

Test Certificate

CERTIFICATE No: TRA029926CC01

ISSUE: B

DATE: 08/09/2016

PURPOSE OF TEST: Ingress Protection

CLIENT ORDER No: 1284

CLIENT: DNH World-Wide Limited, 31 Clarke Road, Mount Farm, Bletchley, Milton Keynes, Buckinghamshire, GB. MK1 1LG.

EQUIPMENT UNDER TEST: EUT Name: Ceiling Loudspeaker
Part Number: BPF 660T
Element Stores Number: TRA-029926-S1

Receipt Date: 26/08/2016

TEST SPECIFICATIONS: In accordance with quotation TRA-029926-01
In accordance with BS EN 60529: 1992+A2:2013

TEST DATE: 26/08-2016 -30/08/2016

TEST LOCATION: Element Materials Technology, Rothwell Road, Warwick, Warwickshire, CV34 5JX

WRITTEN BY:



Sam Bannan
Environmental Test
Engineer

APPROVED BY:

Rob Sutton
Verification
Controller

The results herein relate only to the particular samples of equipment tested and the specific tests performed, as detailed above, and in accordance with the contract. Full details of test results, modifications and marginal results are held by Element Materials Technology Warwick Ltd. The quality control arrangements are in accordance with our UKAS accreditation. No representation or warranty is given that the tests performed under the terms of contract constitute, in themselves, a sufficient programme for the client's purpose, nor that the client's equipment is suitable for any particular purpose, nor that any approval has or will be granted by Element Materials Technology Warwick Ltd or any other body. The contents of this certificate shall not be reproduced, except in full, without the written approval of Element Materials Technology Warwick Ltd.

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EMTEACC02



TESTS CARRIED OUT:

IP5X – Protected Against Access of Solid Foreign Objects – Dust Protected (Category 2)

Duration: 8 hours

IP4X – Protected Against Access to Hazardous Parts and Against Solid Foreign Objects

Probe: 1.0^{+0.05}₋₀ mm diameter X 100mm wire

Force: 1N ± 10%

IPX4 – Protected Against Splashing Water

Nozzle: Spray Nozzle (Shield Removed)

Flow Rate: 10 litres per minute ± 5%

Duration: 1 minute per m² of surface area of enclosure sprayed from all practicable directions. (5 minutes minimum)

Distance: 300-500 mm

Water Temperature: Within ±5°C of equipment temperature

TEST PROCEDURE

IP4X – Protected Against Access to Hazardous Parts and Against Solid Foreign Objects

The 100mm access probe was applied to assess if the 1mm diameter probe could gain access to the openings of the enclosure at a force of 1N.

IP5X – Protected Against Access of Solid Foreign Objects – Dust Protected (Category 2)

The EUT was mounted in the dust chamber, as shown in Figure 1 and was tested for 8 hours in accordance with the specification.

IPX4 – Protected Against Splashing Water

The temperature of the water and the EUT was measured to ensure the differential was within 5°C.

The EUT, mounted in its normal operating orientation was subjected to IPX4 first and sprayed from all practicable directions for a period of 5 minutes as shown in Figure 2 in accordance with the specification

TEST RESULTS:

IP4X – Protected Against Access to Hazardous Parts and Against Solid Foreign Objects

The EUT was found to have no openings that could be penetrated by the access probe of 1mm Ø reducing adequate clearance between the access probe and hazardous parts.

The 1.00mm diameter probe did not gain access at a force of 1.0 N ± 10%

IP5X – Protected Against Access of Solid Foreign Objects – Dust Protected (Category 2)

The EUT was not subjected to an internal inspection at this point as this may affect its sealing quality prior to water testing

IPX4 – Protected Against Splashing Water

After testing, the EUT was dried externally before being opened for internal inspection. No dust or water ingress was found

The EUT TRA-029926-S1 therefore satisfies the requirements of BS EN 60529: 1992 + A2:2013 IP54

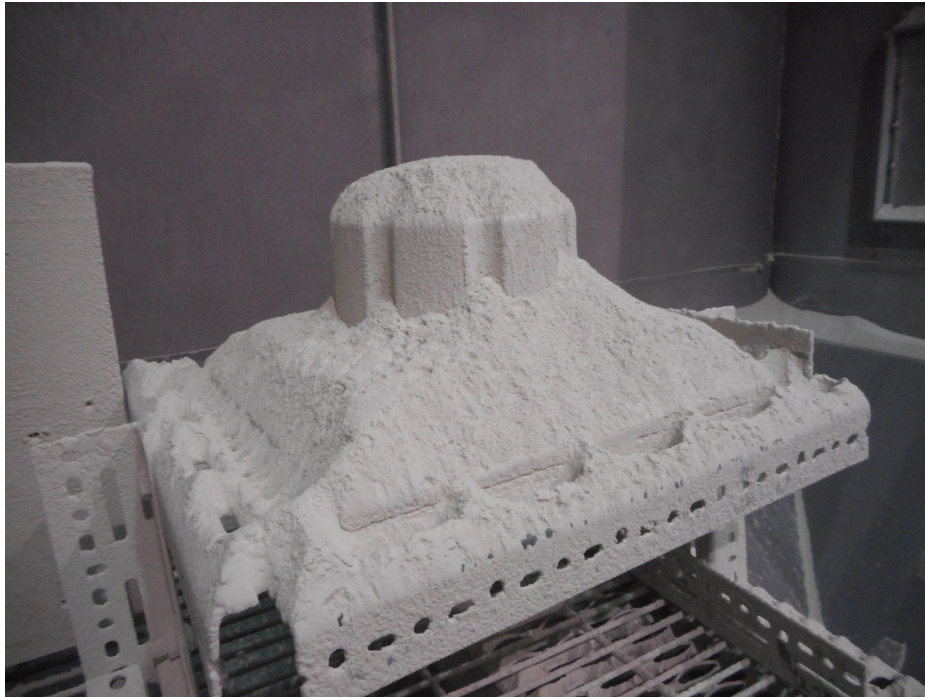


Figure 1 - Post Dust Test

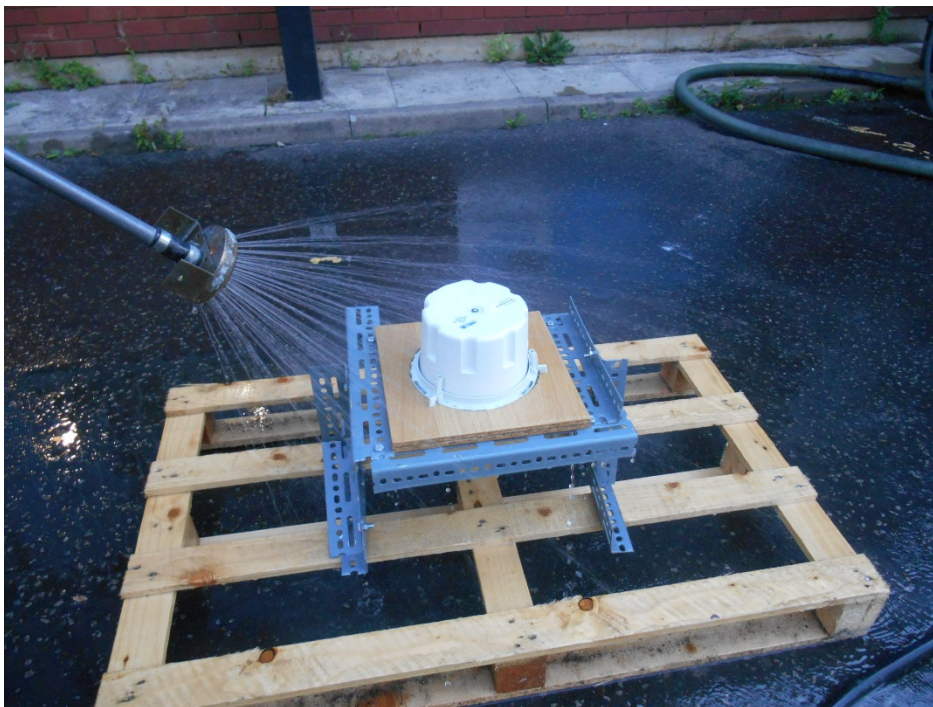


Figure 2 - Post IPX4 Test