

## TEST REPORT No. 319024

**Place and date of issue:** Bellaria-Igea Marina - Italia, 30/09/2014

**Customer:** VIOMETALOUMIN BOUTSINIS J. - BAFALOUKAS J. G.P. - Thesi Patima Aspropyrgos -  
19300 ATHENS - Greece

**Date testing request:** 11/07/2014

**Order number and date:** 63738, 14/07/2014

**Date sample received:** 27/08/2012

**Date of testing:** from 05/08/2014 to 06/08/2014

**Purpose of testing:** Burglar resistance and classification (resistance under static load, resistance under dynamic loading and resistance to manual burglary attempts) according to standards UNI EN 1627:2011, UNI EN 1628:2011, UNI EN 1629:2011 and UNI EN 1630:2011 of folding grill.

**Place of testing:** Istituto Giordano S.p.A. - Via Erbosa, 72 - 47043 Gatteo (FC) - Italia

**Origin of sample:** sampled and supplied by the Customer

**Identification of sample received:** n. 2014/1574

### Name of sample\*

The sample under test is named "T 100 - 1350x2350".



(\*) according to that stated by the Customer.

LAB N° 0021

Comp. MB  
Revis. RP

This test report is made up of 17 sheets.

Sheet  
1 of 17

### **Description of sample\***

The sample under test consists of a single leaf folding grill, featured as listed in the following table.

<b>Sample total nominal width</b>	1350 mm
<b>Sample total nominal height</b>	2350 mm
<b>Sample usable width</b>	910 mm
<b>Sample usable height</b>	2060 mm

The folding door type 100 consists of columns aluminum reinforced inside with bars of iron. The columns are linked together with galvanized shears. The door has been pulled into the upper and lower guide with bearings that are at the bottom of the door. The lock profile has a security lock which can be locked only from the inside without being seen from the outside. The folding door can only be pulled or rotate. When the door rotates four profiles of the hinge is designed in such a way as to achieve the 180° rotation of the door while providing protection.

Further details of sample specifications can be seen in the Customer-supplied list of components and schematic drawings set out hereafter.

Finally, the sample has a surrounding steel frame used to hold the test installation securely in place.

### **Customer-supplied list of components.**

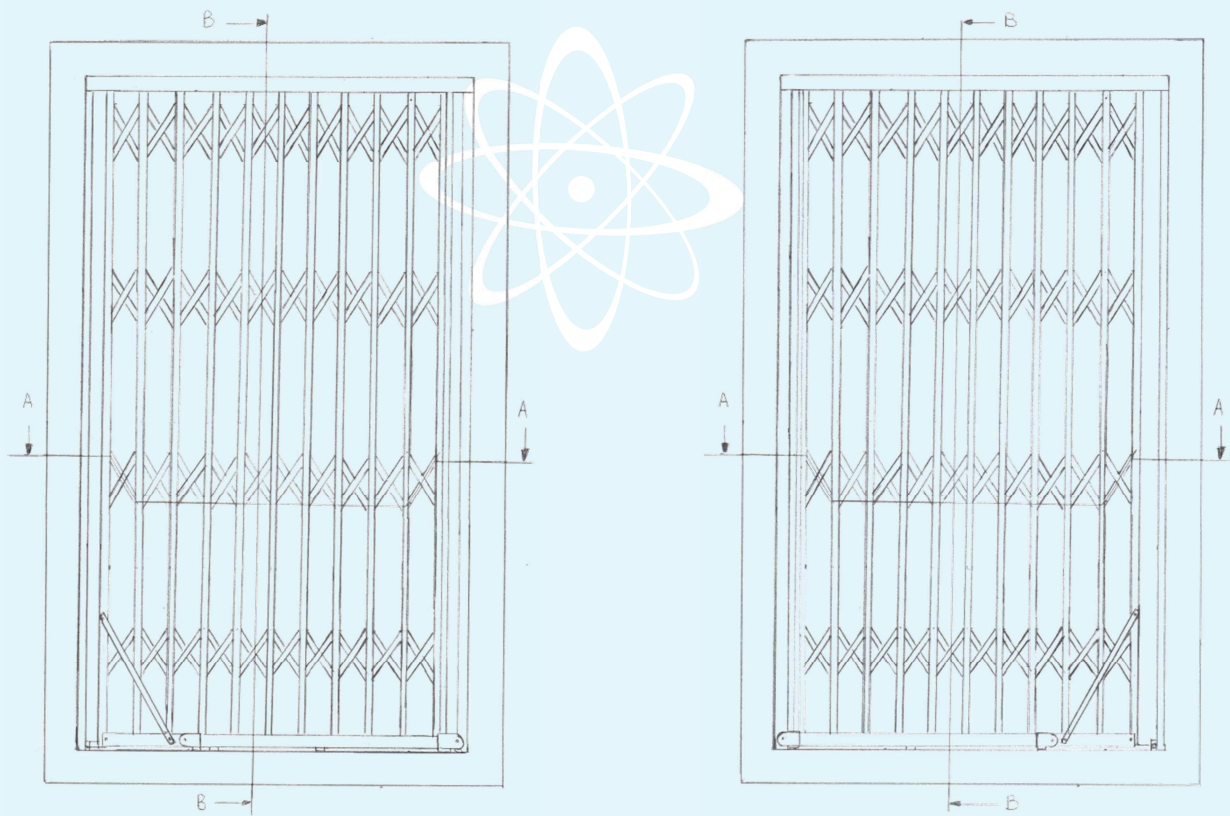
<b>Code</b>	<b>Description</b>	<b>Quantity</b>
11.22	apostate	1
11.23	locking blade	2
11.24	folding shear	80
11.25	support plate	2
11.26	clamp restraint	1
11.27	plastic to centre the lock	1
11.28	plastic rotary joint	2
11.29	hinge A profile	1
11.30	hinge B profile	1
11.31	reinforced beam profile	9
11.32	reinforced beam hing profile	1
11.33	frame hinge profile	1

Code	Description	Quantity
11.34	reinforced beam lock profile	1
11.35	cover frame profile	2
11.36	frame lock profile	1
11.37	guide profile	3
11.40	receptor distance spacer guide	0
11.43	receptor stop guide (double d.)	0
11.44	pin guide / stop guide (double d.)	0
11.45	spacer ring	0
11.49	distance spacer guide	0
11.50	stop guide (down) - (double d.)	0
11.53	regulator hinge	1
11.54	pin regulator hinge	1
11.55	metal plug hinge (down)	1
11.56	metal plug hinge (up)	1
11.71	pin lock	5
11.74	pin $\varnothing 6 \times 37$	47
11.75	pin $\varnothing 6 \times 23,8$	44
11.76	pin $\varnothing 6 \times 9$	36
11.77	plastic plug lock (under / down)	2
11.78	socket screw	6
11.79	plastic guide (pin hinge)	2
11.80	sheet met. flush screw 5,3 $\times$ 32 +	2
11.81	sheet met. rais.-h screw 5,3 $\times$ 32 +	2
11.82	lock	1
11.83	inox spacer ring 6 $\times$ 9,5	1
11.84	plastic closure plug	44
11.85	plastic guide (folding shear)	160
11.86	plastic plug (under / down)	36
11.87	plastic plug holder (guide)	2
11.88	rivet 4 mm	1
11.89	sheet metal flush screw 8 $\times$ 5/8	10
11.90	wood flush screw 6 $\times$ 80	0

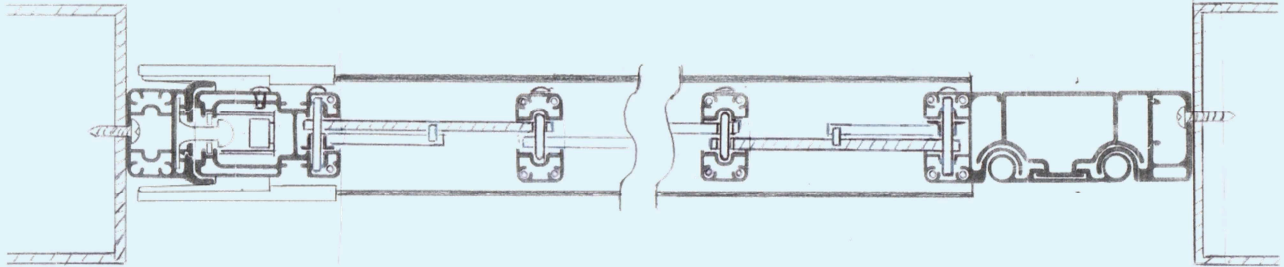
LAB N° 0021

Code	Description	Quantity
11.91	upat 8×80	0
11.92	rivet al 5×16	3
11.93	rivet 5×8	2
11.94	bearing	3
11.95	washer galvanized DIN 9021 no5	3
11.96	metal screw 5,3×20	20

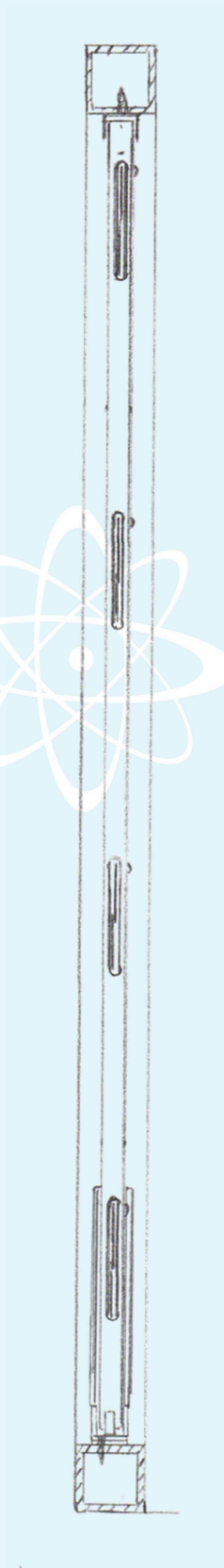
### SAMPLE ELEVATIONS



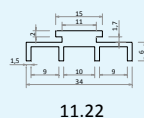
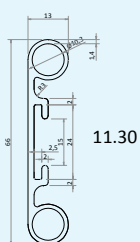
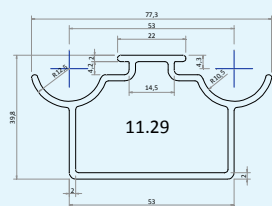
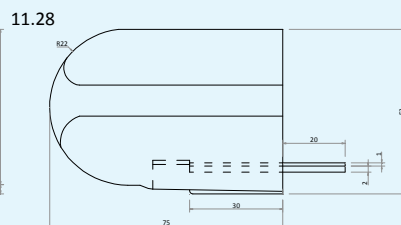
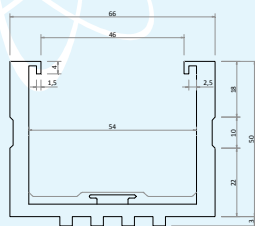
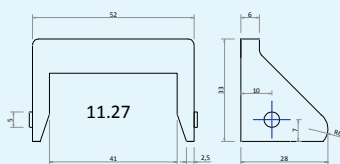
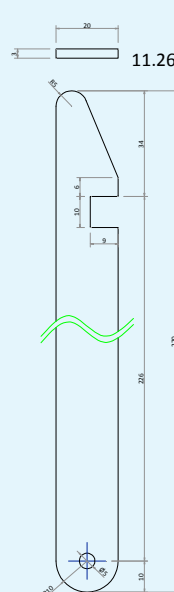
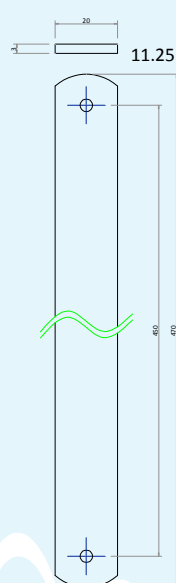
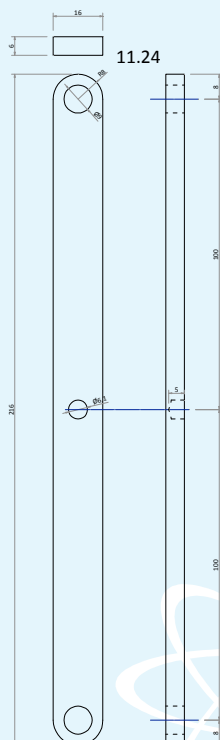
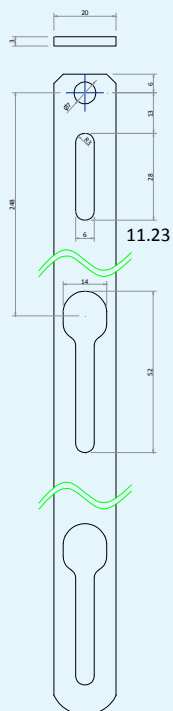
**HORIZONTAL SECTION**



**VERTICAL SECTION**



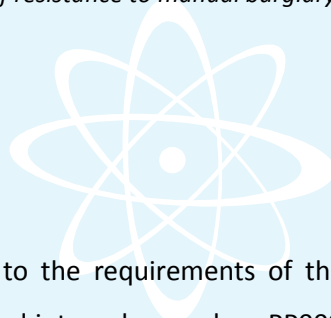
**COMPONENTS**







- UNI EN 1628:2011 dated 16/06/2011 “Porte pedonali, finestre, facciate continue, inferriate e chiusure oscuranti - Resistenza all’effrazione - Metodo di prova per la determinazione della resistenza sotto carico statico” (*Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance under static loading*);
- UNI EN 1629:2011 dated 16/06/2011 “Porte pedonali, finestre, facciate continue, inferriate e chiusure oscuranti - Resistenza all’effrazione - Metodo di prova per la determinazione della resistenza sotto carico dinamico” (*Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance under dynamic loading*);
- UNI EN 1630:2011 dated 16/06/2011 “Porte pedonali, finestre, facciate continue, inferriate e chiusure oscuranti - Resistenza all’effrazione - Metodo di prova per la determinazione della resistenza all’azione manuale di effrazione” (*Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance to manual burglary attempts*).



### **Test method**

The test was performed according to the requirements of the standards mentioned under the heading “Normative References” using detailed internal procedure PP009 review 12 dated 16/11/2011 “Porte, porte pedonali, finestre, facciate continue, inferriate e chiusure oscillanti - Resistenza all’effrazione: Metodi di prova e classificazione” (*Doors, pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance: Test methods and classification*).

### **Check and comparison of documentation provided and sample to be tested**

In accordance with the requirements of standards UNI EN 1627:2011, UNI EN 1628:2011, UNI EN 1629:2011 and UNI EN 1630:2011 was checked the following documentation:

- description of the sample (type of product, characteristics of profiles, materials used and the thickness of the infill or glazing);
- mechanical properties of the materials;
- date of manufacture of the sample;
- declaration about classification of glazing;
- declaration about classification of the hardware;
- side of attack;
- drawings including tolerances and part list;

- installation instructions.

#### **Static load in accordance with standard UNI EN 1628:2011**

The test sample was subjected to a series of static loads for the resistance class 2.

The loads were applied through a pressing device, connected to a pneumatic piston, diameter 250 mm, controlled by motorized reducing valve able to apply the load with a predetermined gradient. The loads were detected by the use of a load cell, scale 25 000 N.

The deformation have been verified through a series of pass/fail templates conforming to paragraph A.10 of standard UNI EN 1628:2011.

The equipment used complies with the requirements of clause 4.8 “Tollerances” of standard UNI EN 1628:2011, therefore compliance with the class is set without regard to the banks by the uncertainty on the value of deformation, in line with paragraph 2.6 help ILAC G8: 03/2009 “Guidelines on the Reporting of Compliance with Specification”.

#### **Dynamic load in accordance with standard UNI EN 1629:2011**

The test sample was subjected to a series of impacts to the resistance class 2 with element of impact of mass 50 kg according to the figure A.29 — Movable grilles: Impact points of standard UNI EN 1629:2011.

#### **Manual burglar test in accordance with standard UNI EN 1630:2011**

The test sample was subjected to a series of preliminary tests for resistance class 2 on the following areas:

- vertical bar;
- cross bar;
- rebate area, vertically, between sash and frame lock side;
- rebate area, vertically, back side between grill and frame.

For the preliminary tests were used set of tools “A1” and “A2”.

Afterwards the sample was subjected to the final test for resistance class 2 with attack to the vertically bar, using the set of tools “A1” and “A2” used during the preliminary tests.

### **Test apparatus**

The tests were carried out using the following equipment:

- burglar resistance test rig (in-house identification code: EDI048) with a loading device (internal equipment identification code: FT481) connected to a load cell of 25 kN with calibration report issued by Istituto Giordano S.p.A.;
- series of load devices (in-house identification codes: EDI074a, EDI074b, EDI074c, EDI074d, EDI074e, EDI074f and EDI074g);
- series of calibrated templates (in-house identification codes: EDI075a, EDI075b, EDI075c and EDI075d);
- series of calibrated templates (in-house identification codes: EDI079a, EDI079b and EDI079c);
- mechanical device for the application of dynamic loads consisting of a special lifting system for adjusting the height completely electromechanical and mechanical system of the position of lateral translation and by impact element (in-house identification code: EDI012);
- metric bar (in-house identification code: FT364);
- digital caliper (in-house identification code: EDI066);
- stopwatch (in-house identification code: FT462);
- thermo-hygrometer (in-house identification code: FT231);
- digital video-camera;
- tools for manual attack test (in-house identification code: FT341), defined on the basis of expected class and shown in the table in the following sheets.

Quantity [n.]	Description	Tool no.
1	Multiple slip joint gripping pliers, maximum length $250 \pm 10$ mm	1.1
1	Screwdriver, total length $260 \pm 20$ mm, shaft diameter of $8 \pm 2$ mm and blade width $10 \pm 1$ mm	1.2
1	Set of small screwdrivers with different blade forms, shaft diameter maximum $6 \pm 2$ mm and total maximum length 250 mm	1.3
//	Hexagonal allen keys, maximum length 120 mm	1.4
//	Spanners, maximum length 180 mm	1.5
1	Engineer pliers, maximum length 200 mm	1.6
1	Tweezer	1.7
1	Knife, maximum length of blade 120 mm, thickness of blade maximum 3 mm	1.8
1	Torch	1.9

Quantity [n.]	Description	Tool no.
	Hooks	1.10
//	Steel wire	1.11
//	Adhesive tape	1.12
//	String	1.13
1	Rubber hammer, shore hardness $90 \pm 10$ shore, head weight $100 \pm 20$ g, total weight $145 \pm 20$ g and length $260 \pm 20$ mm	1.14
1	Universal lock key	1.15
1	Screwdriver, length $365 \pm 25$ mm and blade width $16 \pm 2$ mm	2.1
1	Pipe wrench, length $240 \pm 20$ mm	2.2
2	Plastic wedges, length $200 \pm 25$ mm, width $80 \pm 10$ mm and height $40 \pm 5$ mm	2.3
2	Wood wedges, length $200 \pm 25$ mm, width $80 \pm 10$ mm and height $40 \pm 5$ mm	2.4
1	Compass saw, 2 blades (bimetal or HSS metal cutting), length $310 \pm 25$ mm	2.5
1	Pad saw, 2 blades (bimetal or HSS metal cutting), dimensions $300 \times 13 \times 0,65$ mm	2.6
1	Hacksaw, 2 blades (bimetal or HSS metal cutting), length $330 \pm 25$ mm	2.7
1	Steel extension tube, length 500 mm, diameter 30 mm and maximum thickness 3 mm	2.8

### Test team

The team who carried out the final test was composed of the persons listed in the following table.

Function	Name
Team Leader	Geom. Roberto Porta
Timekeepers	Geom. Roberto Porta / Per. Ind. Alessandro Bonini
Operatives	Per. Ind. Enrico Ugolini
Video operator	Per. Ind. Alessandro Bonini

### Environmental conditions during test

<b>Atmospheric pressure</b>	1013 ÷ 1015 mbar
<b>Ambient temperature</b>	25 ± 3 °C
<b>Relative humidity</b>	45 ± 15 %

### Test results

#### Checking of the documentation supplied and of the test sample

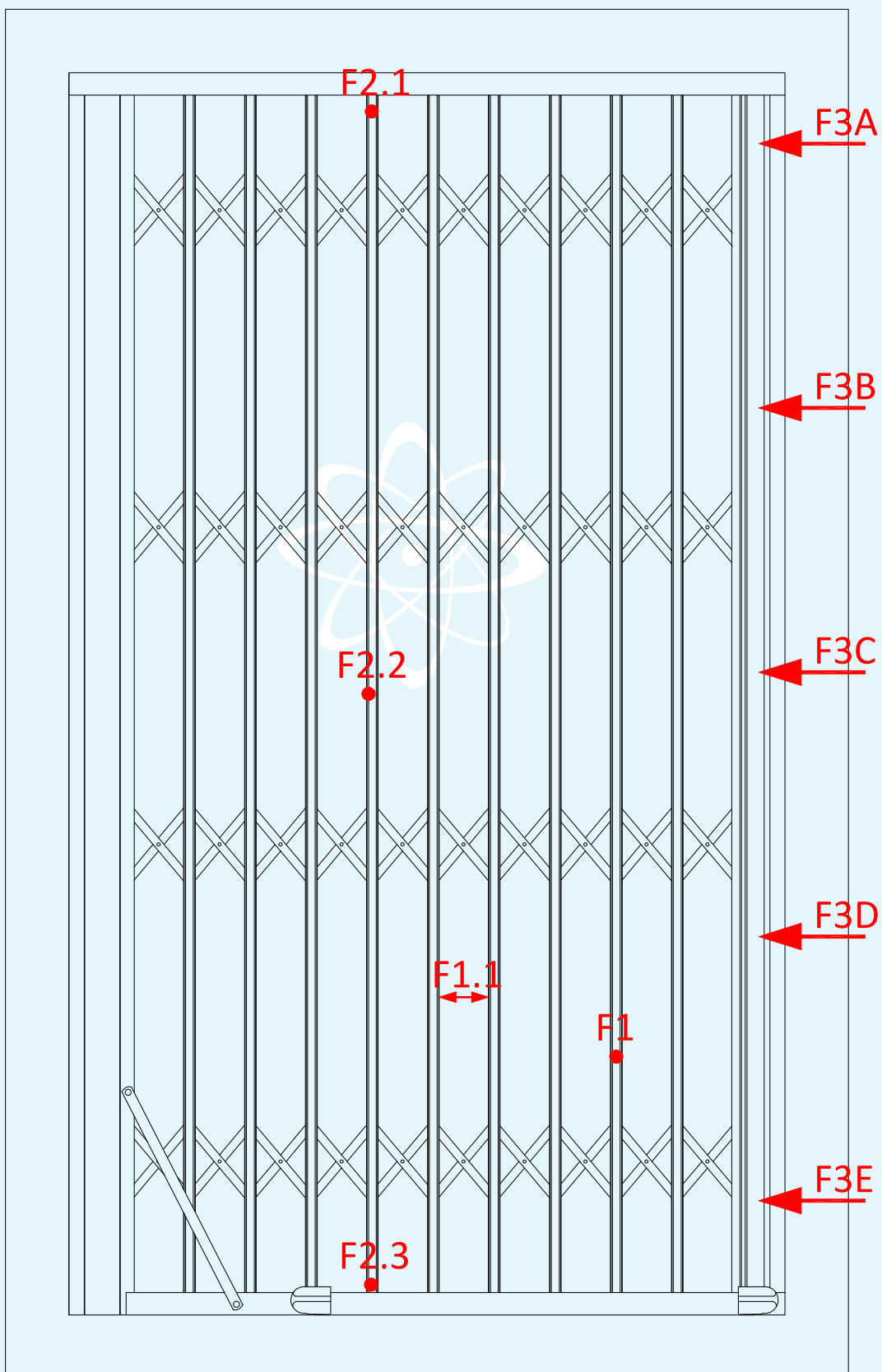
The results of the verifications of the documentation and sample, closed and locked in the closed condition, is shown in the following table.

<b>Document to provide</b>	<b>reference provided</b>	<b>Result</b>
Sample description	document named "DESCRIPTION OF THE SAMPLE T100.doc"	compliant
Material properties	document named "DESCRIPTION OF THE SAMPLE T100.doc" and "ADDITIONAL INFORMATION OF MECHANICAL PARTS OF THE SAMPLE T100.doc"	compliant
Date of production	provided	compliant
Glazing class	not supplied	not suitable
Hardware classification	for multipoint lock "ADDITIONAL INFORMATION OF MECHANICAL PARTS OF THE SAMPLE T100.doc"	compliant
	for the cylinder (EN 1303)	not suitable
	for cylinder protection (EN 1906)	not suitable
Side of the attack	shown on the sample and in the technical documentation	compliant
Construction drawings with dimensional tolerances	Drawings named "DETAILED PLANS LISTED T100.pdf"	compliant
Installation instructions	Documents named "THE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION T100.doc"	compliant

**Static load in accordance with standard UNI EN 1628:2011.**

<b>RC 2 product classifiable in group 4</b>				
<b>Loading point</b>	<b>Load device</b>	<b>Load [kN]</b>	<b>Used template</b>	<b>Result</b>
F1	5	3	D	compliant
F1.1	5	3	D	compliant
F2.1	5	1,5	D	compliant
F2.2	5	1,5	D	compliant
F2.3	1	1,5	D	compliant
F3A	2	3	D	compliant
F3B				compliant
F3C				compliant
F3D				compliant
F3E				compliant

LAYOUT OF LOADING POINTS  
DURING STATIC LOAD TEST



**Dynamic loading in accordance with standard UNI ENV 1629:2011**

<b>RC 2</b>	
<b>Result of test</b>	the sample remains closed with evident deformations

**Manual burglary test (attack from outside) in accordance with standard UNI ENV 1630:2011**

<b>Preliminary tests - RC 2</b>			
<b>Test zone</b>	<b>Operative time</b> [min:s]	<b>Used tools</b>	<b>Attack description</b>
vertical bar	3:00	2.1, 2.2, 2.4	The operator using a couple of screwdrivers and a rubber hammer deforms and disengages the connection between cross bars and vertical bars. At the end of the working time 3 connection are fully removed while 1 is still connected but very damaged.
cross bar	3:00	2.1, 2.2, 2.4	The operator assaults the cross bar with the saw. In the working time he managed to cut 3 bars and remove only one and half cross connection. To open the grill is necessary to remove a minimum of 4 connections
rebate area, vertically, between sash and frame lock side	3:00	2.1, 2.2, 2.4	The operator using a couple of screwdrivers and the rubber hammer attend to put the screwdriver between the fixed frame and the moveable parts of the grill. The particular shape of the connection does not allow this operation with the class 2 tools.
rebate area, vertically, back side between grill and frame	3:00	2.1, 2.2, 2.4	The operator using a couple of screwdrivers and the rubber hammer attend to put the screwdriver between the fixed frame and the first fixed vertical bar of the grill. The particular shape of the connection does not allow this operation with the class 2 tools.



Main test- RC 2				
Test zone	Operative time [min:s]	Gross time [min:s]	Used tools	Attack description
rebate area, vertically, between sash and frame lock side	3:00	5:10	2.1, 2.2, 2.4	The operator using a big screwdriver, the little screwdriver and a rubber hammer deforms and disengages the connection between cross bars and vertical bars. At the end of the working time are 3 connection fully removed while one is still connected but very damaged.

### Classification.

On the basis of the test performed, the results obtained and the provisions of standards UNI EN 1627:2011, UNI EN 1628:2011, UNI EN 1629:2011 and UNI EN 1630:2011, the test sample, consisting of a single-leaf door, called "T 100 - 1350×2350" and submitted by the company VIOMETALOU MIN BOUTSINIS J. - BAFA-LOUKAS J. G.P. - Thesi Patima Aspropyrgos - 19300 ATHENS - Greece, has passed the tests prescribed therein. Therefore, in accordance with standard UNI EN 1627:2011, the sample belong to

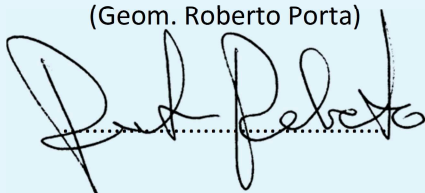
**RC 2\***

The results given refer exclusively to the test sample itself and are only valid under the same conditions in which testing was carried out.

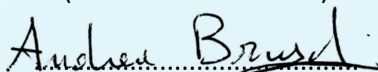
This test report alone shall not be considered a certificate of conformity.

(\*) The classification was determined based on the measured values obtained experimentally, in line with paragraph 2.6 of the guide ILAC G8: 03/2009 "Guidelines on the reporting of compliance with specification".

Test Technician  
(Geom. Roberto Porta)



Head of  
Security and Safety Laboratory  
(Dott. Andrea Bruschi)



Chief Executive Officer  
(Dott. Arch. Sara Lorenza Giordano)

