Test Report

Report No	2370/7782492 This Report consists of 18 pages
Client	Smart Systems Limited Arnolds Way Yatton BS49 4QN
Authority & date	Request by client dated 20 December 2011
Items tested	4 off Aluminium windows, Smart Systems Alitherm 600 Internally Glazed Casement Window Systems
Specification	BS 7950:1997 Specification for enhanced security performance of casement and tilt/turn windows for domestic applications
Results	Pass
Prepared by	D Kirsop (Senior Technician)
Authorized by	M Manito (Senior Engineer)
Issue Date	08 February 2012
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue of CPO322 '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 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.

UKAS TESTING
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TEST, EXAMINATION AND ASSESSMENT OF FOUR ALUMINIUM WINDOWS, SMART SYSTEMS ALITHERM 600

INTRODUCTION

At the request of the client the Aluminium windows, detailed below and described on pages 4 and 11, were tested and assessed to the requirements of BS 7950:1997 Specification for enhanced security performance of windows for domestic applications incorporating Amendments 14289 and 15666, as indicated on the following pages of this Report. This request was made on Quotation No BSI0000360080 dated 20 December 2011. It is emphasized that assessments have not been made against the other Clauses of the Specification.

TEST SAMPLE

2 off projecting side hung next to projecting side hung windows (Sample 1)

2 off projecting top hung windows (Sample 2)

(Equipment Record No 10132932)

Date sample received: 2 February 2012

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.

CLAUSE 4 SAMPLE SELECTION

The samples submitted for tests were selected by the Client.

CLAUSE 5.2 ASSESSMENT

The assessment of the test samples followed the sequence detailed in Scheme document PCP519.

CLAUSE 6 TEST APPARATUS AND SAMPLE MOUNTING

The test apparatus used for the manual and mechanical tests is shown in Appendix A of this Report. This apparatus meets the requirements of the Specification.
Each test sample was submitted for test mounted in a 50 x 100mm timber subframe in accordance with the manufacturer's installation requirements.

DESCRIPTION OF SAMPLE (Sample 1)

Sample type -	Projecting side hung next to projecting side hung	
Material -	Aluminium	
Construction -	Cleated	
Fittings (each sash) -	Friction stays:	16" Securistyle Defender side hung stays
	Locking:	a six point lock (six mushroom bolts) Trojan reverse espagnolette system operated by a key locking handle 4 of run up blocks 2 of pairs of Vector Excluder hinge protectors
Glass -	Double glazed, 4-20-4mm toughened glass sealed units	
Glazing system -	Internal beads and gaskets	
Sample dimensions -	For information only (nominal sizes)	
	Overall size Length: 1455mm Height: 1275mm	
	Sash sizes Length: 690mm Height: 1195mm	

EXAMINATION AND TEST

Sample type - Projecting side hung next to projecting side hung

Date of test – 6 February 2012

Laboratory temperature – 19.1°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.5.1 Manual test	
The sample was mounted vertically in the test rig as described in Annex A.2. The sample was assessed using a selection of tools as described in Annex A.3.	
No entry could be effected within 3 minutes	Pass
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)

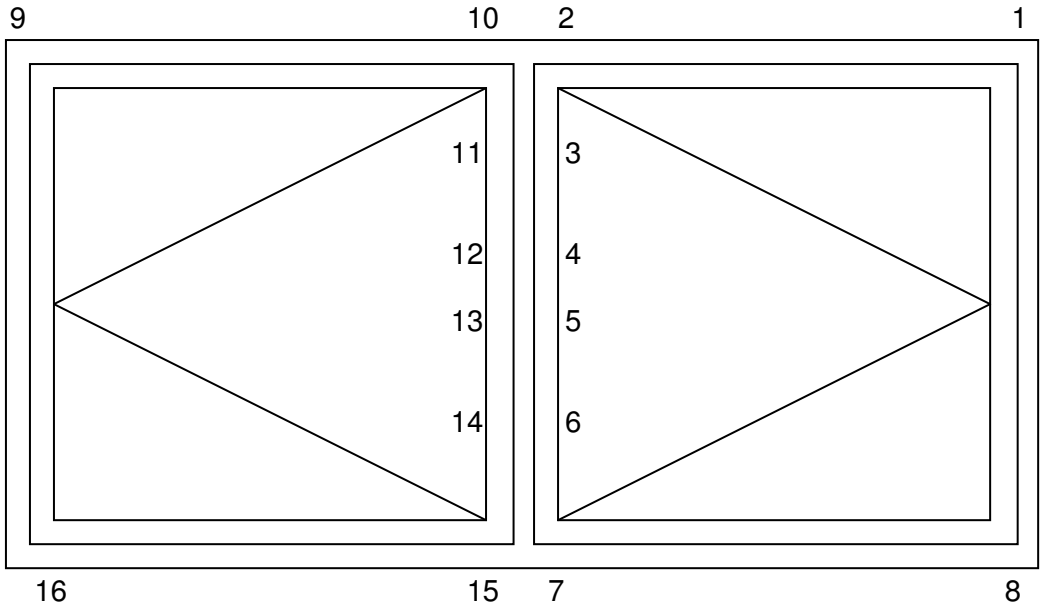
CLAUSE 7 PERFORMANCE REQUIREMENTS

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 (right hand light)

First sequence

1 - Hinge protector/Friction stay (right head)

Standard loading case used: 5/1
Load applied in plane: 1.0kN in direction to disengage hinge protector
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN towards opposite stay
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

EXAMINATION AND TEST (CONTINUED) **ASSESSMENT**

Annex A.6.2 Loading procedure

Point of application of load

2 - Corner (mullion head)

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

Loads 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

3 - Mushroom bolt/Mushroom bolt (upper mullion)

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

Loads applied in plane: 1.0kN at right angles to edge and towards opposite edge
1.0kN at the mullion to oppose the above load
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

4 - Mushroom bolt (centre mullion)

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

Loads applied in plane: 1.0kN at right angles to edge and towards opposite edge
1.0kN at the mullion to oppose the above load
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

5 - Mushroom bolt (centre mullion)

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

Loads applied in plane: 1.0kN at right angles to edge and towards opposite edge
1.0kN at the mullion to oppose the above load
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

EXAMINATION AND TEST (CONTINUED) **ASSESSMENT**

Annex A.6.2 Loading procedure

Point of application of load

6 - Mushroom bolt/Mushroom bolt (lower mullion)

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

Loads applied in plane: 1.0kN at right angles to edge and towards opposite edge
1.0kN at the mullion to oppose the above load
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

7 - Corner (mullion sill)

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

Loads 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 - Hinge protector/Friction stay (right sill)

Standard loading case used: 5/1
Load applied in plane: 1.0kN in direction to disengage hinge protector
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN towards opposite stay
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

No entry effected Pass

Point of application of load (left hand light)

9 - Hinge protector/Friction stay (left head)

Standard loading case used: 5/1
Load applied in plane: 1.0kN in direction to disengage hinge protector
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN towards opposite stay
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

EXAMINATION AND TEST (CONTINUED) **ASSESSMENT**

Annex A.6.2 Loading procedure

Point of application of load

10 - Corner (mullion head)

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

Loads 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/Mushroom bolt (upper mullion)

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

Loads applied in plane: 1.0kN at right angles to edge and towards opposite edge
1.0kN at the mullion to oppose the above load
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

12 - Mushroom bolt (centre mullion)

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

Loads applied in plane: 1.0kN at right angles to edge and towards opposite edge
1.0kN at the mullion to oppose the above load
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

13 - Mushroom bolt (centre mullion)

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

Loads applied in plane: 1.0kN at right angles to edge and towards opposite edge
1.0kN at the mullion to oppose the above load
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

EXAMINATION AND TEST (CONTINUED) **ASSESSMENT**

Annex A.6.2 Loading procedure

Point of application of load

14 - Mushroom bolt/Mushroom bolt (lower mullion)

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

Loads applied in plane: 1.0kN at right angles to edge and towards opposite edge
1.0kN at the mullion to oppose the above load
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

15 - Corner (mullion sill)

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

Loads 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

16 - Hinge protector/Friction stay (left sill)

Standard loading case used: 5/1
Load applied in plane: 1.0kN in direction to disengage hinge protector
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN towards opposite stay
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

No entry effected Pass

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.

DESCRIPTION OF SAMPLE (Sample 2)

Sample type -	Projecting top hung	
Material -	Aluminium	
Construction -	Cleated	
Fittings -	Friction stays:	16" Securistyle Defender side hung stays
	Locking:	a six point lock (six mushroom bolts) Trojan reverse espagnolette system operated by a key locking handle 4 of run up blocks 2 of pairs of Vector Excluder hinge protectors
Glass -	Double glazed, 4-20-4mm toughened glass sealed unit	
Glazing system -	Internal beads and gaskets	
Sample dimensions -	For information only (nominal sizes)	
	Overall size Length: 1455mm Height: 1270mm	
	Sash sizes Length: 1400mm Height: 1200mm	

EXAMINATION AND TEST

Sample type - Projecting top hung

Date of test – 6 February 2012

Laboratory temperature – 19.1°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.5.1 Manual test	
The sample was mounted vertically in the test rig as described in Annex A.2. The sample was assessed using a selection of tools as described in Annex A.3.	
No entry could be effected within 3 minutes	Pass
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)

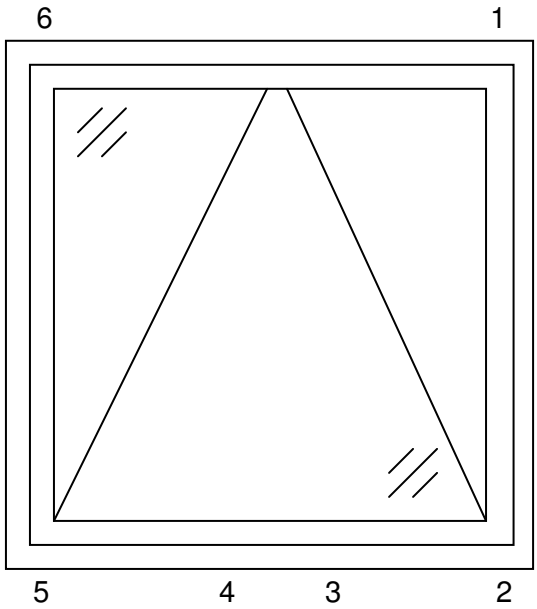
CLAUSE 7 PERFORMANCE REQUIREMENTS

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 - Hinge protector/Friction stay (right head)

Standard loading case used: 5/1
Load applied in plane: 1.0kN in direction to disengage hinge protector
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN towards opposite stay
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

EXAMINATION AND TEST (CONTINUED) **ASSESSMENT**

Annex A.6.2 Loading procedure

Point of application of load

2 - Corner/Mushroom bolt/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 along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Loads 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

3 - Mushroom bolt (centre 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

Loads 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 - Mushroom bolt (centre 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

Loads 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 - Corner/Mushroom bolt/Mushroom bolt (left 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 along edge in direction to disengage bolt
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Loads 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) **ASSESSMENT**

Annex A.6.2 Loading procedure

Point of application of load

6 - Hinge protector/Friction stay (left head)

Standard loading case used: 5/1
Load applied in plane: 1.0kN in direction to disengage hinge protector
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

Load applied in plane: 1.0kN towards opposite stay
Load applied perpendicular to plane: 3.0kN applied for 10 seconds

No entry effected Pass

Annex A.7 Manual check test

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

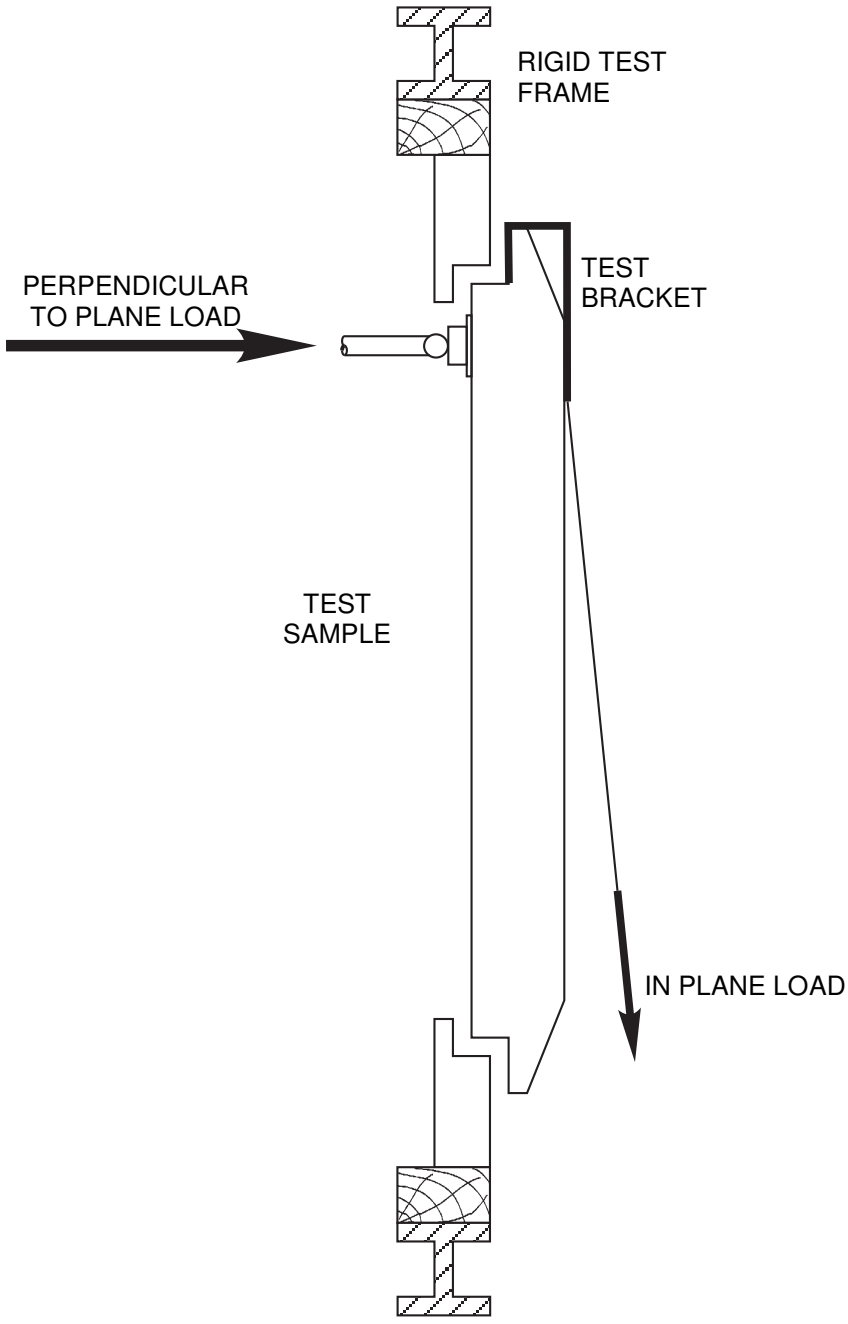
The test was carried out using the tools described in Annex A.7.2 in accordance with the procedures detailed in Annex A.7.3.

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

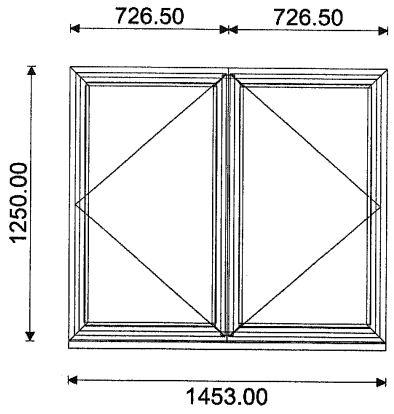

RIGID TEST
FRAME
TEST
BRACKET
PERPENDICULAR
TO PLANE LOAD
TEST
SAMPLE
IN PLANE LOAD

APPENDIX B

2

Casemen

ETC317: Outer Frame
ETC424: Vent
ETC335: Mullion
ETC157: Cill
NONE: Head Extension



QUALITY CONTROL
Approved
Cut
Fabricated
Checked
Glazed

1,453 mm x 1,275 mm

Extrusions		*End Prep*		*Qty*	*Total*	*Length*	*Status*
ETC157	Cill - 150mm SubCill	0.0T	0.0T	1	2	1,453 mm	[ ]
ETC162	Bead - 24mm (ALI47) Square	0.0T	0.0T	4	8	600 mm	[ ]
ETC162	Bead - 24mm (ALI47) Square	0.0T	0.0T	4	8	1,075 mm	[ ]
ETC317	Square Outerframe for Standard Stays	45.0T	45.0T	2	4	1,250 mm	[ ]
ETC317	Square Outerframe for Standard Stays	45.0T	45.0T	2	4	1,453 mm	[ ]
ETC335	Wide Transom/Mullion for STD Stays	0.0T	0.0T	1	2	1,185 mm	[ ]
ETC424	Internally Beaded Square Vent Frame	45.0T	45.0T	4	8	692 mm	[ ]
ETC424	Internally Beaded Square Vent Frame	45.0T	45.0T	4	8	1,197 mm	[ ]

Glazing		*Qty*	*Total*	*Width*	*Height*	
28MM	28mm Glazing	2	4	593 mm	x 1,098	[ ]

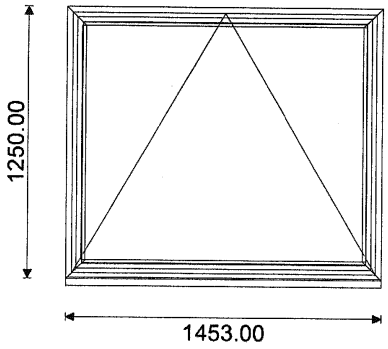
Components		*Qty*	*Total*	*Unit*	
ACET012	CornerCleat (Crimping cleat)	4	8	Each	[ ]
ACET044	Chevron S/S (for 55)	8	16	Each	[ ]
ACET045	Chevron S/S (for 47)	8	16	Each	[ ]
ACET062	Screws (for Cills) No.10 x 2 CskSS STap	6	12	Each	[ ]
ACET064	Screws (for Handles) No. 8 X5/8 Csk Hd.	24	48	Each	[ ]
ACET066	Screws No. 7 x 1.5 Csk head S/S	6	12	Each	[ ]
ACET069	Screws (for ACET081)	4	8	Each	[ ]
ACET070	8X 1/2 " Pozi Flange S.S. Self Tapping	24	48	Each	[ ]
ACET074	CornerCleat (Crimping for 47 Internal)	8	16	Each	[ ]
ACET125	Anti Twist Clip	2	4	Each	[ ]
ACET157WP	Cill end cap	1	2	Each	[ ]
ACET165WPL	Espag Handle Left - White	1	2	Each	[ ]
ACET165WPR	Espag Handle Right - White	1	2	Each	[ ]
ACET180	Alitherm 47 - Run up block for direct fix to	4	8	Each	[ ]
ACET304L	Espag'	1	2	Each	[ ]
ACET304R	Espag'	1	2	Each	[ ]
ACET310	Cleat for ETC310 316 317	4	8	Each	[ ]
ACET335	PVC Transom Locator Block for ETC335	2	4	Each	[ ]
ACET380	Run Up Block	2	4	Each	[ ]
ACET394	Keep Packer	4	8	Each	[ ]
ACINDSSH16	16" SH. Standard Hinge	2	4	Each	[ ]
ACVG31	Gasket - E Gasket 3mm	7	14	Each	[ ]
ACVG34	Gasket - Wedge Gasket 5mm	7	14	Each	[ ]
ACVL032	Gasket - Small Flipper	15	30	Each	[ ]
ACW20024	Stainless Steel Chevron	8	16	Each	[ ]
HINGE PROTEC	Hinge Protectors (Pr)	4	8	Each	[ ]

APPENDIX B (CONTINUED)

1

Casemen

ETC317: Outer Frame
ETC424: Vent
ETC157: Cill



1,453 mm x 1,275 mm

QUALITY CONTROL
Approved
Cut
Fabricated
Checked
Glazed

Extrusions		*End Prep*		*Qty*	*Total*	*Length*	*Status*
ETC157	Cill - 150mm SubCill	0.0T	0.0T	1	2	1,453 mm	[ ]
ETC162	Bead - 24mm (ALI47) Square	0.0T	0.0T	2	4	1,075 mm	[ ]
ETC162	Bead - 24mm (ALI47) Square	0.0T	0.0T	2	4	1,308 mm	[ ]
ETC317	Square Outerframe for Standard Stays	45.0T	45.0T	2	4	1,250 mm	[ ]
ETC317	Square Outerframe for Standard Stays	45.0T	45.0T	2	4	1,453 mm	[ ]
ETC424	Internally Beaded Square Vent Frame	45.0T	45.0T	2	4	1,197 mm	[ ]
ETC424	Internally Beaded Square Vent Frame	45.0T	45.0T	2	4	1,400 mm	[ ]

Glazing		*Qty*	*Total*	*Width*	*Height*	
28MM	28mm Glazing	1	2	1,301	x 1,098	[ ]

Components		*Qty*	*Total*	*Unit*	
ACET012	CornerCleat (Crimping cleat)	4	8	Each	[ ]
ACET044	Chevron S/S (for 55)	4	8	Each	[ ]
ACET045	Chevron S/S (for 47)	8	16	Each	[ ]
ACET062	Screws (for Cills) No.10 x 2 CskSS STap	6	12	Each	[ ]
ACET069	Screws (for ACET081)	2	4	Each	[ ]
ACET070	8X 1/2 " Pozi Flange S.S. Self Tapping	12	24	Each	[ ]
ACET074	CornerCleat (Crimping for 47 Internal)	4	8	Each	[ ]
ACET157WP	Cill end cap	1	2	Each	[ ]
ACET165WPR	Espag Handle Right - White	1	2	Each	[ ]
ACET180	Alitherm 47 - Run up block for direct fix to	2	4	Each	[ ]
ACET305R	Espag'	1	2	Each	[ ]
ACET310	Cleat for ETC310 316 317	4	8	Each	[ ]
ACET380	Run Up Block	2	4	Each	[ ]
ACET394	Keep Packer	4	8	Each	[ ]
ACINDS24	24" Standard Hinge	1	2	Each	[ ]
ACVG31	Gasket - E Gasket 3mm	5	10	Each	[ ]
ACVG34	Gasket - Wedge Gasket 5mm	5	10	Each	[ ]
ACVL032	Gasket - Small Flipper	10	21	Each	[ ]
ACW20024	Stainless Steel Chevron	4	8	Each	[ ]
HINGE PROTEC	Hinge Protectors (Pr)	2	4	Each	[ ]

END OF REPORT