Technical Report No. 68.210.19.0235.01

Dated 2019-05-24

Client ..... :	Name: Ningbo Oubo Hardware Industrial Ltd. Address: No. 185, Shunyu West Road, Yuyao, 315400 Ningbo, PEOPLE'S REPUBLIC OF CHINA Contact person: Mr./Ms. Henry Zhu
Manufacturing place ..... :	Manufacturer's name: same as client Address: same as client Factory's name: Shenzhen Dobiy Electronic Co., Ltd. Address: 6th Floor, Building B, Qiaode Science Park, Rd7 West of High-tech Park, Guangming, Tianliao Community, Gongming office, Guangming new area Shenzhen, Guangdong, CHINA
Test subject..... :	Product: Laser distance meter Type: LDM-M12, LDM-M12+, LDM-M15, LDM-M15+, LDM-M20, LDM-M20+, LDM-M25, LDM-M25+, LDM-M30, LDM-M30+, LDM-M40, LDM-M40+, LDM-M60, LDM-M60+, LDM-M70, LDM-M70+, LDM-M80, LDM-M80+, LDM-M100, LDM-M100+, LDMeter DA30 Trade mark: DEMASS
Test specification ..... :	Clause 13.4, 13.5, 14.2.4 and 14.3 of IEC 60529:1989+A1:1999+A2:2013
Purpose of examination..... :	• ☐Inspection according to specified requirements to realize the conformity with the Produktsicherheitsgesetz –ProdSG, version Nov 08, 2011 • ☐ inspection according to specified requirements to realize the observance of the protection aims of the following EC directives: ☐ LVD directive 2014/35/EU ☐ EMC directive 2014/30/EU • ☒Test according to the test specification (Safety test)
Test result ..... :	The test results show that the presented products are in compliance with the specified requirement.

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1 Description of the test subject

The distance meter can be used to measure distance, length and height in indoor spaces.

1.1 Function

☒ Manufacturer's specification for intended use: According to user instruction
☒ Manufacturer's specification for predictive misuse: According to user instruction

1.2 Consideration of the foreseeable misuse

☒ Not applicable
☐ Covered through the applied standard
☐ Covered by the following comment
☐ Covered by attached risk analysis

1.3 Technical Data

- Degree of protection	: IP54
- Construction	: Hand-held equipment
- Rated input	: 5VDC, 500mA through USB port or 3.7VDC, 200mA by Built-in rechargeable lithium battery
- Rated output	: -
- Laser class	: Class 2
- Operation mode	: Continuous

2 Order

2.1 Date of Purchase Order, Customer's Reference

2019-04-16

2.2 Receipt of Test Sample, Location

Samples were received on 2019-04-16, E&E Department, Shenzhen

2.3 Date of Testing

From 2019-04-16 to 2019-05-24

2.4 Location of Testing

E&E Department, Shenzhen

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A

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3 Test results

3.1 IP5X test procedure and requirement

13.1 Test means

Test means and the main test conditions are given in table 7.

Table 7 – Test means for the tests for protection against solid foreign objects

5	Dust chamber figure 2, with or without underpressure	–	13.4 + 13.5

13.4 Dust test for first characteristic numerals 5 and 6

The test is made using a dust chamber incorporating the basic principles shown in figure 2 whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 μm and the nominal width of a gap between wires 75 μm. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.

Category 1: Enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air, for example, due to thermal cycling effects.

The object of the test is to draw into the enclosure, by means of depression, a volume of air 80 times the volume of the sample enclosure tested without exceeding the extraction rate of 60 volumes per hour. In no event shall the depression exceed 2 kPa (20 mbar) on the manometer.

Test duration: 8hours.

13.5 Special conditions for first characteristic numeral 5

13.5.1 Test conditions for first characteristic numeral 5

The enclosure shall be deemed category 1 unless the relevant product standard for the equipment specifies that the enclosure is category 2.

3.2 Test result:

Observation after disassembly.

No deposit of dust is observed inside the enclosure and terminal after the test, it complies with IP5X.

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3.3 IPX4 test procedure and requirement

14.1 Test means

The test means and the main test conditions are given in table 8.

4	As for numeral 3 Spray ± 180° from vertical	As for numeral 3	14.2.4

14.2 Test conditions

14.2.4 Test for second characteristic numeral 4 with oscillating tube or spray nozzle

The test is made using one of the two test devices described in figure 4 and in figure 5 in accordance with the relevant product standard.

a) Conditions when using the test device as in figure 4 (oscillating tube):

The oscillating tube has spray holes over the whole 180" of the semicircle. The total flow rate is adjusted as specified in table 9 and is measured with a flow meter.

The tube is caused to oscillate through an angle of almost 360°, 180° on either side of the vertical, the time for one complete oscillation (2 × 360°) being about 12 s.

The duration of the test is 10 min.

If not specified otherwise in the relevant product standard, the support for the enclosure under test is perforated so as to avoid acting as a baffle and the enclosure is sprayed from every direction by oscillating the tube to the limit of its travel in each direction.

b) Conditions when using the test device as in figure 5 (spray nozzle):

The counterbalanced shield is removed from the spray nozzle and the enclosure is sprayed from all practicable directions.

The rate of water flow and the spraying time per unit area are as specified in 14.2.3.

Table 9 – Total water flow rate q_V under IPX3 and IPX4 test conditions – Mean flow rate per hole q_{Vl} = 0,07 l/min

Tube radius *R* mm	Degree IPX3		Degree IPX4	
	Number of open holes *N*[1)]	Total water flow q_V l/min	Number of open holes *N*[1)]	Total water flow q_V l/min
200	8	0,56	12	0,84
400	16	1,1	25	1,8
600	25	1,8	37	2,6
800	33	2,3	50	3,5
1 000	41	2,9	62	4,3
1 200	50	3,5	75	5,3
1 400	58	4,1	87	6,1
1 600	67	4,7	100	7,0

1) Depending on the actual arrangement of the hole centres at the specified distance, the number of open holes *N* may be increased by 1.

14.3 Acceptance conditions

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After testing in accordance with the appropriate requirements of the enclosure shall be inspected for ingress of water.

It is the responsibility of the relevant technical committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test, if any.

In general, if any water has entered, it shall not:

– be sufficient to interfere with the correct operation of the equipment or impair safety;
– deposit on insulation parts where it could lead to tracking along the creepage distances;
– reach live parts or windings not designed to operate when wet;
– accumulate near the cable end or enter the cable if any.

If the enclosure is provided with drain-holes, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment.

For enclosures without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.

3.4 Test result:

Observation after disassembly.

After test, water was not found from internal enclosure/terminal. It complies with IPX4 test.

4 Remark

4.1 All models are identical except for model name and the color of enclosure.

4.2 This report is based on previous positive report 68.210.18.0157.01 to include the following changes and/or additions:

-change the applicant(holder of certificate) to ‘Ningbo Oubo Hardware Industrial Ltd.’.

-change trademark to ‘DEMASS’.

-add one model name: LDMeter DA30.

5 Documentation

APPENDIX 1 – Product photo.

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6 Summary

The test specifications are met.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
TÜV SÜD Group

Tested by: Susan Chen
Susan Chen
Project Handler

Reviewed by: Hmily Wei
Hmily Wei
Designated Reviewer

--- End of Report ---

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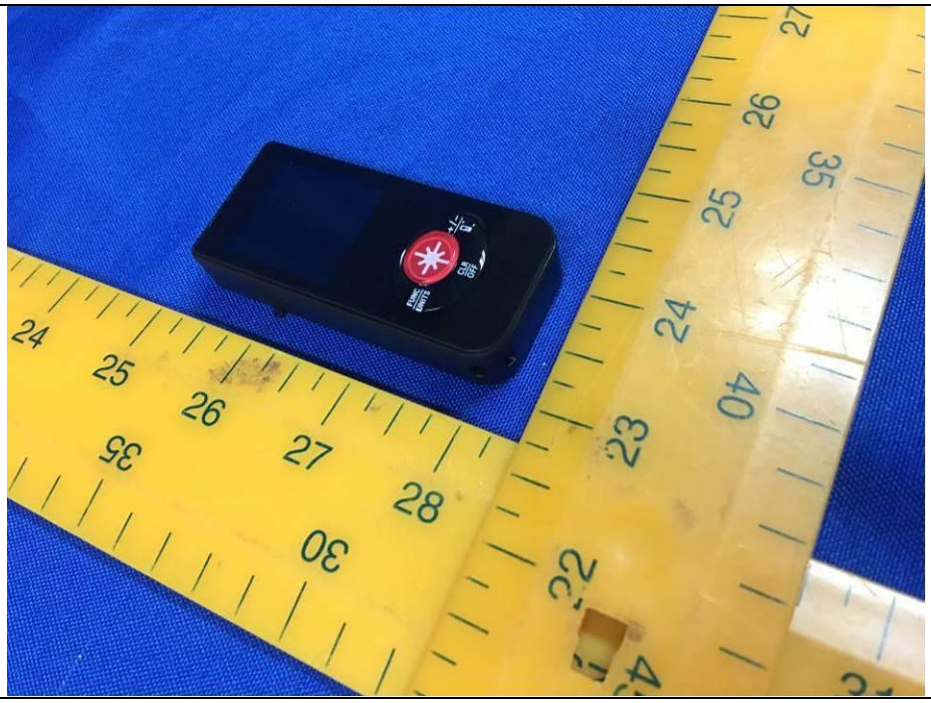
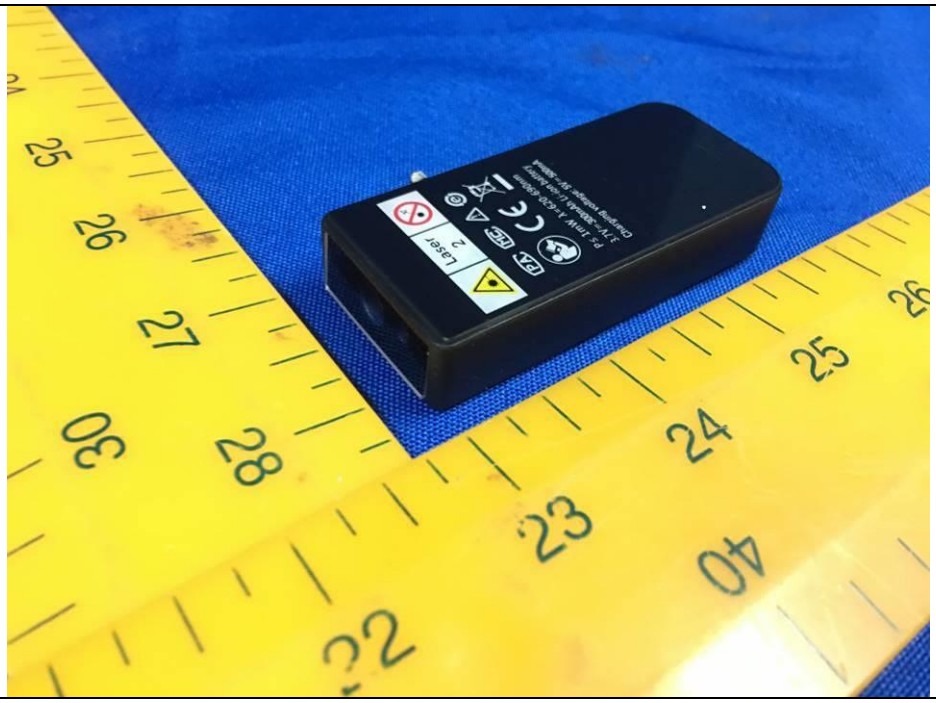
APPENDIX 1

Details of: Product overview 1



Details of: Product overview 2



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Details of: View of product during IP5X test

Details of: Internal view of product after IP5X test

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Details of: View of product during IPX4 test

Details of: Internal view of product after IPX4 test

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