TEST REPORT

EN 1906
Building hardware –

Lever handles and knob furniture – Requirements and test methods

Report reference No. ..... :	141212054GZU-005
Tested by (name and signature)..... :	Credy Chen
Approved by (name and signature) .. :	Blusea Dong
Date of issue..... :	July 20, 2016
Contents ..... :	Total test report 9 pages including: Report text: 6 pages Appendix A for product photos and drawings: 2 pages Revision Page: 1 page
Testing Laboratory name ..... :	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address..... :	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Testing location..... :	Same as above
Applicant's name..... :	NICKAL S.A.
Address..... :	Chemin Champs Lovats 5, 1400 Yverdon-les-Bains, Switzerland
Test specification	
Standard ..... :	EN 1906:2012
Non-standard test method ..... :	N.A.
Test Report Form No...... :	TTRF EN 1906: 2012 A
TTRF Originator..... :	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Master TTRF..... :	Dated 2015-12
Test item description ..... :	Lever handle
Trademark ..... :	—
Model and/or type reference ..... :	5059.0800/FS; 5058.0800/FS; 5149.0800/FS; 5081.0800/FS; 5075.0800/FS; 5062.0800/FS
Manufacturer..... :	Wellcom International Ltd.
Rating ..... :	3 7 — — 1 4 0 U

Summary of testing

The submitted samples **COMPLIED** with all applicable mechanical clauses of EN 1906:2012 for its classification.

Test item particulars

Classification of installation and use.....: Intend use in public high frequency used doors

Test case verdicts

- test case does not apply to the test object ..... : N/A
- test object does meet the requirement ..... : P (Pass)
- test object does not meet the requirement ..... : F (Fail)

Testing

Date of receipt of test item..... : November 29, 2014, March 07, 2015 and March 23, 2016

Date (s) of performance of tests ..... : December 12, 2014 to June 15, 2016

General remarks

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"(See remark #)" refers to a remark appended to the report.
"(See Appendix #)" refers to an appendix appended to the report.
Throughout this report a comma (point) is used as the decimal separator.

When determining the test result, measurement uncertainty has been considered.

General product information:

6 models of lever handle (listed below), all listed models having the same material and structure, the only difference was the outer shape of handle, the model of 5081.0800/FS was subjected to full test,
See appendix A product photo and drawing for detailed appearance.

Model	Lever Handle Drawing#	Lever Handle Dimension	Material	Base plate	Door thickness range	Spindle size, mm	Type
5059.0800/FS	LNHXGX	Φ20*T1.0	SUS304	TLD236ER-P	35 to 70mm	8*8	Unsprung
5058.0800/FS	LN3XGX	Φ20*T1.0	SUS304	TLD236ER-P	35 to 70mm	8*8	Unsprung
5149.0800/FS	LN235	Φ20*T1.0	SUS304	TLD236ER-P	35 to 70mm	8*8	Unsprung
5081.0800/FS	**LN233**	**Φ20*T1.0**	**SUS304**	**TLD236ER-P**	**35 to 70mm**	8*8	Unsprung
5075.0800/FS	LN202NX	Φ20*T1.0	SUS304	TLD236ER-P	35 to 70mm	8*8	Unsprung
5062.0800/FS	LN201NX	**Φ20*T1.0**	**SUS304**	**TLD236ER-P**	**35 to 70mm**	8*8	Unsprung

Schedule of Components:

See Appendix A –Product Photos and Drawings for component list and raw material information.

Detail “Ratings” information listed as following:

First digit (Category of use): Grade 3 – high frequency of use by public or others with little incentive to exercise care and with a high chance of misuse, e.g. public office doors;;

Second digit (Durability): Grade 7 – medium frequency of use: 200, 000 test cycles;

Third digit (Door mass): No classification;

Fourth digit (Fire resistance): – Not included in this test report;

Fifth digit (Safety): Grade 1 – Safety applications;

Sixth digit (Corrosion resistance): Grade 4 – very high resistance;

Seventh digit (Security): Grade 0 – no performance determined;

Eighth digit (Type of operation): type U – unsprung furniture.

EN 1906			
Clause	Requirement – Test	Result - Remark	Verdict
4	**CLASSIFICATION**		
4.1	Coding system		—
4.1.2	Category of use:	3	—
4.1.3	Durability	7	—
4.1.4	Door mass	—	—
4.1.5	Fire resistance	—	—
4.1.6	Safety	1	—
4.1.7	Corrosion resistance	4	—
4.1.8	Security	0	—
4.1.9	Type of operation	U	—
5	**REQUIREMENTS**		
5.1	General Sets of furniture shall be classified in grades 1 to 4 in regard to performance requirements specified in 5.2 to 5.13.	Refer to Clause 5.2 to 5.13	—
	Materials in products shall not release any dangerous substances in excess of the maximum levels specified in the European material standards.	Informative	—
5.2	Check of spindle and fastening elements The spindle and fastening elements shall be supplied or specified by the manufacturer with every set of lock or latch furniture. The manufacturer shall state clearly the door thickness or range of the door thicknesses for which the furniture is suitable and in the case of spring assisted and spring loaded furniture, the angle of rotation permitted by the design.	Spindle and fastening elements were supplied by manufacturer. Range of door thicknesses: 35 mm to 70 mm.	P
5.3	Rotational torque strength Lock or latch furniture shall show no failure of any component and the lever handles or knobs shall still operate after the test. Lever handles or knobs shall not deform permanently more than 5 mm as measured at 50 mm±2mm from the axis of rotation by the dial gauge. Category of use acceptance criteria:	Rotational torque 40 Nm. Permanent deformation: 2,3 mm	P

Grade	1	2	3	4
Torque (Nm)	20	30	40	50

<table>
<tr><td>5.4</td><td>Axial strength of lock furniture or latch furniture and fixing
There shall be no fail of any component and lever handles or knobs shall still operate after the test. After test the permanent deformation for lever handles or knobs measured at the reference point 75 mm±2mm from the axis of rotation shall not increase by more than 2 mm.
Category of use acceptance criteria:<table><tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>Load (N)</td><td>300</td><td>500</td><td>800</td><td>1000</td></tr></table></td><td>Axial load: 800 N.
Permanent deformation: 0,2 mm</td><td>P</td></tr>
<tr><td>5.5</td><td>Free play and safety</td><td></td><td>—</td></tr>
<tr><td>5.5.1</td><td>Requirement of free play
The maximum total movement measured shall not exceed the limit as below,
Category of use acceptance criteria:<table><tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>Total movement (mm)</td><td>⩽10</td><td>⩽10</td><td>⩽6</td><td>⩽6</td></tr></table>This requirement only applies to lever handles and knobs that will not be driven during the endurance test.</td><td>Maximum movement: 0,5 mm</td><td>P</td></tr>
<tr><td>5.5.2</td><td>Safety requirement
When the lock or latch furniture is fitted to the test block there shall be no sharp edges that can cause injury.</td><td>No sharp edges can cause injury.</td><td>P</td></tr>
<tr><td>5.6</td><td>Free angular movement or misalignment
The free angular movement or misalignment shall not exceed the limit as below,
Category of use acceptance criteria:<table><tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>Total movement (mm)</td><td>⩽10</td><td>⩽10</td><td>⩽5</td><td>⩽5</td></tr></table>This requirement applies to all furniture with either a fixed or floating spindle.</td><td>Maximum movement: 0,5 mm</td><td>P</td></tr>
<tr><td>5.7</td><td>Torque of return mechanism</td><td></td><td>—</td></tr>
<tr><td>5.7.1</td><td>General</td><td>See item 5.7.2 and 5.7.4</td><td>—</td></tr>
</table>

<table>
<tr>
<td>5.7.2</td>
<td>Unsprung and spring-assisted lever handles
Category of use acceptance criteria:

For unsprung lever handles, maximum moment,
<table>
<tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>Operate moment (Nm)</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Return moment (Nm)</td><td colspan="2">⩽0,6</td><td colspan="2">⩽1,5</td></tr>
</table>
For spring assisted lever handles,
<table>
<tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>Operate moment (Nm)</td><td colspan="2">⩽1,5</td><td colspan="2">⩽2,4</td></tr>
<tr><td>Return moment (Nm)</td><td colspan="2">⩽0,6</td><td colspan="2">⩽1,5</td></tr>
<tr><td>Angle of rotation</td><td colspan="4">≥40°</td></tr>
</table>
</td>
<td>Unsprung lever handles:
Return moment: <0,5 Nm</td>
<td>P</td>
</tr>
<tr>
<td>5.7.3</td>
<td>Unsprung knobs
Category of use acceptance criteria:
<table>
<tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>Operate moment (Nm)</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Return moment (Nm)</td><td colspan="4">⩽0,6</td></tr>
</table>
</td>
<td>Unsprung lever handles</td>
<td>N/A</td>
</tr>
<tr>
<td>5.7.4</td>
<td>Spring-loaded lever handles or knobs
The torque required to rotate the lever handles or knobs through a maximum of 60° 0/+5°or through the angle of rotation possible by the design shall meet the specified requirement as below,

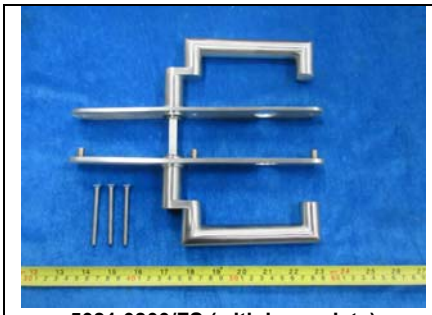
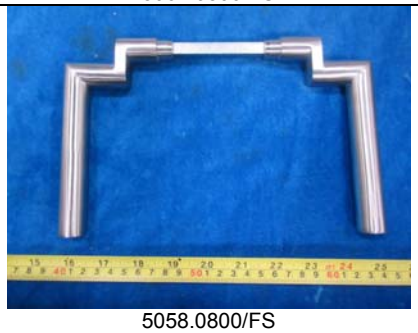
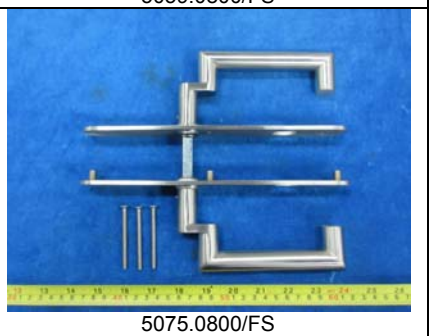
Category of use acceptance criteria:
<table>
<tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>Operate moment (Nm)</td><td colspan="2">⩽1,5</td><td colspan="2">⩽2,4</td></tr>
<tr><td>Return moment (Nm)</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Limited deviations "at rest"</td><td>±4°</td><td>±2°</td><td>±1°</td><td>±1°</td></tr>
</table>
</td>
<td>Unsprung lever handles</td>
<td>N/A</td>
</tr>
<tr>
<td>5.8</td>
<td>Durability of mechanism
There shall be no failure of any component and the lever handle or knob shall still operate after test.
After the test, the "at-rest" position of spring-loaded door furniture when against its stops shall conform to the "at-rest" position recorded before commencing, the detailed requirement specified as below,

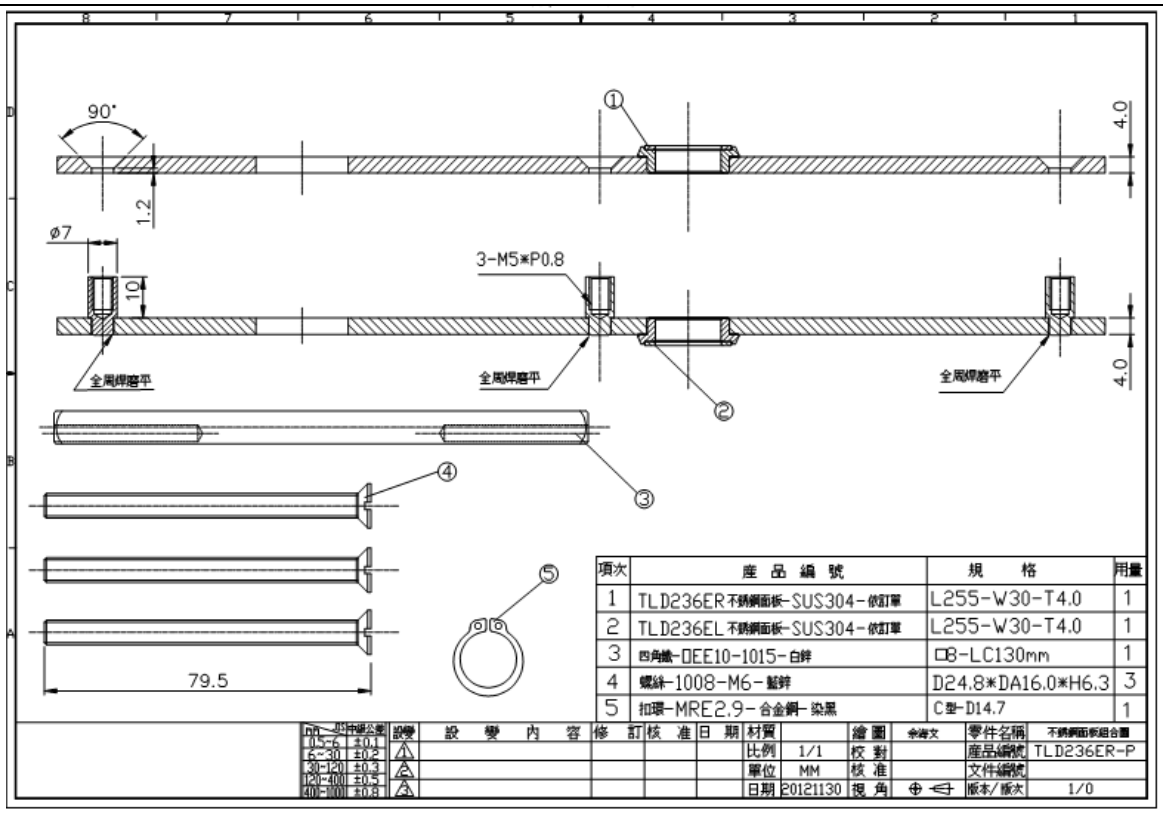
<table>
<tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>Number of cycles</td><td colspan="2">100k</td><td colspan="2">200k</td></tr>
<tr><td>force L (N)</td><td colspan="2">60</td><td colspan="2">100</td></tr>
<tr><td>force P (N)</td><td colspan="2">60</td><td colspan="2">100</td></tr>
<tr><td>Limited deviations "at rest" (except for spring assisted levers)</td><td>±4°</td><td>±2°</td><td>±1°</td><td>±1°</td></tr>
</table>
</td>
<td>200 000 cycles, function correctly
after test;</td>
<td>P</td>
</tr>
</table>

<table>
<tr><td>5.9</td><td>Repeat test of axial strength of lock or latch furniture and methods of fixing
The lock or latch furniture shall meet the requirement of 5.4.</td><td>Axial load: 800 N.
Permanent deformation: 0,4 mm</td><td>P</td></tr>
<tr><td>5.10</td><td>Repeat test of free play measurement
The lock or latch furniture shall meet the requirement of 5.5.1</td><td>Maximum movement: 0,5 mm</td><td>P</td></tr>
<tr><td>5.11</td><td>Repeat test of measurement of free angular movement or misalignment
The lock or latch furniture shall meet the requirement of 5.6.</td><td>Maximum movement: 0,6 mm</td><td>P</td></tr>
<tr><td>5.12</td><td>Repeat test or torque of return mechanism
The lock or latch furniture shall meet the requirement of 5.7.</td><td>Unsprung lever handles:
Return moment: <0,5 Nm</td><td>P</td></tr>
<tr><td>5.13</td><td>Axial strength for safety furniture (optional)
Category of use acceptance criteria:<table><tr><td>Grade</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>Axial load (N)</td><td colspan="2">1500</td><td colspan="2">2500</td></tr></table>After test, there shall be no failure of any component and the furniture shall remain fixed to the test block. The lever handle or knob need not operate after completion of the test.</td><td>Safety application: 2500 N.
Remain fixed to the test block</td><td>P</td></tr>
<tr><td>5.14</td><td>Corrosion resistance
Corrosion resistance shall comply with requirements of EN 1670:1998.</td><td>After 240 hours exposure, no visible corrosion was found on the surface which are visible when fitted in service
Grade 4.
*the fasteners was not evaluated.</td><td>P</td></tr>
<tr><td>8</td><td colspan="2">MARKING</td><td>—</td></tr>
<tr><td>Annex A</td><td>Requirements for security lock furniture for use on burglary resistant doors</td><td>Furniture not approved for use on burglary resistant doors</td><td>N/A</td></tr>
<tr><td>Annex C</td><td>Requirements for lock and latch furniture for use on fire/smoke door assemblies</td><td>Not approved for use on fire/smoke door assemblies</td><td>N/A</td></tr>
</table>

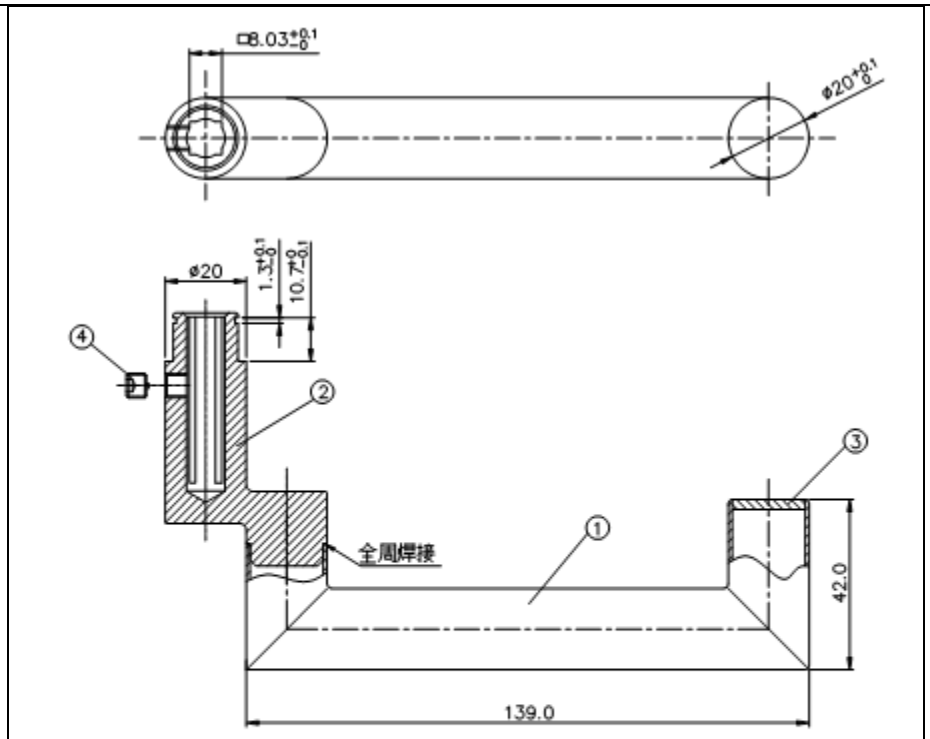
Appendix A

Product Photos and Drawings

 **5081.0800/FS (with base plate)**	 5062.0800/FS	 5059.0800/FS
 5149.0800/FS	 5058.0800/FS	 5075.0800/FS



Base Plate (TLD236ER-P)



項次	品名	規格	用量
1	LN233.2不銹鋼管-SUS304-依 II 單	D20-T1.0mm-L139	1
2	LN233.1 [illegible]-SUS304-依訂單		1
3	LPDNGX.3 [illegible]-JYH21CT-依訂單	D18.2-T2.5mm	1
4	[illegible]-SUS410-M6-P1.0-本色	凸臺-內六角-L6mm	1

客編:5081.0800/FS

材質	SUS304	視角		繪圖	張 二 杰	零件名稱	把手焊接加工圖
比例	1/1	日期	2012.07.19	校對		產品編號	LN233
版本/版次	A/0	單位	M/M	核准		文件編號	DLN233###-0198

5137.0800/FS

**********End of Page**********

Revision Page

Revision No.	Date	Changes	Author	Reviewer
0	July 20, 2016	First issue	Credy Chen	Blusea Dong

**********End of report **********