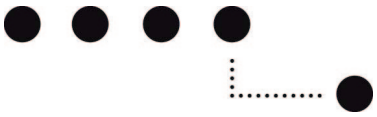
Test Certificate

Bern University of Applied Science
Architecture, Wood and Civil Engineering
Burgdorf, Biel



Test object	**Horizontal sliding window**
Product code	**TH+**
Certificate No	7804-PZ-03
Test report No	7804-PB-02
Order No	7804.DPE
Customer	VITROCSA Orchidées Constructions SA Mr Joray Route Cantonale CH – 1425 Onnens
Construction	Horizontal sliding window, 1 sliding sash, 1 fixed sash Dimension of frame: width x height: 2500 mm x 2543 mm
Relevant standards	EN 1191 (03/2000) – Resistance to repeated opening and closing EN 12046-1 (11/2003) – Operating forces
Classification	**Class 3** - EN 12400 (10/2002) – Mechanical durability – Requirements and classification **Class 1** - EN 13115 (07/2001) – Classification of mechanical properties – Racking, torsion and oper ating forces
Date of issue	29-Sep-2009
Validity	This certificate will expire if the construction or the material of the test product or one of its components changes or if the content or validity of the underlying standard changes.
Address of test laboratory	Bern University of Applied Sciences R&D Department, Facades, Finishing and Furniture Solothurnstrasse 102, CH-2504 Biel
Person in charge	Christoph Rossmanith
Head R&D Facades, Finishing and Furniture	Urs Uehlinger

SUMMARY OF RESULTS

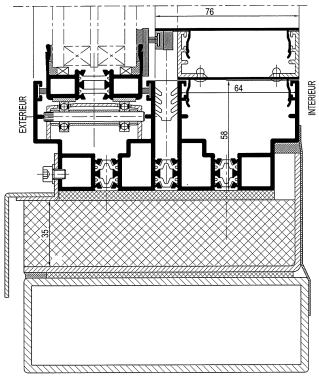
Test object
Horizontal sliding window, system: „TH+“
single sash right,
manufactured by VITROCSA Orchidées Constructions SA

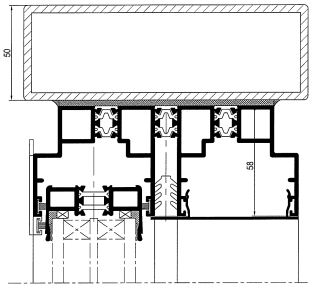
Element frame: thermally separated aluminium profile;
Corner joint: mitre joint with corner plate, bolted and bonded;
Profile depth: 140 mm; profile width: 58 mm;
Gaskets EPDM, brush gaskets, sealant;
Drilled holes and trenches for drainage of frame into the sub drainage profile.

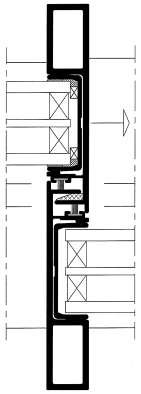
Sliding sash: thermally separated aluminium profile;
U-profile bonded to insulating glass unit, surrounding entire glass, no corner joint;
Profile depth: 51 mm; profile width: 29 mm

Profile of mullion: aluminium profile, width x depth: 22 mm x 110 mm

Length of joint: L = 7.08 m
Test area: A = 6.36 m^2







Test results

Resistance to repeated opening and closing – EN 1191		
Number of cycles	**Classification**	**Test result**
0	Class 0	—
5’000	Class 1	no failure, no operational deterioration
10’000	Class 2	no failure, no operational deterioration
20’000	Class 3	no failure, no operational deterioration

Operating forces – EN 12046-1			
Operation	**Classification**	**Requirement**	**Test result**
open sliding sash	Class 1	≤ 100 N	75 N (Primary measurement) 75 N (Final measurement)
close sliding sash	Class 1	≤ 100 N	66 N (Primary measurement) 83 N (Final measurement)
open locking bolt	Class 2	≤ 20 N	3 N (Primary measurement) 3 N (Final measurement)
close locking bolt	Class 2	≤ 20 N	5 N (Primary measurement) 5 N (Final measurement)

The test was conducted in the period between February 19th and March 9th 2009 at the BUAS in Biel.