
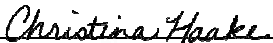





Test Report issued under the responsibility of:
Intertek Testing Services NA, Inc.

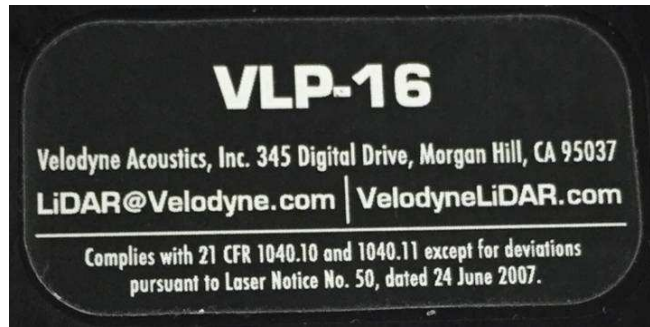
TEST REPORT IEC 60950-1 Information technology equipment – Safety – Part 1: General requirements	
Report Number	102254161MPK-007
Date of issue	2015-11-13
Total number of pages	79
Applicant's name	Velodyne Acoustics, Inc.
Address	345 Digital Drive Morgan Hill, CA 95037 USA
Test specification:	
Standard	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No	IEC60950_1F
Test Report Form(s) Originator	SGS Fimko Ltd
Master TRF	Dated 2014-02
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General disclaimer:	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

Test item description	3D Real Time LiDAR Puck	
Trade Mark		
Manufacturer	Velodyne Acoustics, Inc.	
Model/Type reference	VLP-16	
Ratings	Input: 9-32 V _{DC} , 8W Output: 905 nm, 10mW at 28kHz, 6ns pulse width	
Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	
Testing location/ address	Intertek Testing Services NA, Inc. 1365 Adams Court, Menlo Park, CA 94025 USA	
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address		
Tested by (name + signature)	Christina Haake	
Approved by (name + signature)	Sudhanshu Chawla	
<input type="checkbox"/>	Testing procedure: TMP/CTF Stage 1:	
Testing location/ address		
Tested by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: WMT/CTF Stage 2:	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: SMT/CTF Stage 3 or 4:	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name + signature)		
Approved by (name + signature)		
Supervised by (name + signature)		

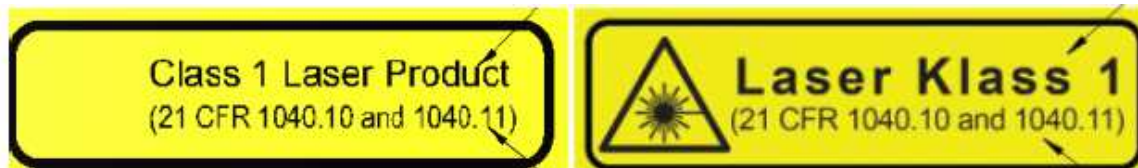
<p>List of Attachments (including a total number of pages in each attachment):</p> <p>1. National Differences (21 Pages)</p> <p>2. Photos (6 Pages)</p> <p>3. Enclosure Drawings (2 Pages)</p> <p>4. IP67 Test Data (5 Pages)</p> <p>5. Component Certificates (4 Pages)</p>	
<p>Summary of testing:</p>	
<p>Tests performed (name of test and test clause):</p> <p>Input Current – 1.6.2</p> <p>Marking Durability – 1.7.11</p> <p>Steady Force Test – 4.2.4</p> <p>Drop Test – 4.2.6</p> <p>Stress Relief Test – 4.2.7</p> <p>Temperature Test – 4.5.2</p> <p>Abnormal Conditions – 5.3</p>	<p>Testing location:</p> <p>Intertek Testing Services NA, Inc.</p> <p>1365 Adams Court, Menlo Park, CA 94025 USA</p>
<p>Summary of compliance with National Differences:</p> <p>List of countries addressed</p> <p>CH, DK, ES, FI, GB, IE, IT, NO, SE, CENELEC group differences</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013</p>	

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBS that own these marks.



Laser Safety Warning Labels:



AC Adapter Label:



Test item particulars.....:	
Equipment mobility.....:	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input checked="" type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains.....:	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input checked="" type="checkbox"/> not directly connected to the mains
Operating condition.....:	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC)	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other: N/A not directly connected to mains
Mains supply tolerance (%) or absolute mains supply values	N/A, not directly connected to mains
Tested for IT power systems	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A)	N/A – not directly connected to mains
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class	Sensor: IP67; Interface box: IPX0
Altitude during operation (m)	2000
Altitude of test laboratory (m)	22
Mass of equipment (kg)	Sensor: 0.6kg; Interface box: 0.12kg

Possible 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 : 2015-08-17
Date (s) of performance of tests : 2015-09-21 to 2015-10-30
General remarks:
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60950-1:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided :

- Yes
- Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) : Velodyne Acoustics, Inc.
 345 Digital Drive
 Morgan Hill, CA 95037 USA

General product information:

Velodyne's Puck (VLP-16) sensor is a compact and advanced Light Detection and Ranging (LiDAR) product. The VLP-16 creates 360° 3D images by using 16 laser/detector pairs mounted in a compact housing. The housing rapidly spins to scan the surrounding environment. The lasers fire thousands of times per second, providing a rich, 3D point cloud in real time. Advanced digital signal processing and waveform analysis provide high accuracy, extended distance sensing, and calibrated reflectivity data. The applications are automotive, Unmanned Aerial Vehicle, Security, Mapping, Robotics and Automation. The sensor is considered for outdoor use while the optional interface box is considered for indoor use only.

Engineering Considerations:

- Manufacturer is responsible for provide product documentation and markings in the appropriate language(s) when the product is shipped to other countries.
- Manufacturer is responsible for any applicable EMC testing when product is shipped to other countries.
- Manufacturer is responsible for compliance with the following when product is shipped to Europe:
 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC and New Directive 2011/65/11.
 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).
- The supply source is required to be a SELV source which is double or reinforced insulated from the AC mains

Abbreviations used in the report:

- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	OP	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

Indicate used abbreviations (if any)