

BRE Test Report

Test Aereco V5S MEV to SAP test methodology for listing on PCBD of NCM (SAP)

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1 Introduction

Aereco requested BRE undertake testing of a MEV product to the test method for inclusion in the PCDB of the NCM, SAP.

The test methodology used for the testing of mechanical extract ventilation products for domestic applications, is; *Test method for central exhaust ventilation system packages used in a single dwelling*, dated 15/01/2013, Version 2.0.

The product tested was

Product manufacturer	Aereco
Product name	V5S 1131
Product serial number	17392 37017
Date received at BRE	01/06/2018

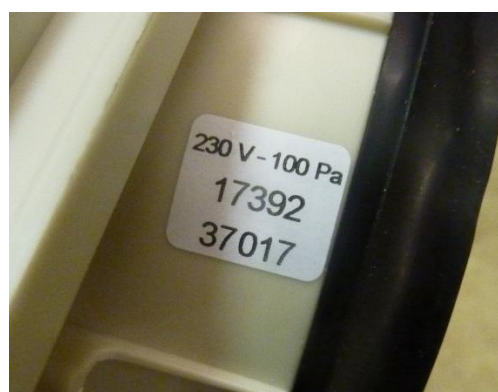


Figure 1 Product label



Configuration of MEV product tested

The spigot sizes and locations of the product tested are detailed in Table 1 and shown in Figure 2.

Spigot	Size (mm)	Location
Kitchen and wet room extract	100 mm diameter	Side of casing 6 spigots
Exhaust	125 mm diameter	Side of casing

Table 1. Location and sizes of spigots



Figure 2 General arrangement of product– Extract: 6 off, 100 mm diameter. Exhaust: 125 mm diameter.

Fan speed control

The fan speed was controlled to maintain a constant pressure across the fan. Required flow rates were achieved by adjusting room valves only.



2 Details of tests carried out

All testing was undertaken at BRE's HVAC Engineering test laboratory, Building 47, Garston, Watford, UK. All tests were undertaken by Dr M Swainson, Principal Engineer, and Claudiu Manescu, Engineer, HVAC Engineering and Building Diagnostics.

The following tests were undertaken in accordance with the *Test method for central exhaust ventilation system packages used in a single dwelling*, dated 15/01/2013, Version 2.

Determination of total air flow rate and electrical power - Clause 4.2.5 and 5

The electrical power at a range of air flow rate corresponding to a defined wet room configurations was determined following the method set out in Clause 4.2.5. The configuration of the extract ducts for each wet room configuration was as set out in Clause 4.2.4.

Variable	Instrument used for measurement	Calibration
Air flow rate	Hastings LFE LS-8S Chell Display CCD100	Chell (UKAS)
External plenum pressure	Furness Controls FCO16	BRE calibration (UKAS)
Air temperature readings	PT100 1/10th DIN probes	In-situ 5 point temperature calibration with Hewlett Packard Digital Quartz Thermometer type 2804A BRE Calibration Services (UKAS)
Absorbed electrical power	Yokogawa WT310E	Caltest (UKAS)



3 Test results

Clause 4.2.5 Test conditions and Clause 5 Electrical power

The tests were undertaken on 10th October 2018.

Variable	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6
Test point - kitchen plus (N ^o) wet rooms	1	2	3	4	5	6
Fan speed setting	Constant pressure					
Exhaust air flow rate (l/s @ STP)	21.0	29.0	37.0	45.0	53.0	61.0
Pressure – extract leg (Pa)	-85	-76	-92	-82	-80	-62
Total measured electrical power (W)	8.33	9.51	13.91	15.48	19.1	21.7
Calculated SFP (W/l/s)	0.40	0.33	0.38	0.34	0.36	0.36
Measured air flow rate at +5 Pa back pressure	20.4	28.2	36.0	44.0	51.7	60.0



4 Results to be used for PCDB

Results for SAP calculations (at minimum flow rate condition)

Table Q1 – Systems with **rigid** ductwork only

Exhaust terminal configuration	Fan speed setting	Specific fan power (W/l/s)
Kitchen +1 additional wet room	Constant pressure	0.40
Kitchen +2 additional wet rooms	Constant pressure	0.33
Kitchen +3 additional wet rooms	Constant pressure	0.38
Kitchen +4 additional wet rooms	Constant pressure	0.34
Kitchen +5 additional wet rooms	Constant pressure	0.36
Kitchen +6 additional wet rooms	Constant pressure	0.36



Results for Approved Document F (at maximum flow rate condition)

Table Q3

Exhaust terminal configuration	Fan speed setting	Total flow rate (l/s)	Total flow rate – wind condition (l/s)	% reduction of total flow rate
Kitchen + 1 additional wet room	Constant pressure	21	20.4	2.9
Kitchen + 2 additional wet rooms	Constant pressure	29	28.2	2.8
Kitchen + 3 additional wet rooms	Constant pressure	37	36.0	2.8
Kitchen + 4 additional wet rooms	Constant pressure	45	44.0	2.2
Kitchen + 5 additional wet rooms	Constant pressure	53	51.7	2.5
Kitchen + 6 additional wet rooms	Constant pressure	61	60.0	1.6