



EVS-GTR

SOC

TF-6 FTF Meeting – Brussels, 16 OCT 2014

European Commission - Joint Research Centre, Institute for Energy and Transport

Configurations – SOC Adjustment

	SOC Adjustment
1. Component level tests – REESS designed for external charging	OK
2. Component level tests - REESS charged by energy source on the vehicle	OK
3. Vehicle level tests – REESS designed for external charging	OK
4. Vehicle level tests - REESS charged by energy source on the vehicle	Difficult!

Configurations – OICA Proposal Jan '14

	OICA Proposed SOC Level
1. Component level tests – REESS designed for external charging	At beginning of test the REESS is at an SOC...not less than 90% SOC
2. Component level tests - REESS charged by energy source on the vehicle	<i>Idem dito</i>
3. Vehicle level tests – REESS designed for external charging	<i>Idem dito</i>
4. Vehicle level tests - REESS charged by energy source on the vehicle	...at any state-of-charge within the normal operating voltage defined by the vehicle manufacturer [from FMVSS305 – Version?]

Configurations – JRC Proposal March'14

	JRC Proposed SOC Level
1. Component level tests – REESS designed for external charging	Tests performed at.. > 95% SOC
2. Component level tests - REESS charged by energy source on the vehicle	<i>Idem dito</i>
3. Vehicle level tests – REESS designed for external charging	<i>Idem dito</i>
4. Vehicle level tests - REESS charged by energy source on the vehicle	> *95% SOC (* <u>for discussion</u> - the highest technically achievable SOC level is required)

Configurations – TF-6 Proposal March'14

	TF-6 Proposed SOC Level
1. Component level tests – REESS designed for external charging	the maximum level of normal operating SOC range in accordance with the procedure defined by the manufacturer, within [24] hours before start of the test
2. Component level tests - REESS charged by energy source on the vehicle	<i>Idem dito</i>
3. Vehicle level tests – REESS designed for external charging	<i>Idem dito</i>
4. Vehicle level tests - REESS charged by energy source on the vehicle	charged [to the maximum level], [which is indicated by the vehicle's instrumentation or using other measurement methods,] [in accordance with the procedure defined by the manufacturer], within [XX] hours before the start of the test.

Configurations – OICA Proposal July'14

	OICA(2) Proposed SOC Level
1. Component level tests – REESS designed for external charging	<i>Charged...until the charging process is normally terminated...or to a SOC not less than 90 per cent of maximum normal operating SOC defined by the manufacturer for specific configuration of the tested-device. After adjustment of SOC, all reasonable and practical steps shall be taken to ensure that this initial SOC is maintained until the start of the test</i>
2. Component level tests - REESS charged by energy source on the vehicle	
3. Vehicle level tests – REESS designed for external charging	<i>Charged....until the charging process is normally terminated. After adjustment of SOC,...</i>
4. Vehicle level tests - REESS charged by energy source on the vehicle	<i>..the REESS shall be prepared to a highest SOC which is reasonably achievable with normal operation of the vehicle. The method of charging the REESS shall be defined by the manufacturer. After adjustment of SOC,...</i>

Configurations – OICA Proposal July'14

	OICA(2) Proposed SOC Level
1. Component level tests – REESS designed for external charging	<p><i>Charged in accordance with the procedure specified by the manufacturer for normal use or for manufacturing, service or maintenance until the charging process is normally terminated...<u>or</u> to a SOC not less than 90 per cent of maximum normal operating SOC defined by the manufacturer for specific configuration of the tested-device.</i></p> <p><i>After adjustment of SOC, all reasonable and practical steps shall be taken to ensure that this initial SOC is maintained until the start of the test</i></p>
2. Component level tests - REESS charged by energy source on the vehicle	

- What is the reference to “manufacturing, service or maintenance”?
- 2 options for defining the SOC level are given – why? Under which circumstances are either option chosen?
- At component level, where SOC can be practically measured and adjusted (integration of current flow with time) can the SOC level to which the REESS (component level) is charged immediately before the test, be explicitly quantified.
- Why is >90% SOC given as one option – is a higher SOC level not feasible where lower losses are expected at component level?

Configurations – OICA Proposal July'14

	OICA(2) Proposed SOC Level
3. Vehicle level tests – REESS designed for external charging	<i>Charged....until the charging process is normally terminated. After adjustment of SOC, all reasonable and practical steps shall be taken to ensure that this initial SOC is maintained until the start of the test</i>

- How is 'normally terminated' defined?
- Is it expected that termination will depend on the charging protocol i.e. whether this is Level 1 charging, Level 2 charging or fast charging?
- Is it confirmed that the SOC level, as stipulated, is equivalent to the "maximum achievable SOC within the normal operating SOC range"?
- The description of the period following charging and up to the start of the test is open to interpretation. Without a defined time limit there may be a long interval during which unacceptably high SOC drop may occur. The test procedure should limit this interval in terms of time and the ambient condition of the REESS/vehicle such that the test is performed within an acceptable time period after charging and that during this period due caution is taken to ensure that conditions exacerbating high SOC loss rate (i.e. high temperatures requiring activation of the REESS cooling system) are avoided.

Configurations – OICA Proposal July'14

	OICA(2) Proposed SOC Level
4. Vehicle level tests - REESS charged by energy source on the vehicle	<p>the REESS shall be prepared to a highest SOC which is reasonably achievable with normal operation of the vehicle. The method of charging the REESS shall be defined by the manufacturer.</p> <p><i>After adjustment of SOC, all reasonable and practical steps shall be taken to ensure that this initial SOC is maintained until the start of the test</i></p>

- Agree on approach however
 - how is this achieved in practice
 - the description of the period following charging and up to the start of the test requires better definition (as mentioned previously).