Test Report

BSI
Product Services

Report No	261/4486853/2 of 2 This Report consists of 9 pages
Client	Smart Systems Limited North End Road Yatton North Somerset BS49 4AW
Authority & date	Request by the Client dated 11 November 2003
Items tested	2 off thermally broken aluminium alloy windows, Smart Systems Visoline High Security Internally Glazed Tilt/Turn Window System
Specification	BS 7950:1997 Specification for enhanced security performance of casement and tilt/turn windows for domestic applications
Results	Pass
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Authorized by	A D Coley (Laboratory Manager)
Issue Date	10 December 2003
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue of *PS082* 'General conditions relating to acceptance of testing'. The results contained herein apply only to the particular sample/s tested and to the specific tests carried out, as detailed in this Test Report. The issuing of this Test Report does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI of any product. No extract, abridgement or abstraction from a Test Report may be published or used to advertise a product without the written consent of the General Manager, BSI Product Services, who reserves the absolute right to agree or reject all or any of the details of any items or publicity for which consent may be sought.

UKAS TESTING
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TEST, EXAMINATION AND ASSESSMENT OF TWO THERMALLY BROKEN ALUMINIUM WINDOWS, SMART SYSTEMS VISOLINE HIGH SECURITY INTERNALLY GLAZED TILT/TURN WINDOW SYSTEM

INTRODUCTION

At the request of Smart Systems Limited the thermally broken aluminium windows, detailed below and described on page 3, were tested and assessed to the requirements of BS 7950:1997 Specification for enhanced security performance of casement and tilt/turn windows for domestic applications, as indicated on the following pages of this Report. This request was made in a Purchase Requisition from the Client dated 11 November 2003 and referenced 55630. It is emphasized that assessments have not been made against the other Clauses of the Specification.

TEST SAMPLES

2 off tilt/turn windows

Date samples received: 11 November 2003

SUMMARY OF RESULTS

1.	Manipulation	The test samples met the requirements of the Specification in respect of Clause 7 Annex A.4.
2.	Glazing removal	The test samples met the requirements of the Specification in respect of Clause 7 Annex A.5.
3.	Mechanical loading	The test samples met the requirements of the Specification in respect of Clause 7 Annex A.6.
4.	Manual check test	The test samples met the requirements of the Specification in respect of Clause 7 Annex A.7.

DESCRIPTION OF SAMPLES

Sample type - Tilt and turn

Material - Aluminium alloy, thermally broken

Construction - Mechanical joints, mitred and cleated

Fittings - Locking: a nine point locking (seven mushroom bolts and two roller cams) Sobinco espagnolette system operated by a Sobinco key locking handle
1 off dog bolt

Glass - Double glazed, 4-16-4mm toughened glass sealed unit

Glazing system - Internal screwed beads and gaskets.
Top and bottom glazing beads screwed into the corners of the sash. Glazing beads siliconed in.
Wooden inserts located inside glazing beads.

Sample dimensions - For information only (nominal sizes)

Overall size
Length: 1200mm Height: 1200mm

Sash size
Length: 1110mm Height: 1110mm

EXAMINATION AND TEST

Sample type - Tilt and turn

Date of test - 19 November 2003

Laboratory temperature - 20°C

CLAUSE 7 PERFORMANCE REQUIREMENTS	ASSESSMENT

Annex A.4 Manipulation test

The sample was mounted vertically in the test rig as described in Annex A.2. The test was carried out in accordance with the given objective of this Annex using the implements described in Annex A.3.

The key for the lockable hardware was fully removable.
No entry could be effected within 3 minutes. Pass

Annex A.5 Glazing removal test

Annex A.5.2 Mechanical test

The sample was mounted vertically in the test rig as described in Annex A.2. A perpendicular to plane load of 2.0kN was applied to each corner of the glazing in turn as specified in Annex A.5.2.

No evidence of bead failure
No entry could be effected Pass

EXAMINATION AND TEST (CONTINUED)

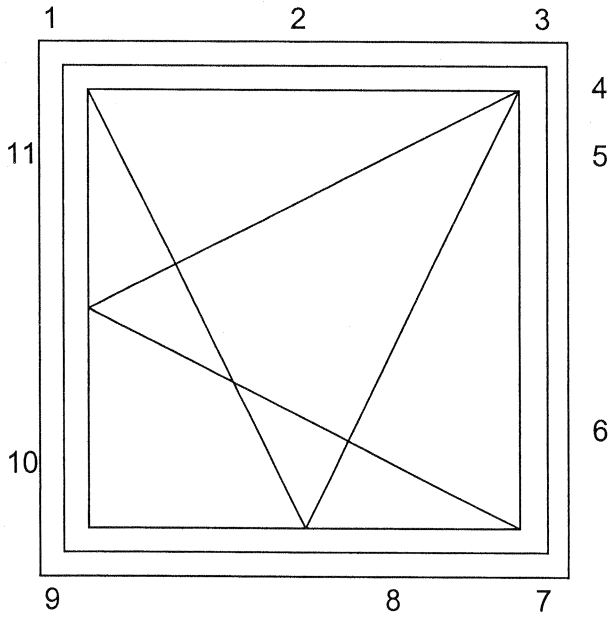
CLAUSE 7 PERFORMANCE REQUIREMENTS

Annex A.6 Mechanical loading test

The sample was mounted vertically in the test rig as described in Annex A.2.

The test was carried out in accordance with the procedures detailed in Annex A.6 and Figure 1 using the test apparatus detailed in Appendix A of this test report.

Diagram of points of application of loads



Annex A.6.2 Loading procedure

Point of application of load

First sequence

1 - Corner (left head)

Standard loading case used: 3
Load applied in plane: 1.0kN in direction to disengage nearest locking point
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

2 - Mushroom bolt (centre head)

Standard loading case used: 4
Load applied in plane: 1.0kN along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

EXAMINATION AND TEST (CONTINUED)

Annex A.6.2 Loading procedure (continued)

Point of application of load

3 - Corner (right head)

Standard loading case used: 3
Load applied in plane: 1.0kN in direction to disengage nearest locking point
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

4 - Roller cam (upper right jamb)

Standard loading case used: 4
Load applied in plane: 1.0kN along edge in direction to disengage cam
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

5 - Mushroom bolt (upper right jamb)

Standard loading case used: 4
Load applied in plane: 1.0kN along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

6 - Mushroom bolt (lower right jamb)

Standard loading case used: 1
Load applied in plane: 1.0kN along edge in direction to disenageg bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

7 - Corner/Roller cam (right sill)

Standard loading case used: 3/4
Load applied in plane: 1.0kN along edge in direction to disengage cam
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

8 - Mushroom bolt (right sill)

Standard loading case used: 4
Load applied in plane: 1.0kN along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

EXAMINATION AND TEST (CONTINUED)

Annex A.6.2 Loading procedure (continued) **ASSESSMENT**

Point of application of load

9 - Corner/Mushroom bolt/Dog bolt (left sill)

Standard loading case used: 3/4/5
Load applied in plane: 1.0kN along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

10 - Mushroom bolt (lower left jamb)

Standard loading case used: 4
Load applied in plane: 1.0kN along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

11 - Mushroom bolt (upper left jamb)

Standard loading case used: 4
Load applied in plane: 1.0kN along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

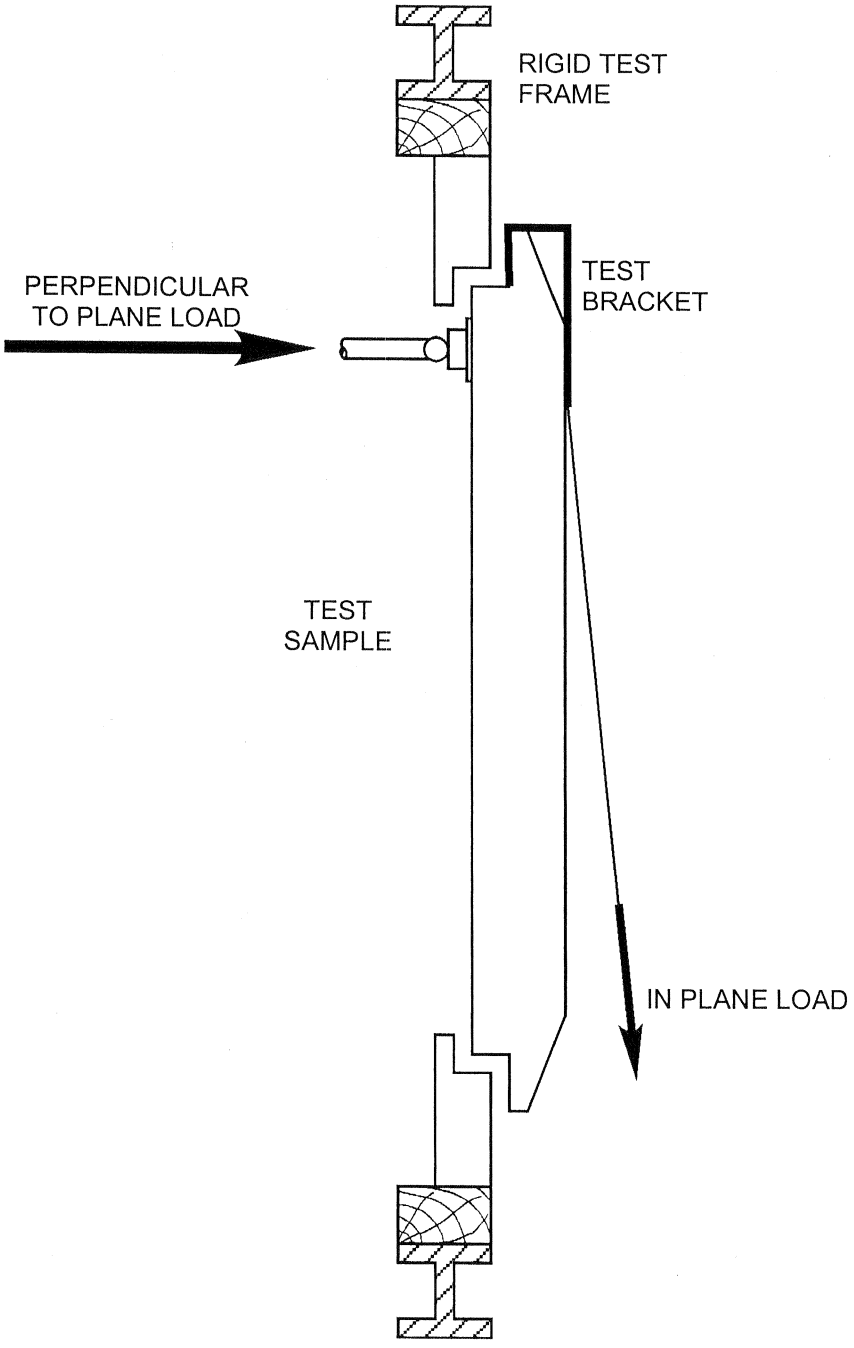
Load applied in plane: 1.0kN at right angles to edge and towards opposite edge
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

No entry effected Pass

EXAMINATION AND TEST (CONTINUED)

CLAUSE 7 PERFORMANCE REQUIREMENTS	**ASSESSMENT**
Annex A.7 Manual check test	
The sample was mounted vertically in the test rig as described in Annex A.2.	
The test was carried out using the tools described in Annex A.7.2 in accordance with the procedures detailed in Annex A.7.3.	
No alternative method of entry could be effected	Pass
Annex A.8 Additional mechanical loading test	
Not applicable as an alternative method of entry was not identified under Annex A.7.	

APPENDIX A


RIGID TEST
FRAME
TEST
BRACKET
PERPENDICULAR
TO PLANE LOAD
TEST
SAMPLE
IN PLANE LOAD