



TEST REPORT No. 14/06B (2025)

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NB: 2025 version – update to Client information only

REFERENCE: The Building Agency Limited,
1/14 Link Drive,
Wairau Valley.

Performance tests on The Building Agency composite Aluminium
cladding system in accordance New Zealand Building Code E2/VM1:

DATE OF TEST: 18 - 19 July 2014

SUMMARY

Series 1 Static pressure Water Penetration Test:

No water penetration observed.

Series 1 Cyclic pressure Water Penetration Test:

No water penetration observed.

Series 2 Static pressure Water Management Test:

No water penetration observed.

Series 2 Cyclic pressure Water Management Test:

No water penetration observed. Water not bridging onto plane of building
wrap membrane

Series 3 Wet wall Test: Initial

Water penetration around window head flashing, crossing cavity onto plane of
building wrap. No other water transfer to plane of building wrap

Series 3 Wet wall Test: Retest

Following the repair to the damaged head flashing, no further water
penetration occurred associated with the window head flashing.

The test on the sample cladding demonstrated that the following elements
incorporated into the test sample complied with the E2/VM1 requirements:

Vertical and horizontal panel joints

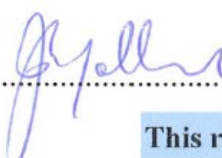
Internal corner detail

External corner detail

Alternative Window installations

Sill detail

Vented/ drained horizontal joint

Tested by: 

Checked by: 

DESCRIPTION:

The test sample consisted of a single storey timber framed structure, with stepped external face providing sample details of internal and external corners, two alternative window penetrations, a horizontal vented joint and a vented bottom plate. General details of the test structure as well as the details of the fixing methods and the panel joints are shown in the attached sample drawings. Sheets A – M.

The sample consists of a nominal 4mm thick panel with precoated aluminium faces and a composite polymeric core, which is fabricated using V groove machining and folding into individual panels. The panels are fitted together with overlapping horizontal and vertical joints, incorporating aluminium extrusions riveted to the inner edge of the panel edges and fixed onto the support framing. With the exception of horizontal drained joints, all horizontal and vertical panel joints are subsequently filled with silicone sealants on PEF backing rod.

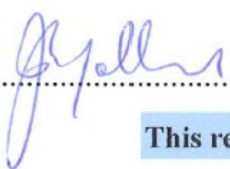
As the test sample had been previously tested using AS/NZS 4284: 2008 procedures to higher ULS test pressures than the notional ± 2500 Pa ULS for



E2/VM1 the previously installed transparent rigid air barrier of 4.5 mm clear polycarbonate sheet was retained instead of a flexible building wrap.



However to comply with the principle of E2/VM1 which uses a full internal lining together with a possibly permeable building wrap, 100 mm diameter openings were cut through the 4.5 mm polycarbonate sheet at every frame opening except for those designated as viewing points for the Series 1 & 2 water penetration tests. The remainder of the internal face was lined with plywood, leaving the original section of polycarbonate at each internal view point opening.

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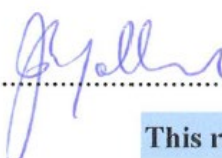
TEST METHOD

Testing of the sample installation was conducted using the NZ Building Code E2/VM1 test procedure.

The VM1 test method is a specific subset of the AS/NZS 4284: 2008 Water penetration Test with additional procedures evaluating possible leakage through external cladding defects. (Water Management tests)

The initial Series 1 test is specified as a 15 minute exposure to a static pressure of 455 Pa, followed by two sequential periods of 5 minutes at cyclic pressures of 227 - 455 Pa and 455–910 Pa respectively. The Series 2 Water Management test consists of a repeat of the static and cyclic Series 1 pressure sequence following the drilling of several 6 mm holes through the cladding face simulating possible defects in the external seals or cladding.

The following photos show the locations of the specified 6 mm diameter holes drilled for the Water Management test.

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Following the removal of all internal linings, the test specimen was subjected to the Wet wall test, being the application of the water spray at a static pressure of 50 Pa across the cladding face.

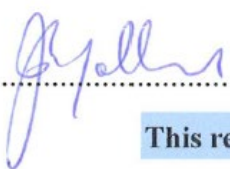
As the results below indicate, water penetration onto the plane of the building wrap was visible during the Series 3: Wet Wall Test Static Water penetration test. The clients subsequently removed the adjacent external panel and located a hole in the back corner of the head flashing that was allowing water to flow into the rear of the cavity, onto the plane of the building wrap. It was apparent that the head flashing damage had occurred following repairs to the window sill installation after water penetration occurred during the AS/NZS 4284 preliminary tests.



Hole in rear of head flashing

RESULTS

Series 1: Static Water penetration Test pressure 455 Pa Duration 15 mins	No water penetration visible on interior of cladding and around penetrations
Series 1: Cyclic Water penetration Test pressure 227 - 454 Pa Duration 5 mins Test Pressure 455 – 910 Pa Duration 5 mins	No water penetration visible on interior of cladding and around penetrations No water penetration visible on interior of cladding and around penetrations
Series 2: Water Management Tests Static Water penetration Test pressure 455 Pa Duration 15 mins	No water penetration visible on interior of cladding and around penetrations
Series 2: Water Management Tests Cyclic Water penetration Test pressure 227 - 455 Pa Duration 5 mins Test Pressure 455 – 910 Pa Duration 5 mins	No water penetration visible on interior of cladding and around penetrations No water penetration visible on interior of cladding and around penetrations. Water not bridging onto plane of building wrap membrane.

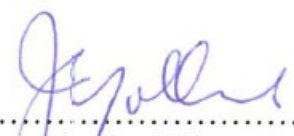
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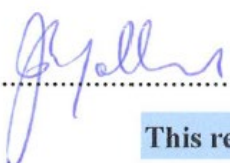
Series 3: Wet Wall Test Static Water penetration Test pressure 50 Pa Duration 15 mins	Water penetration around window head flashing, crossing cavity onto plane of building wrap. No other water transfer to plane of building wrap	
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Retest following repair to window head flashing

Series 3: Wet Wall Test Static Water penetration Test pressure 50 Pa Duration 15 mins	No water penetration around window head flashing, No water transfer to plane of building wrap
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 Authorised Signatory
 30 July 2014

Tested by: 

Checked by: 
