Irish Standard Recommendation
S.R. CWA 17379:2019

General guideline on real drive test methodology for compiling comparable emission data

S.R. CWA 17379:2019

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This document is based on:	*Published:*
CWA 17379:2019	2019-01-30

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2019-02-17	13.040.50
	NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

S.R. CWA 17379:2019 is the adopted Irish version of the European Document CWA 17379:2019, General guideline on real drive test methodology for compiling comparable emission data

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CEN WORKSHOP AGREEMENT

CWA 17379

January 2019

ICS 13.040.50

English version

General guideline on real drive test methodology for compiling comparable emission data

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No.:CWA 17379:2019 E

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FOREWORD

CWA 17379 was developed in accordance with CEN-CENELEC Guide 29 “CEN/CENELEC Workshop Agreements – The way to rapid agreement” and with the relevant provisions of CEN/CENELEC Internal Regulations - Part 2. It was agreed on 2018-11-30 in a Workshop by representatives of interested parties, approved and supported by CEN following a public call for participation made on 2017-10-05. It does not necessarily reflect the views of all stakeholders that might have an interest in its subject matter.

The final text of CWA 17379 was submitted to CEN for publication on 2019-01-14. It was developed and approved by:

Nicholas Molden, Emissions Analytics Organisation - Chairman

Marc Stettler, Imperial College London – Project Leader

Helen Apsimon, Centre for Environmental Policy, Imperial College London

Philippe Awouters, Clean Air Lovers & Lobbyists

Sergi Balagué i Ferrer, Servei de Vigilància i Control de l’Aire Catalugna

Alessandro Corrado, Lombardy Region Delegation

Massimo Fedeli, AIR- Allow Independent Road testing

Les Hill, HORIBA UK Limited

Claire Holman, Brook Cottage Consultants Ltd

Gian Luca Gurrieri, Regione Lombardia

Guido Lanzani, Scientific Advisory Board AIR Alliance

Norbert E. Ligterink, TNO – Sustainable Transport and Logistic Group

Martin Lutz, Scientific Advisory Board AIR Alliance

Tamás Merétei, ANEC

Raymond Petrovan, Opel Automobile GmbH - Groupe PSA

Xavier Querol, Institute of Environmental Assessment and Water Research

Dorothee Saar, Deutsche Umwelthilfe e.V.

Lucy Sadler, Sadler Consultants GmbH i.G.

Ayse Sumer, ANEC

Martin Williams, King's College London, Environmental Research Group

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Introduction

This document captures the collective output of participating parties to record the methodology and requirements to conduct on-road tests of light duty vehicles (both M1 and N1) to capture emissions data. The methods and requirements presented are to ensure that the test procedure is consistently applied to different vehicles and by different test centres such that the data is collected from comparable tests and will allow the emissions performance of vehicles to be fairly compared. While the methodology to create comparative ratings is out of the scope of this CWA, the expert participants have provided invaluable recommendations on the subsequent use of the data as this enhances the understanding of and application of the testing standard.

The basis of the test methodology is the collective expertise of the participants in conducting emissions testing and in developing various aspects of regulatory test protocols over many years.

The contributors believe that this CWA has established a methodology that is robust and can be reliably applied by different test centres to multiple vehicles. This CWA is voluntary and results from vehicles tested can be used with confidence within the limitations of the documented methodology and requirements for testing. From existing test data, collected from tests conducted prior to the publication of this CWA and satisfying the requirements of this CWA, results may be collected to add to a collective standardised set of data for comparisons, to ensure the confidence in the results is increased – although the actual creation of such a database is out of the scope.

This CWA may be applied to all passenger cars and some light duty commercial vehicles with a diesel engine that do not hold an EU type-approval which confirms it meets the Euro 6d-temp or later emissions level. The document is primarily focused on compiling comparable data for vehicle nitrogen oxide (NO_x) emissions that impact urban air quality.

This document covers the test methodology using Portable Emissions Measurement Systems (PEMS) equipment to capture the necessary emissions data, during on-road driving, that will yield test data suitable to fairly compare emissions performance of different vehicles.

The use of emissions data compiled to compare quantitively the emissions of different vehicles falls outside the scope of this CWA.

However, this procedure consists of three main parts:

1. to ensure that only correctly measured on-road emissions data, satisfying the requirements of this CWA, are included in the analyses and results;

2. to select and present data from different test programmes, satisfying the requirements of this CWA, relevant for addressing urban NO_2 air quality problems in a complete and consistent manner;

3. to provide a methodology for potential creation of a database combining data, satisfying the requirements of the CWA, in order to calculate the average emissions performance and variability for vehicle models, for the purposes of comparison.

Similarly, the test centre requirements are out of scope and should be developed separately – although some comments are given in Annex A.

PEMS test methodologies around the world developed and evolved over time and the EU regulators and automotive industry developed improved regulations for light-duty vehicle type approval that aimed to expand dynamometer testing in laboratories to include PEMS testing. This resulted in the current RDE testing requirements applicable to new passenger car types from 1 September 2017 and all new cars from 1 September 2019. For heavy-duty vehicles in-service conformity PEMS testing started in 2009.

This CWA is in no way a replacement for the RDE certification process. The RDE certification process aims for modern vehicles never to exceed the emissions limits in all normal use. Therefore, the results of RDE tests do not represent the average emissions performance of the vehicle, but the variation therein.

The methodology in this CWA is to provide a standardised way to report typical urban emissions data on the vehicle parc currently on roads today, for the purposes of inter-vehicle comparison. On the other hand, RDE spans a wide variation of certification tests to cover all normal driving conditions. RDE generally sets down wider test boundaries than the test criteria in this CWA. Nevertheless, excepting the legal conformity factors, RDE legislation will serve as the technical basis for appropriate test execution under this CWA applied to models certified prior to the RDE regulation.

There are many common aspects between this CWA test methodology and the RDE regulations, so this document takes many of those aspects of RDE as a foundation and then focuses on where the CWA methodology is different or more prescriptive. This should not be seen as a weakness or overlap but merely similar descriptions of two different activities. This CWA has intentionally adopted terminology from RDE to simplify understanding. Both approaches follow similar principles in terms of equipment, operating procedures, calibration and data validation. This CWA methodology can be considered broadly a special application of the RDE regulation.

1 Scope

This document provides a test methodology for collecting comparable emissions test data for different light duty vehicle makes and models, to allow the comparative rating of vehicles. It covers topics around the technical conducting of tests and reporting results, which includes equipment, calibration, test boundaries and outputs.

The scope has been defined in order to achieve two priorities. First, the data shall be most relevant to the pressing problem of poor air quality caused by nitrogen oxide emissions from light-duty vehicles – hence the focus on diesel vehicles. Second, factors are excluded that are relatively less important in the characterisation of the vehicles, in order to reduce variability and help facilitate comparable test data. For example, the highly variable cold start emissions are excluded as they make up a smaller proportion of total emissions from pre-RDE vehicles due to the typically high emissions levels during warm start.

Particle number emissions are excluded due to their variability and lower levels from diesel vehicles with particle filters. These areas could be included in future work, beyond the scope of this CWA.

The methodology in this CWA focuses on the collective nitrogen oxide emissions as this is what is regulated at the tailpipe. However, nitrogen dioxide emissions shall also be reported where available, as this is relevant for ambient air quality compliance.

The scope of this CWA in more detail is:

- to provide the basis for collection of accurate emissions test data across different light duty vehicles for the purposes of facilitating comparable ratings;
- to present on-road emissions test data in a transparent, consistent and concise manner;
- to allow the aggregation of emissions test data from multiple sources;
- to define a methodology for the analysis of new and existing test data, such that is it suitable for the potential creation of comparable ratings.

The methods described in this CWA are considered to be suitable for emissions from vehicles of the following characteristics:

- non-hybridised diesel passenger cars and light commercial vehicles (class M1, and class N1 where power-to-mass ratio (rated power (W): tested mass (kg)) is greater than 44) that do not hold an EU type-approval which confirms it meets the Euro6d-temp or later emissions levels;
- covering primarily urban driving;
- for emissions of NO_x.

While the methodology proposed may also be suitable for other vehicle categories (such as M2, M3, N2 and N3), driving conditions and pollutants, this would require further future work in a subsequent workshop.

Outside of scope of this CWA are: