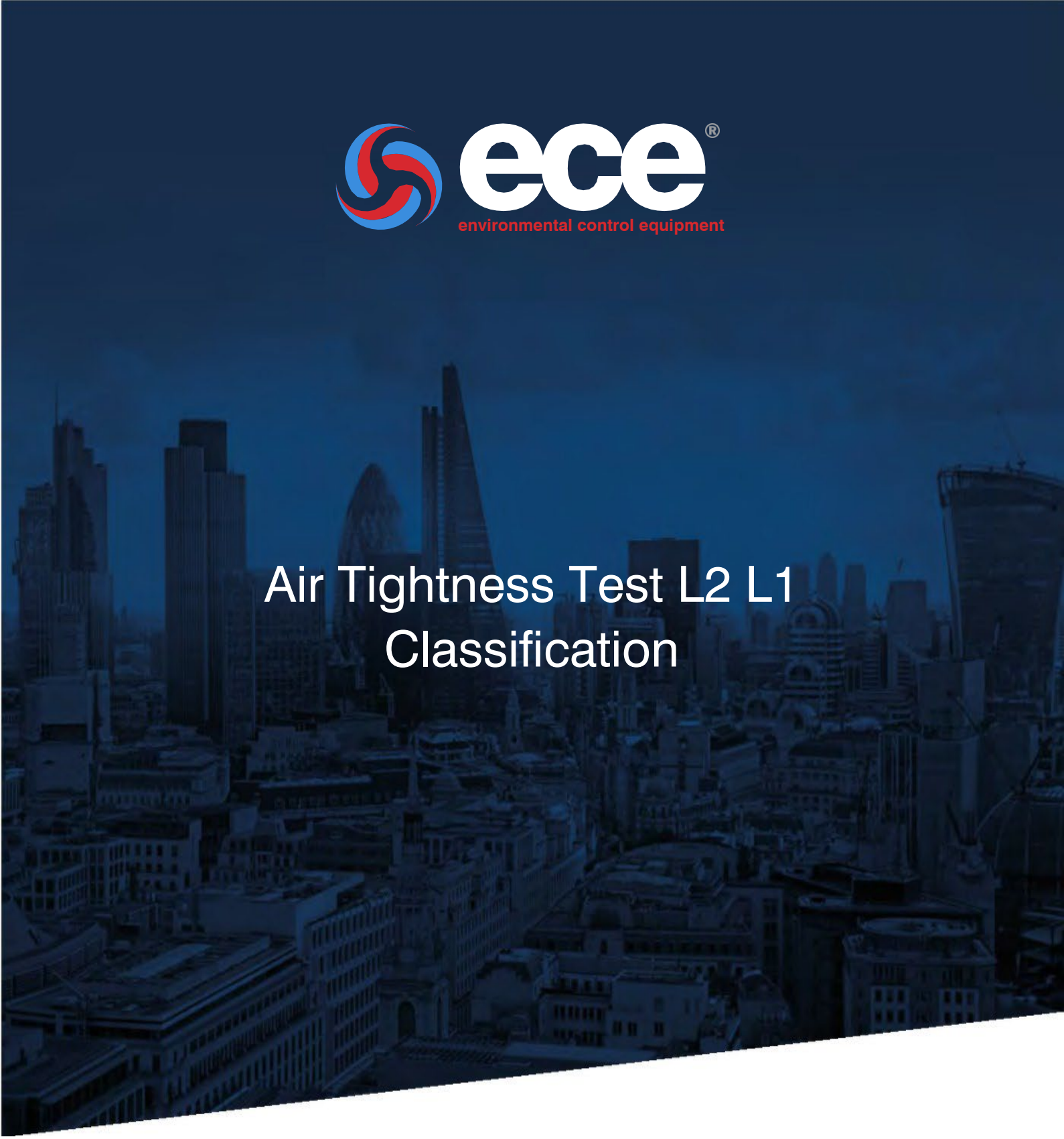

Air Tightness Test L2 L1 Classification

How To Guides

Air Tightness Test L2 L1 Classification

Figure 1. Factory-tested ECE air handling unit. Air tightness testing verifies the casing integrity under positive and negative pressure conditions in accordance with BS EN 1886.

Video Duration: 10 minutes 53 seconds
Applies to: Factory & Site Leakage Testing in Accordance with BS EN 1886
Document Status: Controlled technical instruction

1. Purpose

Air leakage testing verifies the casing integrity of the AHU under positive and negative pressure conditions.

Leakage performance is classified (e.g., L2, L1) based on allowable leakage rates per square metre of casing surface area.

L1 = Higher performance (lower leakage)

L2 = Standard performance

2. Important AHU Information

- ECE AHUs are bespoke. Do not assume that information, access arrangements, terminal numbers, wiring colours, component selections or controls logic from another AHU applies to the AHU being reviewed or worked on.
- The certified drawing and current project-specific documentation are the primary sources for the AHU arrangement and component technical information.
- Where component technical information is checked, it must be checked against the certified drawing and related manufacturer data for the exact AHU.

IMPORTANT: Always use the project-specific asset information, certified drawing, relevant ECE product-range IOM, quotation scope and component information for the exact AHU being reviewed or worked on.

3. Safety and Competency Requirements

- Only competent and authorised personnel should carry out this procedure. The required competency depends on the task being undertaken.
- Before starting, confirm the correct AHU, asset tag, certified drawing, relevant ECE product-range IOM and any applicable wiring diagram, controls description, component technical information or manufacturer data sheet.
- Follow all site-specific RAMS, permits, PPE, isolation and access requirements.
- Where the task requires physical access to the AHU, do not open access doors, remove panels or work inside the AHU unless fans and relevant equipment are isolated, stationary and safe to access.
- Do not bypass safety devices, interlocks, alarms or controls.
- Stop and escalate if the AHU identity, current technical information, safe isolation, access condition or required competency cannot be confirmed.

Figure 2. Site personnel in PPE reviewing the certified drawing. Confirm test pressure, leakage classification and sealed openings before pressurising the AHU.

Task-specific requirements:

- Air tightness testing must be carried out by competent personnel using the project test method, required leakage classification and calibrated test equipment.
- Confirm the test pressure, leakage class, test duration, sealed openings, safe access and temporary test arrangements before pressurising the AHU or section.
- Do not pressurise an AHU or section beyond the project test requirement or where panels, doors, seals, temporary blanks or test connections are insecure.
- Keep personnel clear of unsafe pressurised areas, temporary blanks, flexible connections and test fan arrangements during the test.
- Stop and escalate if the test pressure/classification is undefined, equipment is not calibrated, the section cannot be sealed safely, or leakage results cannot be verified.

4. Before You Begin

- Access the AHU asset information via the ECE Client Portal using the asset tag or 18-digit reference number where available.
- Confirm the AHU reference, project name, location and latest document revision.
- Review the certified drawing, relevant ECE product-range IOM, quotation scope, component schedule and manufacturer data sheets where applicable.
- Review the wiring diagram, controls description and commissioning information where the task involves electrical, controls or BMS interfaces.
- Confirm the required personnel, tools, PPE, access equipment, permits and isolation method before starting work.

Figure 3. Asset Tag plate carrying the unique 18-digit reference number used to retrieve AHU technical information from the ECE Client Portal.

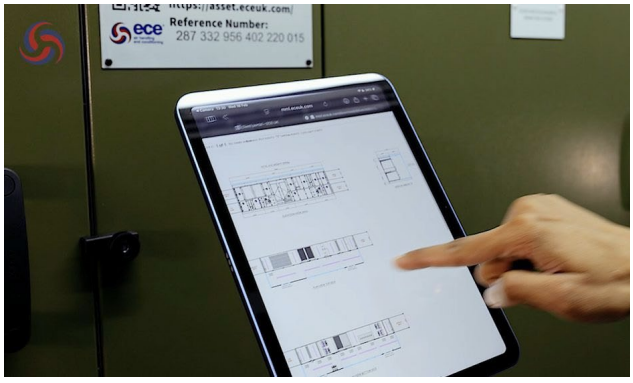

Figure 3b. AHU technical information opened on a device via the Asset Tag link, used to confirm AHU reference, drawing revision and fan information before starting work.

5. Required Tools, Equipment, PPE and Information

- Certified drawing and test requirement
- Relevant ECE product-range IOM
- Calibrated or suitable test equipment
- Temporary sealing materials where required
- Test record or certificate template
- Air tightness test equipment
- Temporary sealing materials
- Calculation sheet or certificate template

Additional Required Items

- Calibrated leakage tester (e.g., PANDA model)
- Calibrated digital pressure gauge (BSRIA certified)
- Flexible duct connection hose
- Blanking plates
- Temporary sealing materials
- Surface area calculation sheet

Figure 4. Calibrated leakage tester (e.g., PANDA model)

All flow measurement devices must be calibrated (certificate reference shown on test sheet)

5. Connecting the Test Equipment

- Connect flexible hose from leakage tester to AHU test port.
- Ensure connection is airtight.
- Position calibrated pressure gauge across casing.
- Confirm measurement range appropriate (0–1999 Pa typical)

6. Procedure

This booklet accompanies the video demonstrating:

- Setup of pressure testing equipment
- Sealing of AHU connections
- Conducting L2 and L1 air leakage tests
- Verifying pass result on digital display
- Accessing air tightness certification via the Client Portal

Testing in accordance with BS EN 1886:2007 and ECE factory procedures Example Installation Test Sheet reference

Figure 5. Sealing of AHU connections.

6.1 Test Classification Overview

Negative Pressure Test (400 Pa)

For units operating under negative pressure only:

- Test pressure: 400 Pa negative
- L2 maximum leakage rate: 0.44 l/s per m²

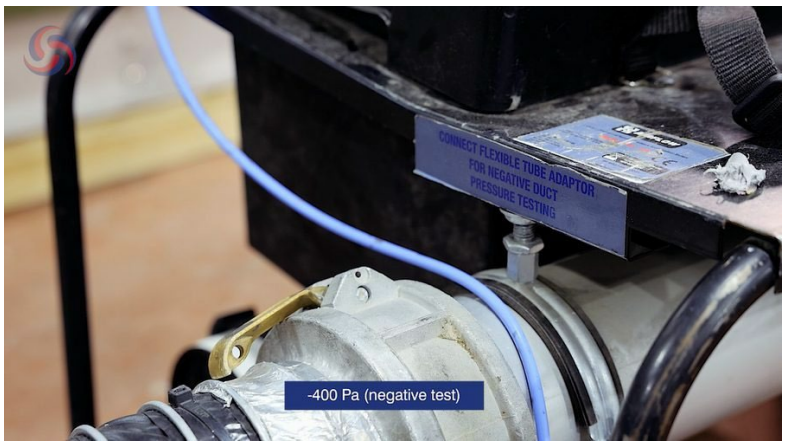

Figure 6. Negative pressure test setup labelled −400 Pa.

Positive Pressure Test (700 Pa)

For positive pressure sections:

- Test pressure: 700 Pa positive
- L2 maximum leakage rate: 0.63 l/s per m²

If leakage achieved is lower than L2 threshold, the unit may qualify for L1.

Example installation test shows AHU achieved L1 leakage classification

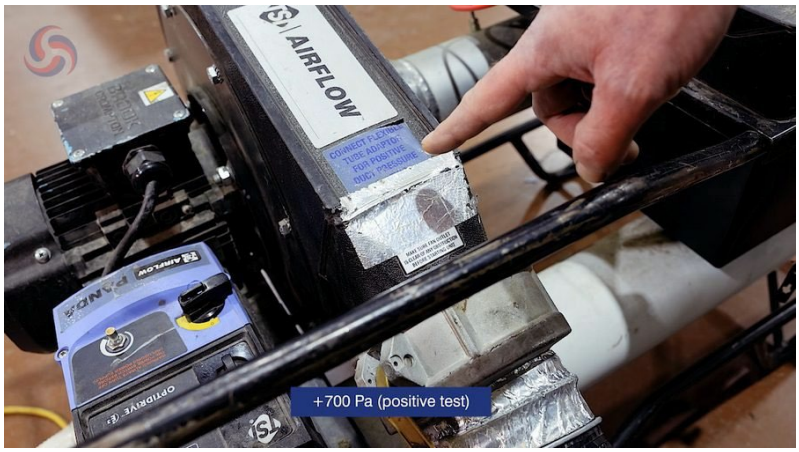

Figure 7. Positive pressure test setup with the AIRFLOW test fan labelled +700 Pa.

6.2 Preparation for Test

Figure 8. Preparing the AHU for test — close all openings (electrical, air, water services) and fit blanking plates.

6.3 Conducting the Test

6.4 Establish Test Pressure

- Start leakage tester.
- Gradually increase airflow.
- Stabilise at required test pressure:
- +700 Pa (positive test)
- -400 Pa (negative test)
- Maintain pressure for required duration (typically 15 minutes)

Figure 9. Calibrated digital pressure gauge showing 700.0 — required positive test pressure achieved.

Figure 10. Pressure gauge stabilised at −404.9 Pa (close to the −400 Pa negative test target) with leakage tester reading alongside.

6.5 Measuring Leakage

Digital display will show:

- Barometric pressure
- Flow rate (l/s)
- Leakage rate
- Temperature
- Time

Figure 11. Leakage tester digital display showing the live leakage measurement during the 15-minute test.

Leakage factor calculated from:

Leakage (l/s) ÷ Total Surface Area (m^2)

Example surface area: 120.419 m^2

6.6 Determining Pass or Fail

Compare measured leakage against allowable maximum:

Example (700 Pa positive):

Maximum allowable leakage: 76.586 l/s

Interpreted leakage: 26.49 l/s

Result: PASS – Achieved L1 leakage

Digital display will confirm final leakage rate during test.

During video demonstration:

- Show stable pressure reading.
- Show leakage value.
- Confirm test duration timer complete.
- Display final interpreted leakage value.
- Confirm PASS result.

Testing engineer signs off certification sheet

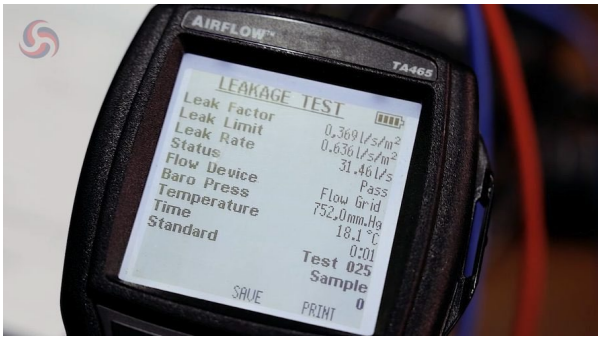

Figure 12. AIRFLOW PANDA TA465 leakage test display — Leak Factor, Leak Limit, Leak Rate, Status: Pass.

Figure 13. Engineer signing off the certification sheet against the leakage tester output and recorded values.

6.7 Post-Test Actions

- Switch off leakage tester.
- Remove blanking plates.
- Remove flexible ducting.
- Restore AHU connections.
- Confirm no damage to panels or seals.

6.8 Accessing Air Tightness Data in Client Portal

Each AHU asset tag links to its technical documentation.

To access test certification:

- Scan Asset Tag QR code.
- Open ECE Client Portal.
- Enter 18-digit reference number.
- Navigate to Technical Documents.
- Download:
- Air Tightness Test Sheet (PDF)
- Calibration references
- Certification data

Example test sheet available via portal

6.9 Key Performance Indicators

Test sheet confirms:

- Required pressure achieved
- Actual pressure recorded
- Test duration met
- Leakage factor calculated
- Maximum allowable leakage defined
- Interpreted leakage recorded
- Pass or Fail declared

7. Verification / Functional Test

- The specified test method and classification are confirmed before testing.
- Test pressure, duration and measured result are recorded.
- Result is compared with the required pass/fail criterion.
- Any leakage path, defect or failed result is recorded and escalated.
- Test pressure, measured leakage and classification result are documented.

Additional Verification Notes

As per factory testing notes:

- Ensure unit constructed per IOM method.
- Close all openings (electrical, air, water services).
- Fit blanking plates to duct spigots.
- Remove dampers or blank them securely.
- Do not apply additional sealing beyond standard construction.

Surface area of all sections must be calculated and recorded prior to testing

Verifying Digital Display

8. Stop-and-Escalate Conditions

STOP: Stop work or stop the review and escalate to the responsible ECE/project technical contact if any of the following apply:

- The AHU reference, asset tag, certified drawing or document revision cannot be confirmed.
- The information found does not match the physical AHU, installed component or project scope.
- Safe access, safe isolation or required site permits cannot be confirmed.
- A required component technical detail, wiring detail, control signal or manufacturer data sheet is missing.
- The task would block or compromise AHU maintenance access, withdrawal routes, isolators, terminal boxes or emergency access.
- The required classification, pressure or acceptance criterion is unclear.
- The AHU cannot be safely sealed or tested.
- Test equipment is unavailable, unsuitable or out of calibration where calibration is required.
- The measured result fails the required acceptance criterion.
- Leakage result exceeds the specified L1/L2 classification limit or acceptance criterion.

9. Final Checks

- Confirm the AHU, component, wiring, control function or approval item has been left in the intended safe and complete condition.
- Confirm access doors, panels, terminal boxes, covers, guards, isolators and labels are secure where applicable.
- Confirm no tools, temporary materials, loose items, debris or packaging remain in or around the AHU.
- Confirm any alarms, faults, abnormal indications or unresolved comments have been recorded and escalated.

10. Records to Complete

Record enough evidence to prove that the task, review or test has been completed using the correct AHU information and by competent personnel.

- Test method recorded
- Pressure/duration/result recorded
- Pass/fail recorded
- Certificate or test record completed
- Defects and corrective action recorded

Evidence item	Required entry
AHU reference / asset tag	To be completed
Certified drawing revision / document revision	To be completed
Person completing task / review	To be completed
Date completed	To be completed
Result / status	Pass / fail / comment / not applicable
Outstanding actions	To be completed or marked none

Additional Record Notes

Example data recorded:

Actual FMD reading 22.46 l/s

11. Completion Checklist

[ ] Correct AHU and guide number confirmed.
[ ] Latest asset information and certified drawing checked.
[ ] Relevant IOM, wiring diagram, controls description or manufacturer data checked where applicable.
[ ] Safety and competency requirements confirmed.
[ ] Procedure completed or approval review completed.
[ ] Verification / functional test completed.
[ ] Stop-and-escalate conditions checked and no unresolved stop condition remains.
[ ] Records to Complete section completed.
[ ] AHU returned to safe condition or review status recorded.

12. Task-Specific Completion Checks

[ ] All AHU openings sealed
[ ] Surface area calculated
[ ] Calibrated equipment connected
[ ] Test pressure achieved
[ ] 15-minute duration completed
[ ] Leakage rate recorded
[ ] Classification verified (L2/L1)
[ ] Test sheet signed
[ ] Certification uploaded to Client Portal

13. Learning Outcome

After completing this guide, the user should be able to complete or review Air Tightness Test – L2 / L1 Classification using the correct AHU information, with clear safety controls, defined verification, completion records and escalation criteria.