Test Plan
Energy Efficiency
Phase 4, Medical Concentrator Assessment

Draft A

The below tests are to be performed on O2 concentrator models supplied by DT Global specifically for Performance Testing.

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1. Test Name
    - **Usability Assessment**

2. Relationship with Operation in Low Resource Settings (LRS) – for Reference Only
    - Oxygen concentrators are often used around the clock, and can have a large power demand.
    - In LRS, units may be operated on solar power.

3. Test Objective
    - To assess energy efficiency characteristics of medical oxygen concentrators.

4. Test Apparatus
    - Medical oxygen concentrator to be assessed
    - Multimeter

5. Test Procedures

5.1 Variable power

1. Criterion: It is advantageous for the unit's power consumption to scale with delivered flow rate.
2. Test method:
    a. Turn the unit on.
    b. Using the multimeter, measure the power consumed by the unit at 0, 2, and 10 L/min.
3. Impact: Major preferred. Units that meet the criterion receive a Major Advantage, which may impact the rating of the unit.

5.2 Soft start

1. Criterion: It is advantageous for the unit to have a soft-start feature to avoid high current at startup.
2. Test method:
    a. Using the multimeter, record the current draw when the unit is powered on.
    b. We also spoke to the vendor to inquire if the unit had a soft-start feature.
3. Impact: Major preferred. Units that meet the criterion receive a Major Advantage, which may impact the rating of the unit.

5.3 Power consumption at max flow

1. Criterion: It is advantageous for the unit to use less than 400 W at 10 L/min.
2. Test method:
    a. Turn the unit on and set the flow to 10 L/min.
    b. Using the multimeter, measure the power consumed.
3. Impact: Minor preferred. Units that meet the criterion receive a Minor Advantage, which is noted in the report but does not affect the rating of the unit.

5.4 Power consumption at low flow

4. Criterion: It is advantageous for the unit to use less than 300 W at 1-5 L/min.
5. Test method:
    c. Turn the unit on and set the flow to 1 L/min.
    d. Using the multimeter, measure the power consumed.
    e. Repeat for 2, 3, 4, and 5 L/min.
6. Impact: Minor preferred. Units that meet the criterion receive a Minor Advantage, which is noted in the report but does not affect the rating of the unit.