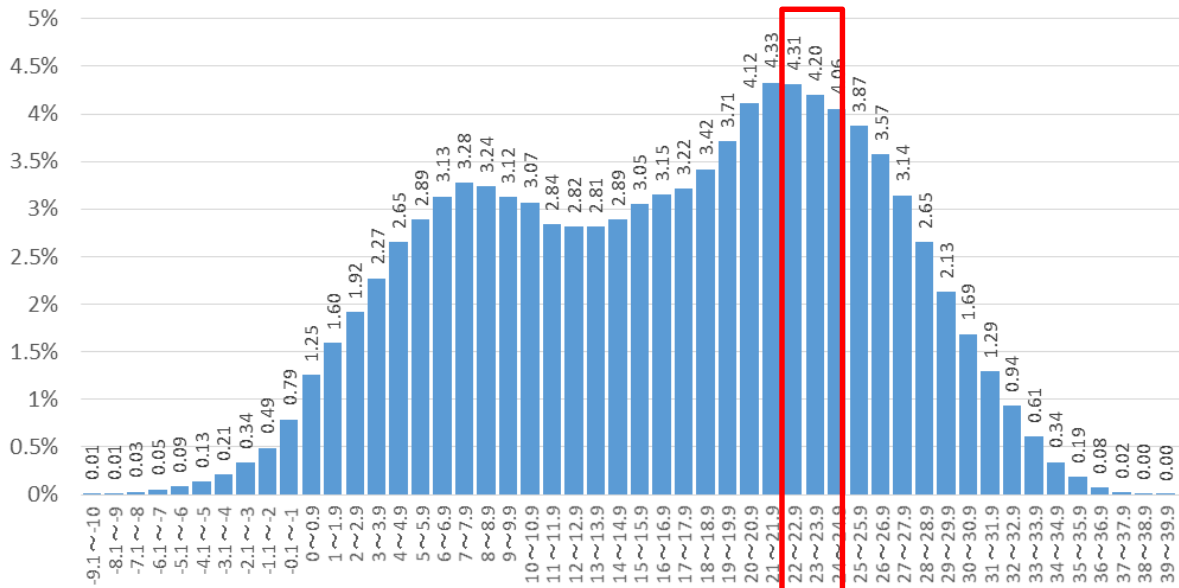


Japan position for Low temperature Test

Background

Average traffic volume for every ambient temperature (2012-2016)



- ✓ Type 1 test does not cover to evaluate the performance of the vehicle at low ambient temperature.
 - ✓ However, it is clear that there are high traffic volume at low ambient temperature.
- ⇒ **Japan is considering to regulate the test at low temperature.**

Temp. (°C)	Ratio (%)	Integration from -10°C
-9.1~-10	0.01	0.01
-8.1~-9	0.01	0.02
-7.1~-8	0.03	0.05
-6.1~-7	0.05	0.10
-5.1~-6	0.09	0.19
-4.1~-5	0.13	0.32
-3.1~-4	0.21	0.53
-2.1~-3	0.34	0.87
-1.1~-2	0.49	1.36
-0.1~-1	0.79	2.15
0~0.9	1.25	3.40
1~1.9	1.60	5.00
2~2.9	1.92	6.92

Temp. (°C)	Ratio (%)
3~3.9	2.27
4~4.9	2.65
5~5.9	2.89
6~6.9	3.13
7~7.9	3.28
8~8.9	3.24
9~9.9	3.12
10~10.9	3.07
11~11.9	2.84
12~12.9	2.82
13~13.9	2.81
14~14.9	2.89

Temp. (°C)	Ratio (%)
15~15.9	3.05
16~16.9	3.15
17~17.9	3.22
18~18.9	3.42
19~19.9	3.71
20~20.9	4.12
21~21.9	4.33
22~22.9	4.31
23~23.9	4.20
24~24.9	4.06
25~25.9	3.87
26~26.9	3.57
27~27.9	3.14

Temp. (°C)	Ratio (%)	Integration from 40°C
28~28.9	2.65	9.93
29~29.9	2.13	7.27
30~30.9	1.69	5.15
31~31.9	1.29	3.46
32~32.9	0.94	2.17
33~33.9	0.61	1.23
34~34.9	0.34	0.62
35~35.9	0.19	0.29
36~36.9	0.08	0.10
37~37.9	0.02	0.03
38~38.9	0.00	0.00
39~39.9	0.00	0.00
40~40.9	0.00	0.00

1. The purpose of introducing the low temperature test

- ✓ The purpose is to regulate the emission at low temperature
- ✓ Moreover, the fuel consumption and performance of EV (i.e. range) at low temperature are to be regulated to improve the performance of vehicles.
- ✓ They will also be used for customer information

2. The values to be measured

- ✓ The same values as the one which is measured by Type 1 testing is to be measured.(i.e. CO, THC, NOx, PM, PN, Fuel consumption, Electric energy consumption and Range.)

3. The temperature of measuring emission, fuel consumption, electric energy consumption and range

- ✓ They should be measured at the same temperature.

4. The values to be used for customer information

- ✓ The same values as the one which is measured by Type 1 testing.(i.e. Fuel consumption, Electric energy consumption and Range.)
- ✓ On the other hand, which information the user need should be take into consideration.