

Auxiliaries Sub-Group  
for  
Low Temperature Task Force @UN

12dec2019-C.Petitjean (Clepa)

# Auxiliaries Sub-Group for Low Temperature UN Task Force

→ An Auxiliary Devices sub-Group has been formed @ UN Geneva meeting end may 2019

[WLTP Low Temp TF] / Auxiliary devices Group Participants > Boîte de réception x

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📧 27 mai 2019 15:52

À moi, d.vartholomaios, t.gyoeroeg, miyazaki-s2t3, noriyuki\_ichikawa, Mayumi\_Morimoto, Peter.Bonsack, iddo, les.hill, harald.kurz, hans.mathiasson, william.coleman,

Dear all,

Attached the list of people that have requested to be included in the Low T -Auxiliary devices mailing list.

## UNECE WLTP Low and Realistic Winter Temperature Task Force - Auxiliary devices Group

### List of Participants

Name	First Name	Affiliation	E-Mail
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At 08nov2019 TF webex there was a discussion about the best way for drafting the Auxiliaries portion of Test Procedure in // of overall drafting process of Annex Low Temp.

The conclusion was:

to provide a short paragraph of structured text to be then included into the overall Test Procedure annex with the support of Rob for final drafting.

Achievements after decision to elaborate a draft text proposal for Auxiliaries to included in informal document for Geneva Jan2020:

29nov2019: 1<sup>st</sup> synthetic draft text based on the collected comments on Technical Grid.

01dec2019: Distribution of the 1<sup>st</sup> synthetic draft text to Sub-Group Auxil to get comments together with a FAQ excel doc to provide back-ground and rational elements.

09dec2019: Webex review with Sub-Group Auxil to integrate main comments from OICA & BAFU.

11dec2019: Review of the 1<sup>st</sup> synthetic draft text with Sub-Group EV and main proposal ACEA EV SG.

12dec2019: Present the synthetic draft text to Low Temp TF prior to inclusion for TF report @ Geneva.

# Auxiliaries Sub-Group for Low Temperature UN Task Force

## Synthetic draft text for auxiliaries – State of development

→ Main points to finalize indicated in red

Based on Reference documents:

- Word file: "Text draft proposal for Auxil 1&2- WLTP Low Temp-CP-V3 for TF-12dec2019"
- Excel file: "FAQ for Auxil @ Low Temp-CP-for TF-12dec2019"

*Draft Text proposal for Auxiliary n°1 & n°2: Heating system for cabin via HVAC blown air and Heat Pump variations. As a paragraph or appendix to add in WLTP Low Temperature, draft GTR.*

### **Definitions:**

Full automatic Thermal comfort system: means that the user is only setting the desire cabin temperature then all functions of the Thermal comfort system are automatically activated according to the installed control strategy.

Manual Thermal comfort system: means that the user is activating by himself all the functions of the Thermal comfort system.

(**May be a short text to add**) for Thermal comfort system partially automatic (**see proposal in 1.1.x below**)

Mix mode: means an air distribution mode with airflow directed to feet and defrost outlets. It is the usual distribution mode used for winter conditions.

Outside air: means that the air used for cabin comfort is coming from outside of the car. So that no air is recirculated from interior of the car.

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### Test Procedure:

For Mandatory Base Procedure, activation of auxiliary occurs along the WLTC test Phase of the WLTP Low Temperature Test Procedure and possibly along pre-conditioning in some cases (to confirm with Sub-Group EV). No activation along charging and soaking phase.

An optional additional portion of procedure might be developed for the specific purpose of pre-heating the cabin at end of the charging & soaking phase right before to run the WLTC test Phase (to confirm with Sub-Group EV but pay attention then to get similar approach for all powertrain types).

The vehicle's interior Thermal Comfort system must be operate by adjusting the comfort setting as indicated in following paragraphs.

1.1. *Full Automatic Thermal comfort system.* For vehicles with automatic control systems, set the temperature thanks to control panel to 22°C (to confirm but according to Auxil SG webex 09dec2019: 22°C might be preferred versus 21°C) in a time period between 0-11s before the first acceleration (to confirm in practice with OICA). Leave the temperature and air source settings unchanged for the whole test. If independently controllable, set the system to draw in outside air.

1.1.x. For Thermal Comfort system that are partially automatic, operate the remaining manual settings as indicated in 1.2.

### Remarks for Rob:

Key point for final drafting & inclusion in Low Temp GTR.  
If mandatory only: one generic appendix for all type of powertrains may be sufficient.  
If optional added: may be better to adapt Auxil Test procedure in each Chapter for the 4 different powertrains.

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1.2. *Manual Thermal comfort system.* Take the following steps to control Thermal Comfort system settings:

1.2.1. Set the climate control system as follows before the first acceleration in a time period between 0-11s (to confirm in practice with OICA).|

1.2.1.1. *Temperature.* Set controls to maximum heat.

1.2.1.2. *Blower speed.* Set the blower speed to maximum.

1.2.1.3. *Airflow direction.* Direct airflow to the feet and defrost the front window (mix mode).

1.2.1.4. *Air source.* If independently controllable, set the system to draw in outside air.

1.2.2. Adjustment of Manual settings: xxx seconds (600s or more – exact value to agree based on experimental data of cabin warm-up) after the beginning of the WLTC test phase, adjust the initial manual setting as follow: Set the blower speed to minimum speed level and keep Air Temperature, Air flow direction and Air source as already settled.

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1.3. *Multiple-zone systems.* For vehicles that have separate (left & right) driver and front passenger controls, all temperature and blower controls shall be set as described in paragraphs 1.1 and 1.2 of this section. Rear Thermal Comfort Systems does not need to be operate.

1.4. *Assessment of activation.* (To confirm – Create a summary pro&cons table for decision if necessary) First option is to delegate it to type approval authority (Technical service) conducting the test. Second option is to have a temperature sensor recorded indications just to confirm heating function is on (not to assess the comfort level achieved).

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## FAQ for auxiliaries – State of development

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	<b>Initial orientations from Low Temp TF about the Test Procedure to include auxiliaries</b>	A. Auxil Test Procedure must stay as simple as possible to avoid test burden B. Auxil Test Procedure must be as much as possible the same for all power-train types C. Auxil Test Procedure could be inspired from US existing approach	Automatic Comfort System leads to a very simplify method. Keep in mind that in some case Auto Control go back to Manual control. This is important to insure a technology neutral approach of the Test Procedure. In addition there is a Test Procedure for Low Temp under development in China (GB/T 18386.1-xxx) which target to include auxiliaries.
	<b>FAQ vs drafting text</b>	<b>Rational</b>	<b>other comments</b>
1	Why the Test Procedure is not for Cabin Comfort function assessment/Achivement ?	1. Purpose of the Auxil Test Procedure is just to include the energy consumed by the auxiliaires into the overall (Emission & Range) impact measured by the global Low Temp Test Procedure	To assess the Cabin Comfort achievement a lot of sensors, and specific soaking period of the cabin it-self are needed together with the use of a Climatic Wind Tunnel. This is clearly not compatible with existing practices for Emission Testing and the orientation of a simplify Test Procedure here.
2	Why is it better not to activate pre-heating of Cabin along Charging Phase ?	1. In real life the car is not necessary plugged when starting @ -7°C 2. In real life, even the car is @ plug, it is not certain that the necessary electrical power for pre-heating is available in addition to the one for charging the battery pack 3. In real life, even the car is @ plug, it is not certain that the pre-heating will be used 4. Then not the same starting point for different cars because pre-heating strategy will not be the same. 5. Then very complexe test procedure (even not realistic in today emission chambers)	In terms of consumer information, it is probably better to bring an idea of the maximum impact of Low Temp, so that the car user have the boundary conditions for its next use.  Activation of pre-heating @ plug will reduce the impact gap in between different efficiency of various heating sources.  Activation of pre-heating @ plug will complexify a lot the Test Procedure and will introduce variations between powertrain types
3	Why a potential need of a Temperature sensor in the cabin ?	If No temperature sensor at all ==> it means that we rely only on the good execution of the Test procedure it-self If 1 temperature sensor ==> it means that at least one indication that something is heating will prove the good execution of the Test Procedure	For Automatic control comfort system, an activation checking sensor might be not necessary. But for Manual operated comfort system, it might be needed to prove activation.
4	?	?	?
<b>No Auxil FAQ</b>	Is Battery Thermal Management activated?	Battery Thermal Management is not an Auxiliary. So that its activation is only depending of the powertrain management control system.	The user do not interact directly with Battery Thermal Management.



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## Next Steps:

### Beginning Jan2020:

- Include the initial draft text for Auxiliaries into the draft document of Low Temp TF

### Q1/2020 till mid-march:

- Finalize the draft text for Auxiliaries and include it into the working document