*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.

**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. *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.

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.

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).