75 (to account for the mass of the driver) and multiplied by 1000.

Engine speed limitation



GRB 0906

Thank you for your patience