

VIAQ-26-04



# Test Equipment requirements: Proposal



Following the first draft shared in VIAQ 25th session, the gas and particle to be measured are:

## Purpose

Components	Requirements
PN	0 to 500000 #/cm <sup>3</sup>
PM <sub>2.5</sub>	0 to 0.5 mg/m <sup>3</sup> or 100 µg/m <sup>3</sup>
PM <sub>10</sub>	0 to 1 mg/m <sup>3</sup> or 100 µg/m <sup>3</sup>
CO	0 to 1ppm
CO <sub>2</sub>	0 to 5000 ppm
NO <sub>2</sub>	0 to 0,5 ppm

## Optional

Components	Requirements
PM	NA
tVOC	NA
PAH	NA
NO <sub>x</sub>	NA
NH <sub>3</sub>	NA
O <sub>3</sub>	NA

**Two methods could be proposed**



- **Real time measurement**



- **Bag measurement**

- This method require a specific cycle with specific phases
- Measurement technologies are well known and more accurate but depend on the measurement duration (Same analysers as WLTP regulation and PMP Euro 7)
- Time after the test should be defined
- Need a sampling bag covered with a black opaque film and sampling pump

## For PN:

- **Technology:**
  - Optical Particle Counter (OPC)
  - Condensation Particle Counter (CPC)
- **Specification:**
  - **Flowrate:** 100 cc/min
  - **Resolution time:** 1 s
  - **Particle dimension:** 0,02 et 1  $\mu\text{m}$
  - **Measuring range:** 0 to  $5 \times 10^5$  particles/cm<sup>3</sup>
  - **Temperature range:** 0 to 38°C

## For PM

- **Technology:**
  - Photometer method
- **Specification:**
  - **Measuring range:** 0.001 to 400 mg/m<sup>3</sup>
  - **Accuracy:**  $\pm 5\%$  of reading
  - **Resolution:** 0.1  $\mu\text{g}/\text{m}^3$

# Test equipment requirements

## For CO:

- **Technology:**
  - Infra-red Analysis, Electro-chemical
- **Specification:**
  - **Response time:** <60s
  - **Resolution time:** 0,1 pmm
  - **Measuring range :** 0 To 500 ppm
  - **Accuracy:**  $\pm 3.0\%$  of reading or  $\pm 3$  ppm

## For CO<sub>2</sub>

- **Technology:**
  - NDIR (non-dispersive infrared)
- **Specification:**
  - **Response time:** <20s
  - **Resolution:** 1 ppm
  - **Measuring range :** 0 à 5000ppm
  - **Accuracy :**  $\pm 3.0\%$  of reading or  $\pm 50$  ppm

## For NO<sub>2</sub>

- **Technology:**
  - chemiluminescence
- **Specification:**
  - **Response time:** <60s
  - **Resolution time:** 10 s
  - **Measuring range:** 0 to 150 mg/m<sup>3</sup>
  - **Accuracy :** +/- 1% FS