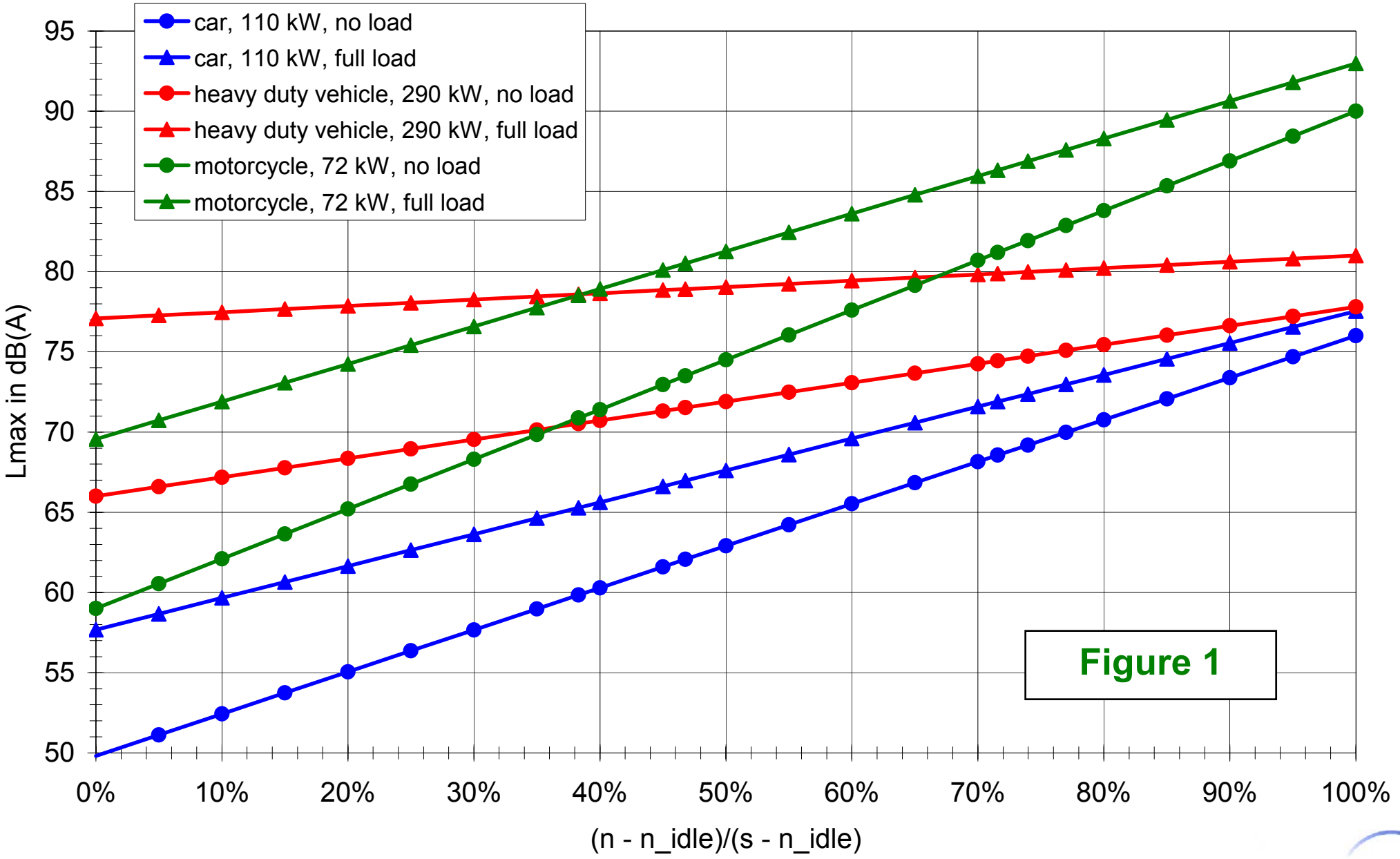
Motorcycle Noise Emission

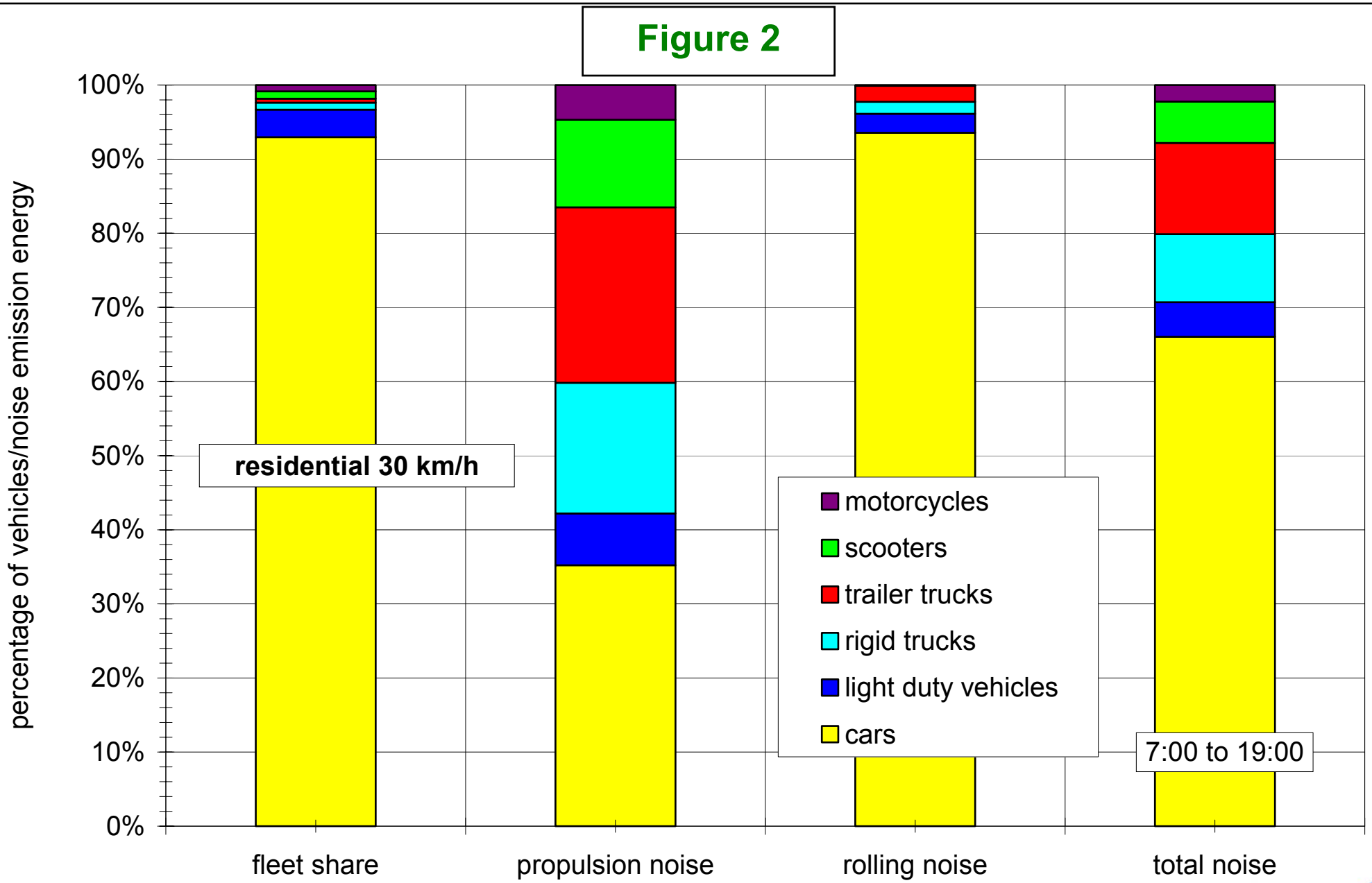
Informal document No. **GRB-41-10**
(41st GRB, 22-24 February 2005,
agenda item 1.1.)

- **Motorcycles have the highest technical potential of noise emission (figure 1),**
- **Motorcycles do not contribute significantly to the Leq in agglomerations and even on rural roads (figures 2, 3 and 4), but their annoyance potential at the boundaries of urban locations is high. This annoyance is not only related to the use of illegal exhaust systems but also to single events with high accelerations and high engine speeds that can lead to noise levels of up to 90 dB(A) even for a non modified motorcycle (figures 5, 6 and 7).**
- **The measurement method of the new ISO 362 standard for cars and motorcycles is Leq based. This is adequate for cars but not for motorcycles.**
- **First investigations show that the acceleration values of ISO 362 new are in line with practical use (figure 8) but that the engine speeds during the tests are significantly lower than the engine speeds used in real traffic (figure 9).**
- **ECE R40 (exhaust emission measurement procedure) is currently been updated (by WMTC, a subgroup of GRPE). The already agreed gearshift prescriptions result in higher engine speeds during the driving cycles than those of the new ISO 362 standard (figure 9).**
- **For an amendment of ECE R41 a measurement method that better reflects the most annoying conditions in real traffic would be more adequate. One possible solution is the adaptation of the ISO 362 new method for N2 and N3 vehicles to motorcycles. That means target engine speeds that must be reached at the end of the test track (BB') during an acceleration test. The target engine speed should be a function of power to mass ratio. An appropriate gear ratio should be chosen so that the resulting vehicle speed at a given position falls into the range between 30 and 60 km/h.**

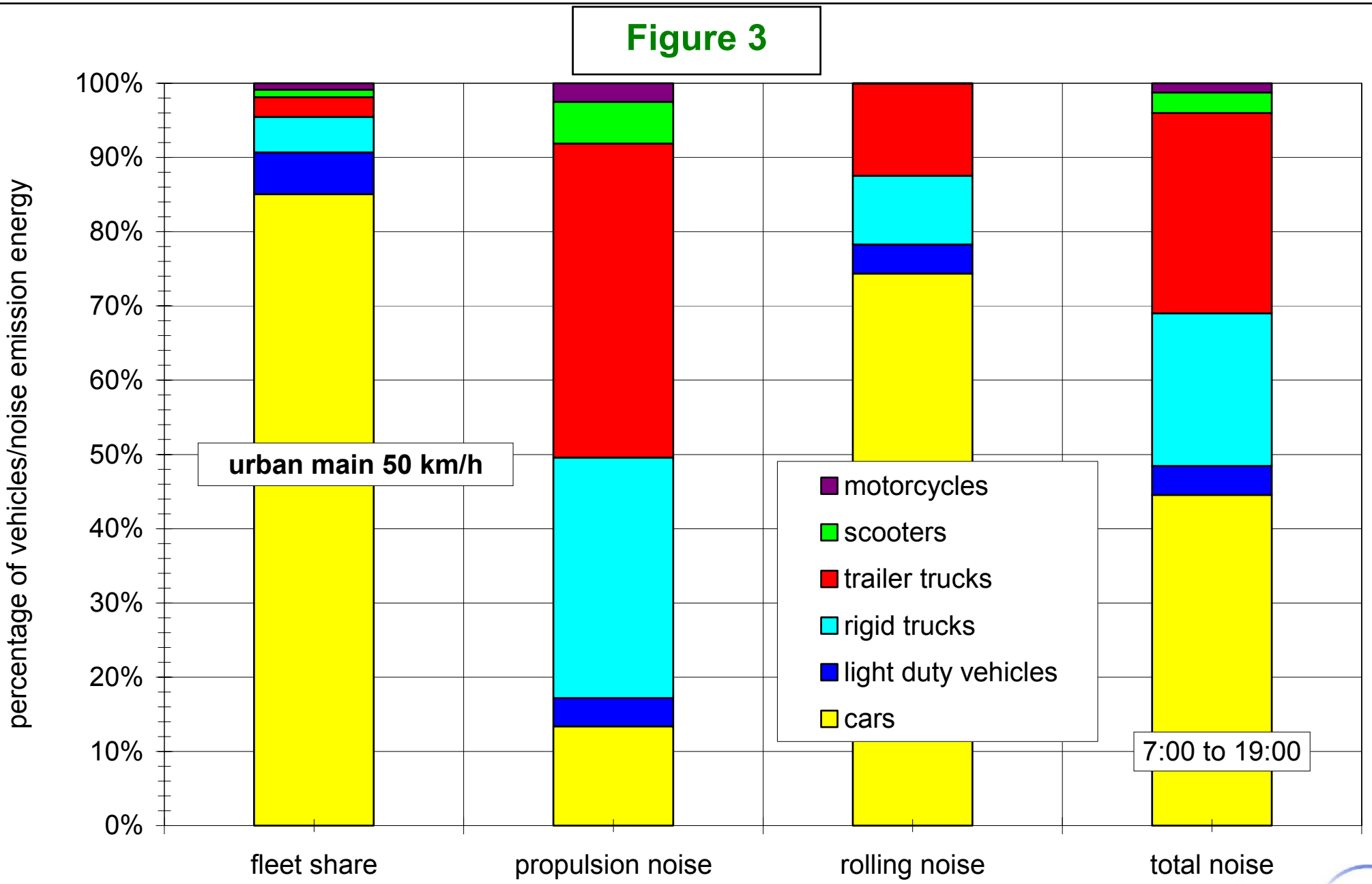
The technical noise emission potential



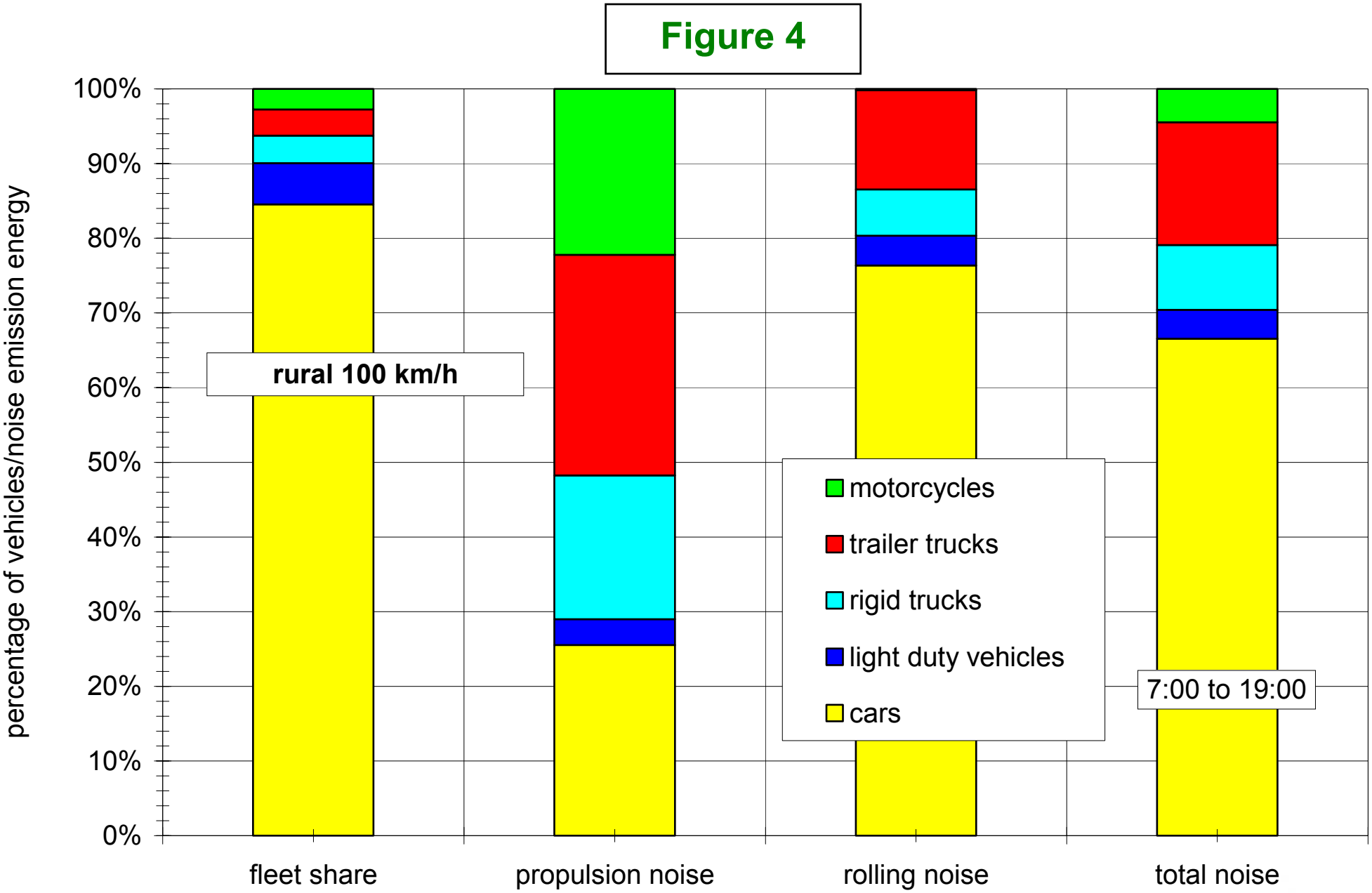
The contribution of motorcycles to Leq



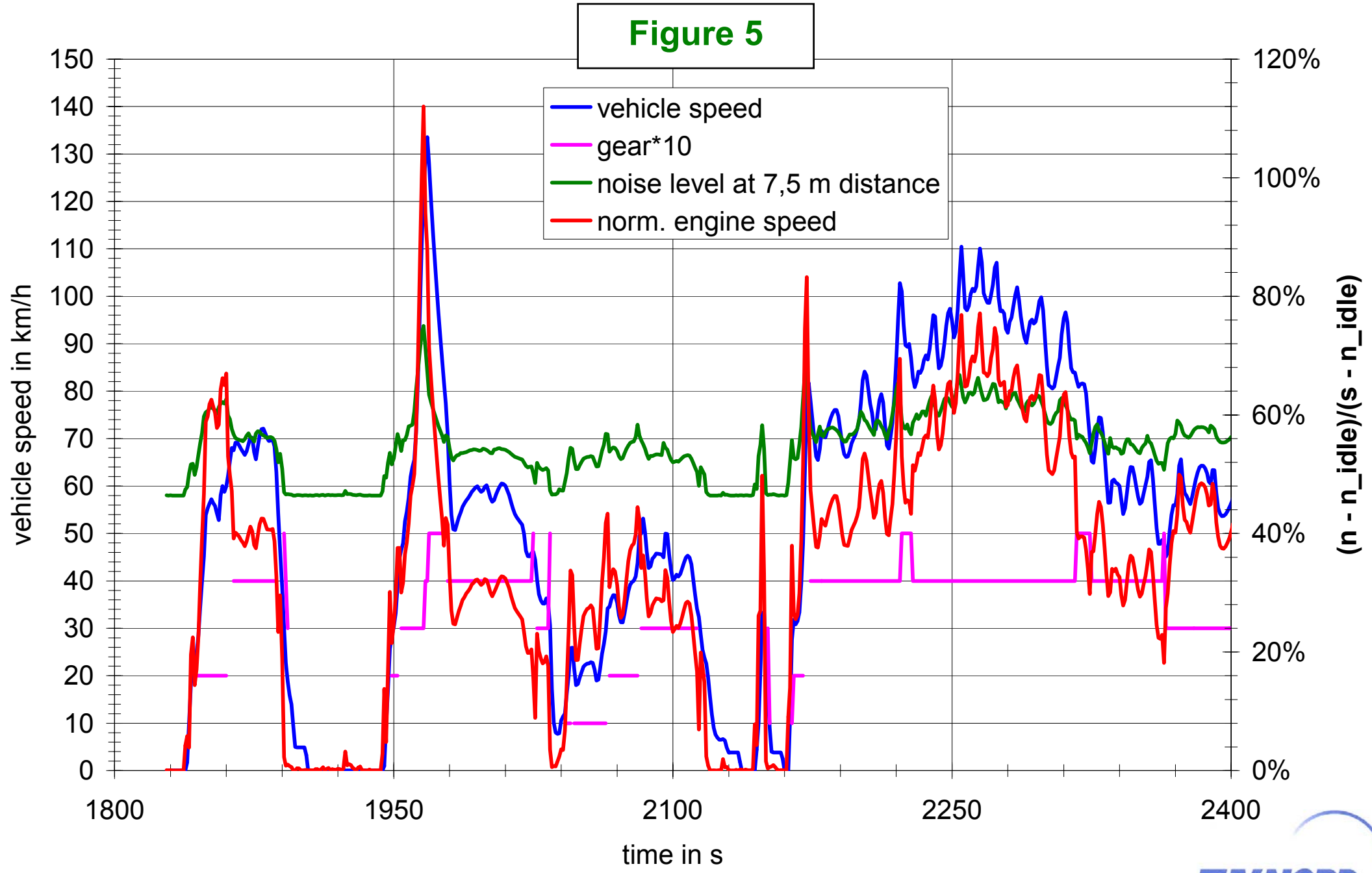
The contribution of motorcycles to Leq



The contribution of motorcycles to Leq

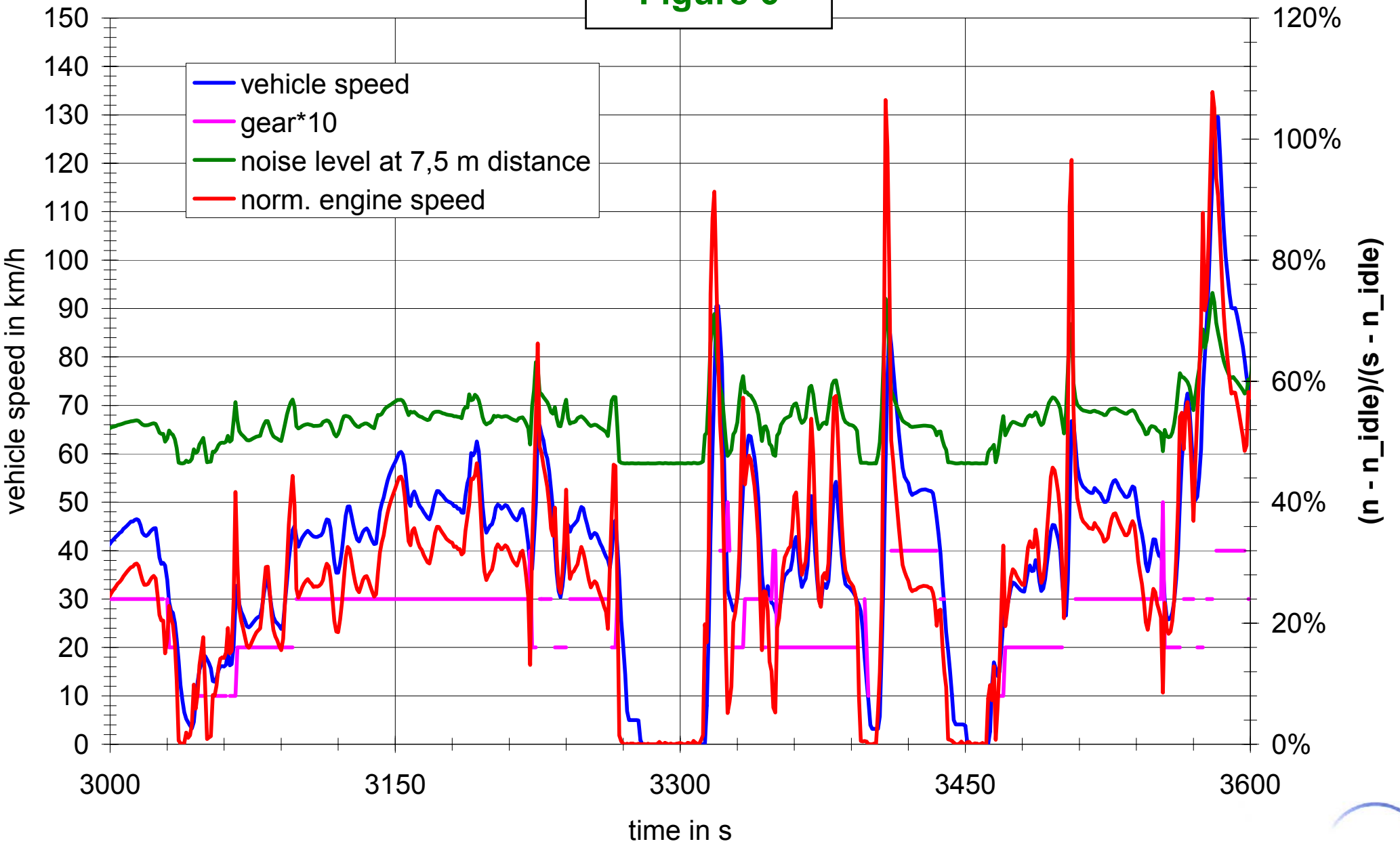


Time history of in-use driving behaviour data



Time history of in-use driving behaviour data

Figure 6



Peak acceleration as function of vehicle speed

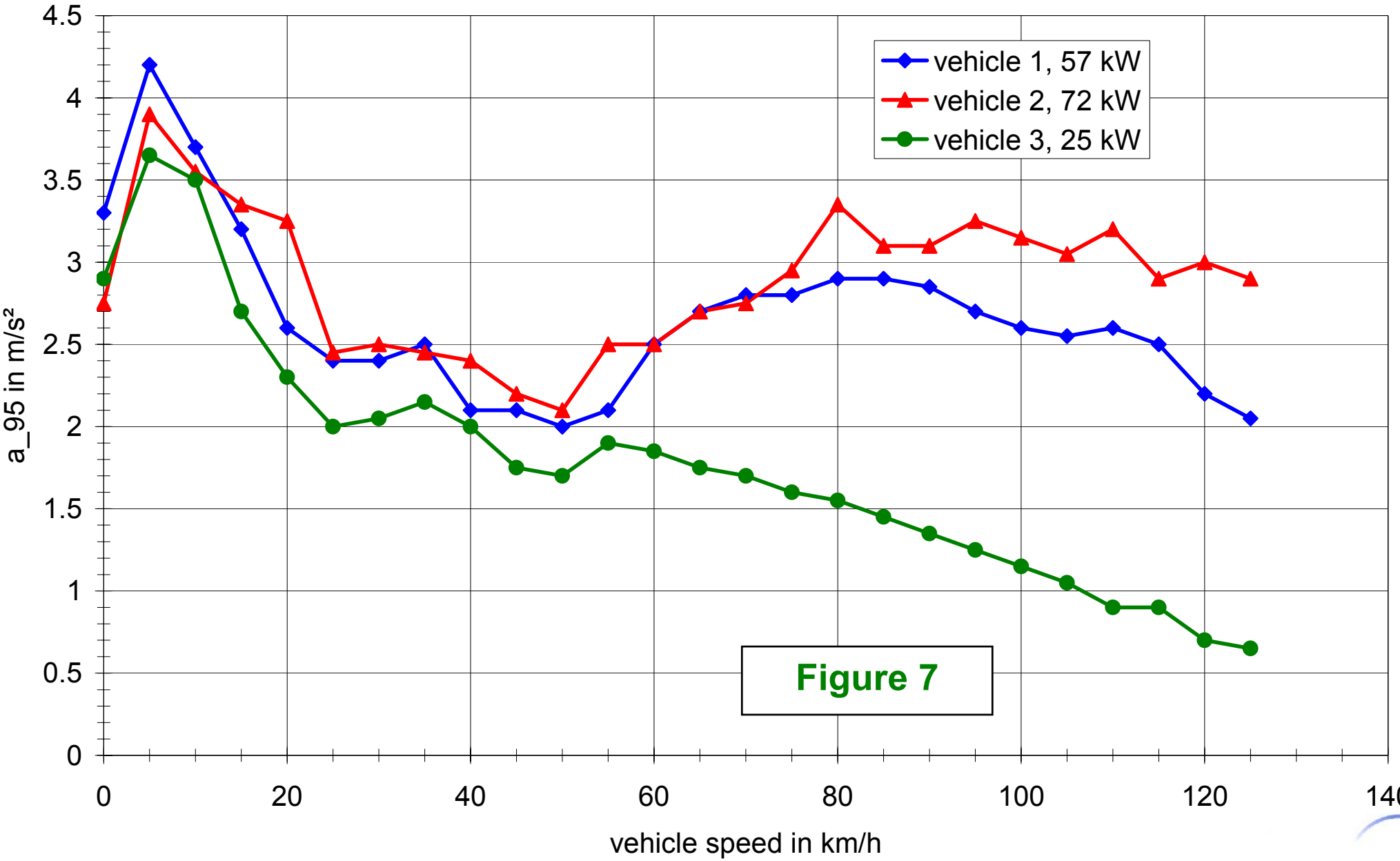
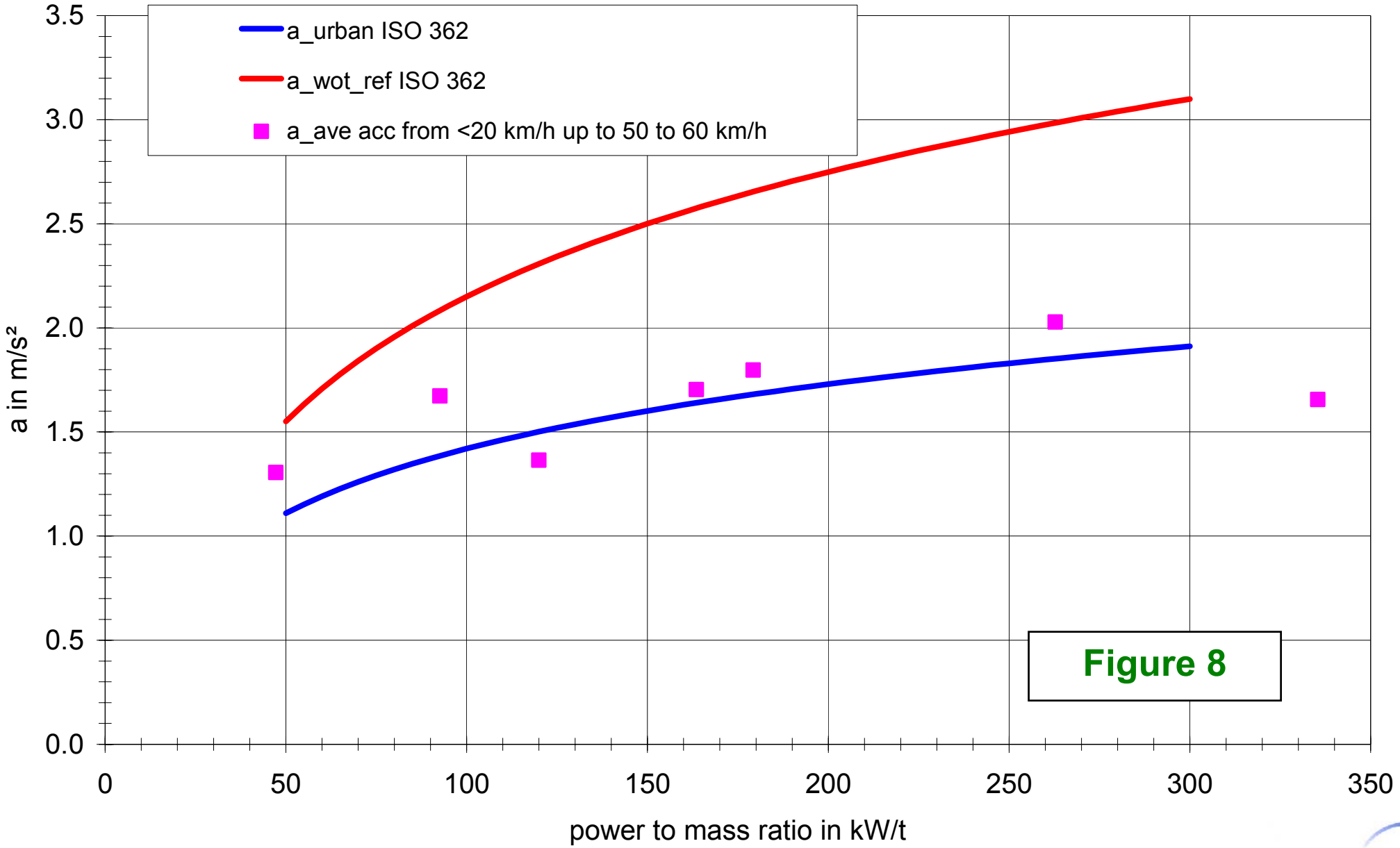


Figure 7

Average urban acceleration and a_urban ISO 362



In-use engine speeds and ISO 362 test speeds

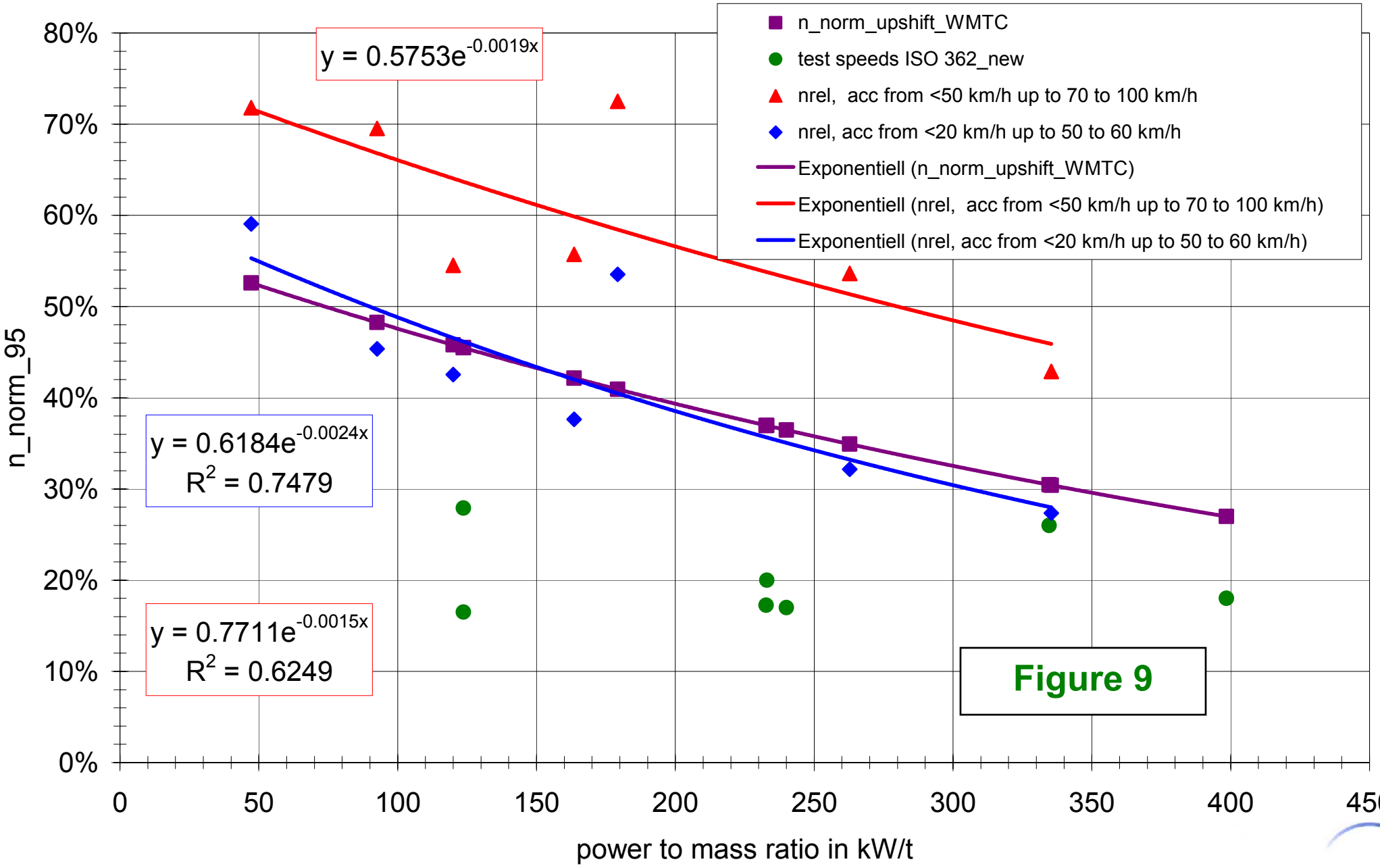


Figure 9

Motorcycles

The end