

# Japan position on the Low Temperature test procedure

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## Scope

- ICE, NOVC-HEV, OVC-HEV and EV

## Testing Temperature

- $-7^{\circ}\text{C}$  to  $38^{\circ}\text{C}$

(Justification)

- Considering environmental situation in Japan, the testing temperature should be set between  $-2^{\circ}\text{C}$  to  $38^{\circ}\text{C}$ .
- On the other hand, we understand that some CPs need the lower testing temperature because their average temperature is lower than Japan.
- For the harmonized testing procedure, it is preferred to cover the CP 's environmental situation as much as possible, and it is better to set the testing temperature from  $-7^{\circ}\text{C}$  to  $38^{\circ}\text{C}$ .
- Therefore, if each CP can agree the concept above and  $38^{\circ}\text{C}$  for the high testing temperature, which Japan needs, then Japan can support  $-7^{\circ}\text{C}$  for the low testing temperature.

## Testing Cycle

- L+M+H

## The value to be measured

- CO, NMHC, NO<sub>x</sub>, PM, Fuel Consumption, Electric Energy Consumption and Range

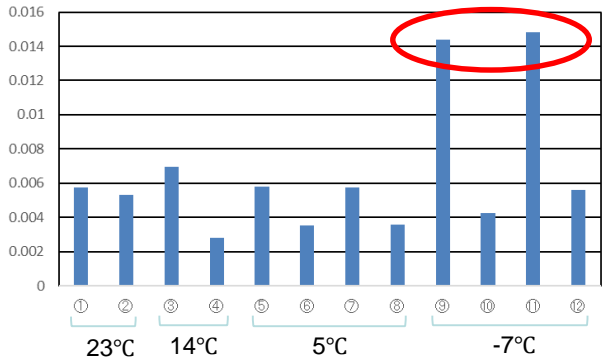
## Purpose

- “To regulate” and “to use for customer information” at Low Temperature

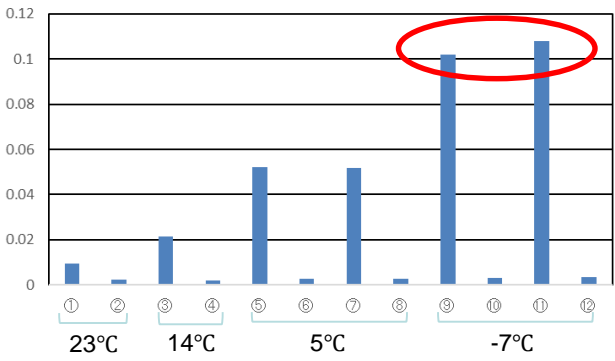
# (ref.) Emission results at Low Temperature -4 Phase



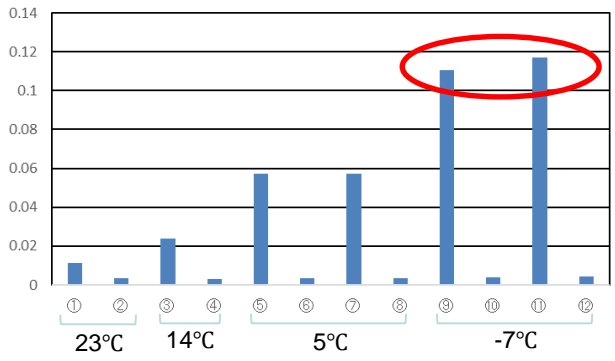
NOX(g/km)



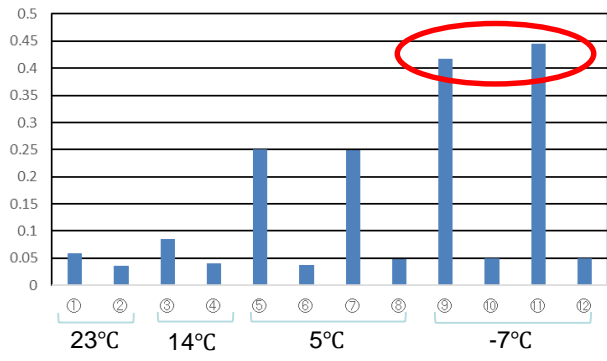
NMHC(g/km)



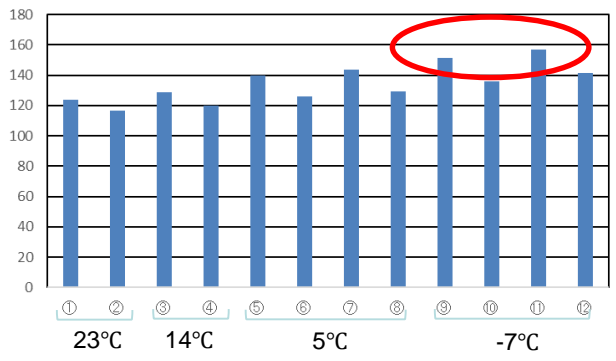
THC(g/km)



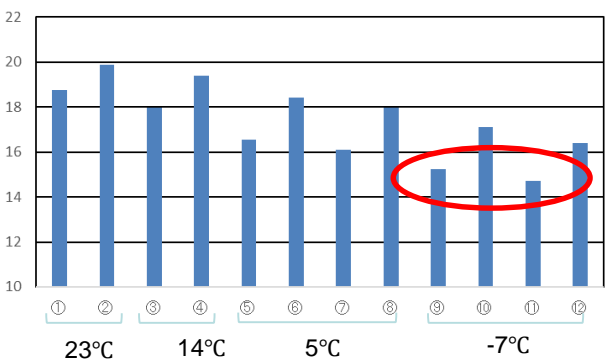
CO(g/km)



CO2(g/km)



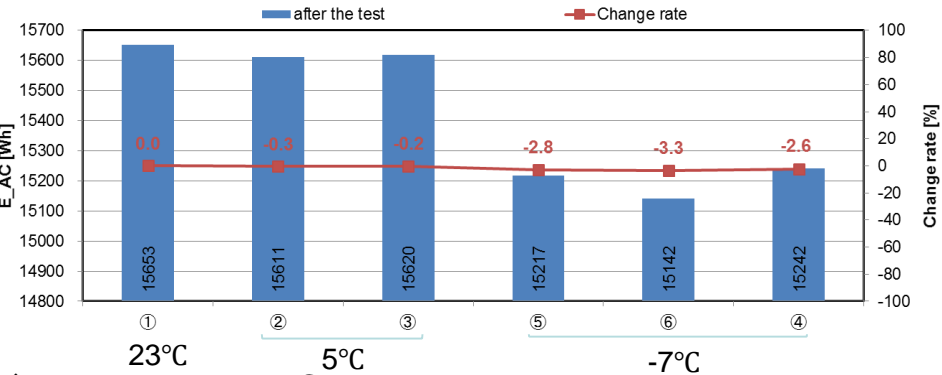
FC(km/L)



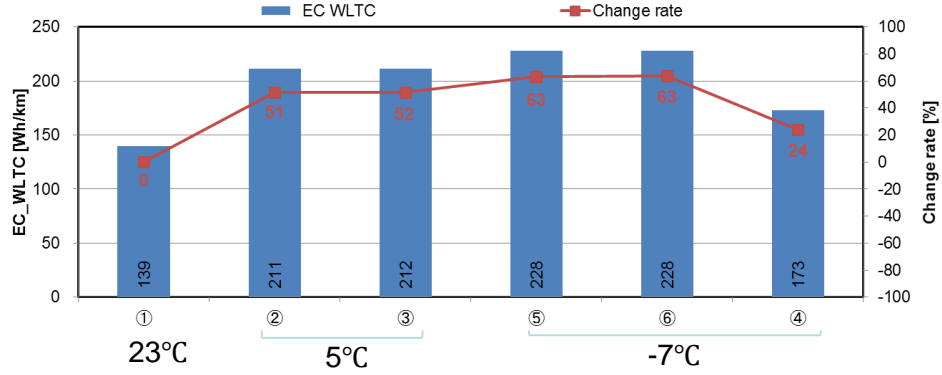
At low temperature, the emission results are almost 10 times (at maximum) higher compared to results at 23°C.

- ①23°C-A/C OFF-Cold    ⑦5°C-A/C ON-Cold
- ②23°C-A/C OFF-Hot    ⑧5°C-A/C ON-Hot
- ③14°C-A/C OFF-Cold    ⑨-7°C-A/C OFF-Cold
- ④14°C-A/C OFF-Hot    ⑩-7°C-A/C OFF-Hot
- ⑤5°C-A/C OFF-Cold    ⑪-7°C-A/C ON-Cold
- ⑥5°C-A/C OFF-Hot    ⑫-7°C-A/C ON-Hot

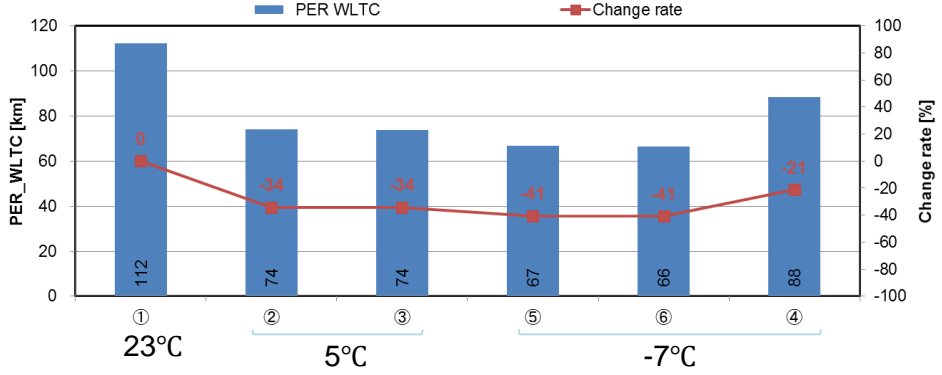
## ◆ E\_AC



## ◆ Electric Energy Consumption



## ◆ Range



The vehicle performance gets worse, compared to 23°C testing.  
e.g.) Range decreases to 60% of 23°C result

- ① 23°C-A/C OFF-without soaking
- ② 5°C-A/C ON-without soaking
- ③ 5°C-A/C ON-with soaking
- ⑤ -7°C-A/C ON-without soaking
- ⑥ -7°C-A/C ON-with soaking
- ④ -7°C-A/C OFF-with soaking