

PMP – Particle Measurement Program Informal Working Group Task Force 2– Brake Dust Sampling and Measurement

Meeting #37 – Wednesday 30 MARCH 2022 15:00 – 17:00 CEST

Minutes of Meeting – Final Version

1. Participants: As in the file “*37th TF2 Meeting Attendance*” uploaded in TEAMS.

2. Introduction: Theo Grigoratos (TG) welcomed the TF2 members and briefly described the aim of the meeting. This is to present and discuss proposals for amendments in Clause 1 of the TF2 protocol. The agreed overall text, including amendments for all TF2 clauses, will be brought again to the TF2 for a final review before its submission to the PMP group for approval.

3. Clause 1 presentation: TG provided a presentation related to the proposed amendments in Clause 1. The details of the proposal are summarized in the attached presentation “*ILS - Clause 1*” as well as in the submitted document “*PMP Brake Protocol - Clause 1*”. The proposal can be summarized to the introduction of four different sub-clauses as follows:

Clause 1.1: Provides general information and high-level statistics of the WLTP-Brake cycle – The content been adopted from GRPE-81-12 (§8.1) – Minor editorial changes were applied and are marked in the submitted text with track changes – Important addition to the overall protocol is the submission of an excel file with the 1Hz speed profile of the cycle (also attached to the MoM);

Clause 1.2.: Discusses the specifications for controlling the initial brake temperature during to the execution of the WLTP-Brake cycle on different occasions – The content is based on the actual TF2 Protocol and the GRPE-81-12 (§8.2). One additional topic from the issues log related to the execution of additional brake events was considered. Suggestions related to the initial temperature in various occasions have been introduced;

Clause 1.3.: Discusses the provisions related to the interruption of the WLTP-Brake cycle under different scenarios – The content is based on the actual TF2 Protocol and the GRPE-81-12 (§8.2). Suggestions for minor modifications have been introduced, while there are provisions also for the cooling adjustment method;

Clause 1.4.: Provides the means for an effective quality control of the execution of the WLTP-Brake cycle – The content has been defined by the TF2 Protocol, the GRPE-81-12, and the ILS data and experience. A suggestion for implementing three different quality check criteria looking into speed, number of brake events, and brake energy was submitted.

Many questions and requests for clarifications were set by almost all participants. There were also several recommendations on how to deal with different aspects of Clause 1. TG clarified that no change in the basic principle of the method will be made. The aim of the procedure is to improve the current protocol and not radically amend it. A discussion on the definitions and the nomenclature followed. TG highlighted that all relevant terms will be clearly defined in the protocol. An alternative proposal for handling initial temperatures in Clause 1.2 was submitted. Concerns regarding the temperature regimes in vehicles with regen braking were raised. TG clarified that the basic principle will be the same; however, temperature targets for these vehicles will need to be adjusted based available data. Most parts of the protocol will not be affected since there is the direction to apply the

PMP – Particle Measurement Program Informal Working Group Task Force 2– Brake Dust Sampling and Measurement

same cycle, cooling, and bedding method in all types of vehicles. There is a need to appropriately define the brake events in case an alternative sequence is agreed to warm up the brake in the context of the cooling air adjustment procedure. Several comments related to Clause 1.3 on how to handle cycle interruptions were submitted. A proposal to restart emission tests whenever interruptions occur during the actual emission cycles was submitted – the brake will not need to undergo bedding again in such a case. A discussion on the proposed quality check criteria followed. There were comments related to the need of keeping the RMSSE criterion or if this could be substituted by another criterion based on distance driven. A discussion on the need of introducing a simple brake events count criterion followed. Finally, there was a consensus on the need for introducing a brake energy related criterion like the one applied during the ILS.

TF2 participants are invited to submit their proposal on the draft amended text by Tuesday 5 April EOB.

4. Next Meeting: The next meeting will take place on Wednesday 06.04.2022 at 15.00-17.00. The topic will be Clause 2 of the TF2 protocol