German proposal on application of test cycles

A. Proposal:

Test cycles for determination of emission reduction of REC should be applied as follows:

HDV:

1. measurement of test engine without REC in corresponding cycle of test engine approval (depending on Euro class)
   ⇨ see whether test engine fulfills requirements

2. measurement of test engine with REC in corresponding cycle of the emission level to be achieved with REC (= as currently proposed in REC Reg.)
   ⇨ see whether emission limit(s) can be achieved

3. measurement of test engine without REC in WHTC* (cold and hot, weighted)
   ⇨ base measurement for determination of relative reduction rate of REC

4. measurement of test engine with REC in WHTC* (cold and hot, weighted)
   ⇨ determination of relative reduction rate of REC

NRMM:

1. measurement of test engine without REC in corresponding cycle of test engine (depending on emission stage)
   ⇨ see whether test engine fulfills requirements

2. measurement of test engine with REC in corresponding cycle of the emission level to be achieved with REC (= as currently proposed in REC Reg.)
   ⇨ see whether emission limit(s) can be achieved

3. measurement of test engine without REC in NRTC* (cold and hot, weighted)
   ⇨ base measurement for determination of relative reduction rate of REC

4. measurement of test engine with REC in NRTC* (cold and hot, weighted)
   ⇨ determination of relative reduction rate of REC

* given that same test cycle(s) is/are also used for tests 1+2, tests 3+4 might get redundant.

B. Justification

To provide that both PM and NOx REC effectively reduce emissions and to reduce measurement costs as far as possible the aforementioned approach to test RECs in accordance with future ECE Regulation is proposed. The approach is driven especially

1. from the need of getting effective NOx RECs
2. possible problems with the application of ETC/ESC for determination of NOx reduction performance and

3. the need of applying same test procedures (and therefore cycles) for NOx-, PM and especially PM+NOx-RECs