

OCE GTR
Laboratory Based WNTe Test – Revised EC Proposal

7.4. Description of the WNTe laboratory test

7.4.1. The emissions of gaseous and particulate pollutants shall be determined on the basis of randomly defined test points distributed across the WNTe control area. All the test points shall be contained within 3 randomly selected grid cells imposed over the control area.

The grid comprises of 12 cells and is defined as follows:

- The outer boundaries of the grid are aligned to the WNTe control area;
- 2 horizontal lines spaced at equal distance of engine torque ($\frac{1}{3}$) at each vertical line within the WNTe control area; and
- 3 vertical lines spaced at equal distance of engine speed ($\frac{1}{4}$) between n_{30} , and n_{hi} .

An example of the grid applied to a specific engine is shown in Figure 2.

7.4.2. The 3 selected grid cells shall each include 5 random test points, so a total of 15 random points shall be tested within the WNTe control area. Each cell shall be tested sequentially; therefore all 5 points in one grid cell are tested before transiting to the next grid cell. The test points are combined into a single ramped steady state cycle.

7.4.3. The order in which each of the grid cells are tested, and the order of testing the points within the grid cell, shall be randomly determined. The 3 grid cells to be tested, the 15 test points, the order of testing the grid cells, and the order of the points within a grid cell shall be selected by the type approval or certification authority using acknowledged statistical methods of randomisation.

7.4.4. The average specific mass emissions of gaseous pollutants shall not exceed the WNTe limit values specified in section 5.2 (of the GTR) when measured over any of the cycles in a grid cell with 5 test points.

7.4.5. The average specific mass emissions of particulate pollutants shall not exceed the WNTe limit values specified in section 5.2 when measured over the whole 15 test point cycle.

7.5. Laboratory test procedure

7.5.1. After completion of the WHSC cycle, the engine shall be preconditioned at mode 9 of the WHSC for a period of three minutes. The test sequence shall start immediately after completion of the preconditioning phase.

7.5.2. The engine shall be operated for 2 minutes at each random test point. This time includes the preceding ramp from the previous steady state point. Ramps between the test points shall be linear for engine speed and load and shall last a maximum of 20 seconds.

7.5.3. The total test time from start until finish shall be 30 minutes. The test of each set of 5 selected random points in a grid cell shall be 10 minutes, measured from the start of the

entry ramp to the 1st point until the end of the steady state measurement at the 5th point. Figure 1 illustrates the structure of the test procedure.

- 7.5.4. The measurement of the emissions shall be carried out in accordance with paragraph 7.8 of gtr n° 4 (WHDC).
- 7.5.5. The calculation of the test results shall be carried out in accordance with paragraph 8 of gtr n° 4 (WHDC).

Figure 4: Schematic example of the start of the WNTe test cycle

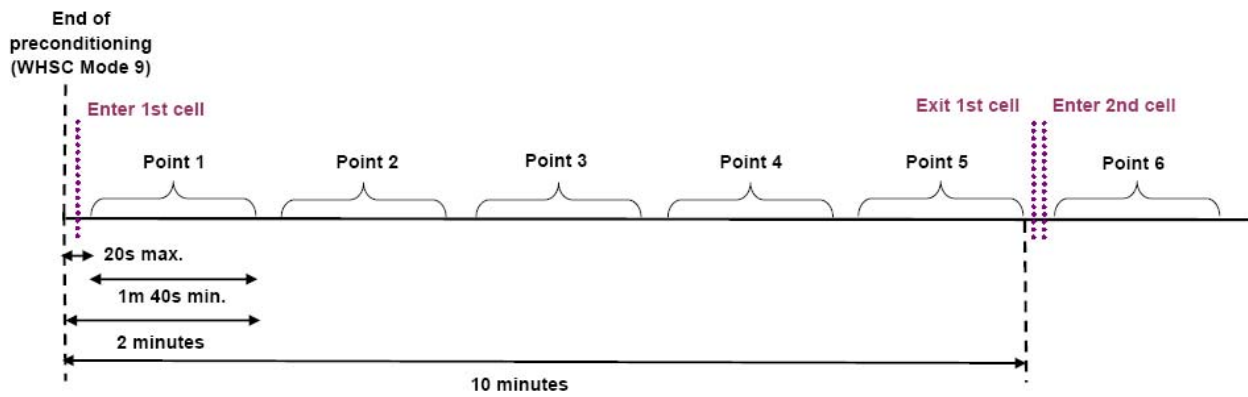


Figure 5: WNTe test cycle grid

