Test Report

Report No	2370/7948221/ 3 of 3 This Report consists of 10 pages
Licence/Certificate No	KM 81543
Client	Smart Systems Limited Arnolds Way Yatton BS494QN
Authority & date	Service Management Order No - 7948221 dated 31 January 2013 - Equipment Record No 10139986
Items tested	1 off Aluminium alloy window, Alitherm 800 Internally Glazed Casement Window System
Specification	BS 4873:2009 - Aluminium windows and doorsets BS 6375-2:2009 Performance of windows and doors - Part 2 Classification for operation and strength characteristics and guidance on selection and specification Type testing for Product Certification
Results	Pass
Prepared by	D Kirsop (Senior Technician)
Authorized by	M Manito (Senior Engineer)
Issue Date	01 July 2014
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue of *CP0322 'Conditions of contract for 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 Managing Director, BSI, 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.

TEST AND EXAMINATION OF ONE ALUMINIUM ALLOY WINDOW SUBMITTED FOR TYPE ASSESSMENT, ALITHERM 800 INTERNALLY GLAZED CASEMENT WINDOW SYSTEM

INTRODUCTION

The Aluminium alloy window submitted by Smart Systems Limited, was tested and assessed to the requirements of BS 4873:2009, BS 6375-1:2009 and BS6375-2:2009, as indicated on the following pages 4 and 5 of this Report. This request was made on Service Management Order No 7948221 dated 31 January 2013.
It is emphasized that assessments have not been made against the other Clauses of the Specification.

TEST SAMPLE

1 off projecting top hung window

(Equipment Record No: 10139986)

Date sample received: 18 February 2013

Parts list on page 16

SUMMARY OF RESULTS

1.	Operation and Strength	The test sample met the requirements of the Specification in respect of BS 6375-2

Classification for Operational strength

Repeated opening and closing	10'000 cycles

PREPARATION AND METHOD OF TEST

The samples were prepared as required by BS EN 1026:2000 Windows and doors - Air permeability, BS EN 1027:2000 Windows and doors - Watertightness and BS EN 12211:2000 Windows and doors - Resistance to wind load in respect of BS 6375 -1:2009.
The samples were mounted into a plywood surround for installation in the test apparatus. The joint between the samples and the plywood surround was sealed.

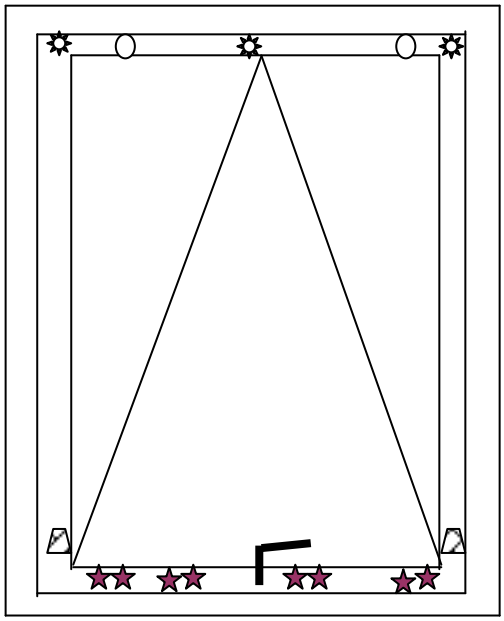
1. Operational strength

The operational strength characteristics were determined by the method given in BS 6375-2:2009.

Description of sample

Manufacturer:	Smart systems
Window type:	Projecting top hung
Material -	Aluminium alloy
Finish -	Natural
Construction -	Outerframe: Cleated Sash: Cleated
Fittings -	Hinges: 24" Securistyle top hung stays Locking: An eight point locking (eight mushroom bolts) Trojan espagnolette system operated by a key locking handle 4 of run up blocks 2 of securistyle Vector hinge protectors
Manufacturing sizes:	Outerframe: Length - 1435mm Height - 1360mm Sash: Length - 1335mm Height - 1260mm
Glass thickness:	Double glazed, 4-20-4mm sealed unit
Date of test:	03 to 16 of June
Laboratory temperature:	22.8°C
Laboratory humidity:	31.2%

ELEVATION DRAWING INDICATING POSITION OF HARDWARE



- hinge protector
- mushroom bolt
- handle
- run up block

BS 6375-2:2009

Clause 5 Performance characteristics and requirements for windows **Assessment**

Clause 5.5 Repeated opening and closing

The sample was opened and closed 5 times before testing started
A procedure was followed

Key rotation of key to unlock: 90 degrees

Clause 6.2 Operating Forces: EN12046-1 and EN12217 (pre test operation)

The sample was tested three times, unlocking the key, handle opening force, sash opening force, sash closing force, handle closing force, key force to lock, and average of the three results were then recorded.

The sample had three handles, the highest results are below from the three handles.

Key force to unlock – 0.30N (maximum 50N)	Pass
Handle opening force – 24.68N (maximum 100N)	Pass
Sash opening force – 29.43N (maximum 100N)	Pass
Sash closing force – 35.10N (maximum 100N)	Pass
Handle closing force – 35.33N (maximum 100N)	Pass
Key force to unlock – 0.30N (maximum 50N)	Pass

At 25% of the complete cycles the Operating forces were taken again

Key force to unlock – 0.30N (maximum 50N)	Pass
Handle opening force – 26.40N (maximum 100N)	Pass
Sash opening force – 33.11N (maximum 100N)	Pass
Sash closing force – 34.96N (maximum 100N)	Pass
Handle closing force – 38.80N (maximum 100N)	Pass
Key force to unlock – 0.30N (maximum 50N)	Pass

Before the testing was restarted the sample was lubricated and no visible movement from the datum points were detected

BS 6375-2:2009

Clause 5 Performance characteristics and requirements for windows	**Assessment**

Clause 5.5 Repeated opening and closing

At 50% of the complete cycles the Operating forces were taken again

Key force to unlock – 0.30N (maximum 50N)	Pass
Handle opening force – 28.10N (maximum 100N)	Pass
Sash opening force – 29.00N (maximum 100N)	Pass
Sash closing force – 36.33N (maximum 100N)	Pass
Handle closing force – 36.74N (maximum 100N)	Pass
Key force to unlock – 0.30N (maximum 50N)	Pass

Before the testing was restarted the sample was checked and no visible movement from the datum points were detected

At 75% of the complete cycles the Operating forces were taken again

Key force to unlock – 0.30N (maximum 50N)	Pass
Handle opening force – 26.10N (maximum 100N)	Pass
Sash opening force – 28.85N (maximum 100N)	Pass
Sash closing force – 33.60N (maximum 100N)	Pass
Handle closing force – 34.41N (maximum 100N)	Pass
Key force to unlock – 0.30N (maximum 50N)	Pass

BS 6375-2:2009

Clause 5 Performance characteristics and requirements for windows	**Assessment**
Clause 5.5 Repeated opening and closing	
Key force to unlock – 0.30N (maximum 50N)	Pass
Handle opening force – 29.23N (maximum 100N)	Pass
Sash opening force – 27.51N (maximum 100N)	Pass
Sash closing force – 34.36N (maximum 100N)	Pass
Handle closing force – 36.50N (maximum 100N)	Pass
Key force to unlock – 0.30N (maximum 50N)	Pass

At 100% of the complete cycles the Operating forces were taken again

The sample met the requirements of the standard and remained within the forces for 10000cycles

Parts list

smart
architectural aluminium

Alith 800 Tests

Update 14.0
WARNING SOFTWARE NEEDS UPDATE
Software last updated 03/07/2012
New update now available from
www.smartsystems.co.uk/v6

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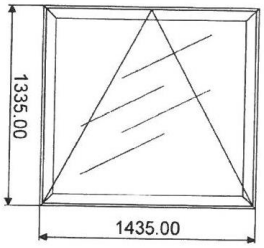
BSI

Quote:2 Item: 2 BS6375 Pt 1 & 2 Qty 2

2

BS6375 Pt 1 & 2

ETC811: Outer Frame
ETC824: Vent
ETC831: Mullion/Transom
NONE: Cill
NONE: Head Extension



QUALITY CONTROL
Approved
Cut
Fabricated
Checked
Glazed

1,435 mm x 1,335 mm

Extrusions		End Prep		Qty	Total	Length	Status
ETC811	61mm Equal Leg Outer Frame	-45.0	-45.0	2	4	1,335 mm	[ ]
ETC811	61mm Equal Leg Outer Frame	-45.0	-45.0	2	4	1,435 mm	[ ]
ETC824	Internally Beaded Flat Vent	45.0T	45.0T	2	4	1,300 mm	[ ]
ETC824	Internally Beaded Flat Vent	45.0T	45.0T	2	4	1,400 mm	[ ]
ETC866	28mm Internal Square Glazing Bead	0.0T	0.0T	2	4	1,169 mm	[ ]
ETC866	28mm Internal Square Glazing Bead	0.0T	0.0T	2	4	1,302 mm	[ ]

Glazing		Qty	Total	Width	Height	
28MM GLAZING	28mm Glazing	1	2	1,293 mm	x 1,193 m	[ ]

Components		Qty	Total	Unit	
ACDV21	Stainless Steel Chevron	4	8	Each	[ ]
ACET064	Screws (for Handles) No. 8 X5/8 Csk Hd.	12	24	Each	[ ]
ACET069	Screws (for ACET081)	2	4	Each	[ ]
ACET070	8X 1/2 " Pozi Flange S.S. Self Tapping Screws	6	12	Each	[ ]
ACET099	8 X 3/4 Pozi Flange S/S Self Tapper	6	12	Each	[ ]
ACET131WP	Drain Hole Cover [White]	4	8	Each	[ ]
ACET165WPR	Espag Handle Right - White	1	2	Each	[ ]
ACET290	20mm Polyamide Screw	8	16	Each	[ ]
ACET811	Outer Crimp Cleat for ETC810,811,821	4	8	Each	[ ]
ACET813	Outer Crimp Cleat for ETC811,821	4	8	Each	[ ]
ACET820	Inner Crimp Cleat for ETC820,822,824	4	8	Each	[ ]
ACET824	CHEVRON S/S FOR ETC 324/820/821/824	4	8	Each	[ ]
ACET826	Outer Crimp Cleat for ETC824	4	8	Each	[ ]
ACET836	Flipper Gasket for ali300	5	11	Each	[ ]
ACET838	Long Tail Flipper Gasket	5	11	Each	[ ]
ACET842	Low Line Gasket Captive for ali300	5	10	Each	[ ]

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Quoted By: -

Report Name: FabSumShort_Rev12.0

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Update 14.0
WARNING SOFTWARE NEEDS UPDATE
Software last updated 03/07/2012
New update now available from
www.smartsystems.co.uk/v6

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Quote 2
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BSI

Alith 800 Tests

ACET84R8	TROJAN ~~SHOOTBOLT SASH REBATE 945/1406~~ *	1	2	Each	[	]
ACET855	Insulation	11	21	Each	[	]
ACET857	Bridge Packer	2	4	Each	[	]
ACET880WP	Run Up Block - White	2	4	Each	[	]
ACINDS24	24" Standard Hinge	1	2	Each	[	]
ACW20034	4mm Wedge Gasket	5	10	Each	[	]
WCA106SSZ	Aluminium Corner Chevron (ETC105)	4	8	Each	[	]

ACET513 - VECTOR EXCLUDOR

* AS ITEM 1

END OF REPORT