

Test protocol for off cycle emission measurements for motorcycles

1 Off cycle emission area:

1.1 Motorcycles with manual transmission

- Vehicle speeds at BB' between 50 km/h and 90 km/h
- Engine speed at BB' up to $3,4105 \cdot \text{pmr}^{-0,3315} \cdot (s - n_{\text{idle}}) + n_{\text{idle}}$
with s – rated engine speed in min^{-1} ,
 n_{idle} – idling speed in min^{-1}
 $\text{pmr} = P_n \text{ in kW} / (m_0 \text{ in kg} + 75) \cdot 1000$

pmr is the power to mass ratio index. This is the rated power of the vehicle (P_n) in kW divided by the kerb mass of the vehicle (m_0) in kg + 75 (to account for the mass of the driver) and multiplied by 1000.

1.2 Motorcycles with automatic transmission

- Vehicle speeds at BB' between 50 km/h and $v_{\text{BB}'_{\text{max}}} = 0,071 \cdot \text{pmr} + 55$ in km/h

2 Tests and calculation of result

- In case of manual transmission choose 2. gear for the tests, in case of automatic transmissions choose gear selector position (if any) that ensures highest acceleration.
- Perform wide open throttle acceleration pretest to determine corresponding vehicle speed $v_{\text{AA}'}$ at AA'.
- Perform 4 wide open throttle acceleration tests with $v_{\text{AA}'}$, measure L_{max} during the pass-by at each side of the vehicle.
- Average the 4 L_{max} results for each side of the vehicle.
- The final results is the maximum of these averages.
- Perform at least one test series (4 measurements) with $v_{\text{BB}'}$ and/or $n_{\text{BB}'}$ at the upper borderline of the off cycle emission area.
- Perform additional test series with $v_{\text{BB}'}$ and/or $n_{\text{BB}'}$ below the upper borderline of the off cycle emission area (e.g. in the middle and at the lower borderline).

3 Other parameters to be measured

- Vehicle speeds at AA', PP' and BB'
- Engine speeds at AA', PP' and BB'
- If possible, measure noise emission, vehicle speed and engine speed between AA' and BB' continuously.