

EVE 64 - Proposal: Different methods per type of vehicle

- To set the methods based on HDVs available system
- and dyno test as alternative method to the other ones; equivalency to be evaluated

Alternative methods for checking Battery Durability Monitor for HDV					
	HDV with no bidirectional charging				HDV with bidirectional charging
	Method 1a	Method 1b	Method 1c	Method 1d	Method 2
Description	Discharge by standard average speed with tolerances on test track And charge	Discharge by driving on the road with average speed with higher tolerances And charge	Discharge with on-board systems And charge	Standard charging Discharging by any method (not measured)	Virtual Round Trip Efficiency (VRTE) test Charging and discharging in a column
Repeatable	Yes	Partly, if tolerances are set	Potentially, but not characteristic	Yes	Yes
C-rate	Constant (different for categories)	Varying but limits could be set	Small and difficult to control	to be set also in this case	Constant
RTE	YES	YES	YES	NO	YES
UBE	Yes	Yes, but it depends on the driving	Yes	Not meaningful Not measured	Yes
UBC	Yes	Yes	Yes	Yes but issues with current leaking	Yes
comment	tolerances of the average speed to be discussed Proposal from Japan on different constant speeds in the test	tolerances of the average speed to be discussed	not favourable method	discharge more favourable this method 1d not applicable	
Feasibility	voltage sensor, voltage measurement, under discussion				
discharge vs charge UBE vs UBC	UBE in discharge discharge and charge RTE				

measurement method	Voltage measured, Voltage on-board data with equivalence of results, accuracy to be proven Current measured availability of inspection point action: to be discussed further in Ottawa; OICA will check
	OICA discharge UBC for method 1a and 1b UBE more favourable by CP discharge more favourable by CP
Alternative Method	HDV Dyno testing with similar driving characteristics

Open issues:

1. To decide if UBE or UBC shall be measured: **UBE more favourable by CP**
2. To decide if applying discharge or charge measurements: **discharge more favourable by CP**
3. Current measured, Voltage measured, on-board data with equivalence of results, accuracy ... Availability of inspection point

For all the methods:

- a. UBE or UBC shall be measured at the battery
- b. Representative C-rate to be set
- c. Repeatability of the test results to be assured