DNV·GL

Certificate No:
TAA00001F0

TYPE EXAMINATION CERTIFICATE

This is to certify:

That the Miscellaneous

with type designation(s)

Issued to

Treo - Labor für Umweltsimulation GmbH
Hamburg, Germany

is found to comply with

Application :

has been found to comply with the requirements for EMC and environmental testing services as required for Type Approval of products according to DNV GL Rules, DNV GL Guidlines and Council Directive 96/98/EC, Marine Equipment Directive, as amended.

The acceptance is based on the laboratory's accreditation according to ISO/IEC 17025:2005. Further details are given overleaf.

Issued at **Hamburg** on **2017-09-28**

This Certificate is valid until **2020-09-27**.
DNV GL local station: **Hamburg**

Approval Engineer: **Andrea Grün**

Digitally Signed By: Rinkel, Marco
for **DNV GL**
Location: Hamburg - On behalf of

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Examination Certificate and not to the approval of equipment/systems installed.

Scope of recognition

The following tests are in accordance to the Class Guidelines DNVGL-CG-0339 Environmental test specification for electrical, electronic and programmable equipment and systems, Edition November 2016 and according to the following standards:

- Sec. 3 No. 4 Power supply failure
- Sec. 3 No. 5 Power supply variations
- Sec. 3 No. 6 Vibration: Sweep sine Test acc. to IEC 60068-2-6 and Wide band random test acc. to IEC 60068-2-64, Test Fh
- Sec. 3 No. 7 Dry heat: IEC 60068-2-2, Tests Bb and Bd
- Sec. 3 No. 8 Damp Heat Test CLASS A – Static (Non-condensation) acc. to IEC 60068-2-3 Test Ca and CLASS B – Cyclic (Condensation) acc. to IEC 60068-2-30, Test Db
- Sec. 3 No. 9 Cold (IEC 60068-2-1 Ab and Ad)
- Sec. 3 No. 10 Salt mist (Basis: IEC publication 60068-2-52)
- Sec. 3 No. 11 Inclination Test
- Sec. 3 No. 12 Insulation Resistance Test as initial test
- Sec. 3 No. 13 High voltage
- Sec. 3 No. 14.4 Conducted Low Frequency Test
- Sec. 3 No. 14.5 Electrical Fast Transient/Burst Immunity Test acc. to IEC 61000-4-4
- Sec. 3 No. 14.6 Electrical Slow Transient/Surge Immunity Test acc. to IEC 61000-4-5
- Sec. 3 No. 14.7 Conducted Radio Frequency Immunity Test acc. to IEC 61000-4-6
- Sec. 3 No. 14.8 Radiated Electromagnetic Field Immunity Test acc. to IEC 61000-4-3
- Sec. 3 No. 14.9 Electrostatic Discharge Immunity Test acc. to IEC 61000-4-2
- Sec. 3 No. 14.11 Radiated Emission Test acc. to CISPR 16-1, 16-2
- Sec. 3 No. 14.12 Conducted Emission Test acc. to CISPR 16-1, 16-2
- Sec. 3 No. 15.1 Compass safe distance tests
- Sec. 3 No. 15.2 Acoustic noise and alarm signal levels for equipment installed on the bridge
- Sec. 3 No. 16.1 Flame-retardant test
- Sec. 3 No. 16.2 Ice test
- Sec. 3 No. 16.3 High temperature test
- Sec. 3 No. 16.4 Temperature shock test
- Sec. 3 No. 16.5 Low pressure test
- Sec. 3 No. 16.6 High pressure test
- Sec. 3 No. 16.7 Mechanical shock test

Additional: Tests for Degree of Protection

EMC testing:

- EN 60945, Maritime navigation and radio communication equipment and systems, Methods of testing and required test results. EMC testing according to clause 7, 9 & 10 of the standard.

Environmental testing:

- EN 60945, Maritime navigation and radiocommunication equipment and systems. Methods of testing and required test results. Testing according to clause 7, 8, 11 & 12 of the standard. Corresponding to IEC 60945.

Application/Limitation

The acceptance is based on the laboratory's accreditation according to ISO/IEC 17025:2005. Further details are given overleaf.

Treo - Labor für Umweltsimulation GmbH shall at all times comply with the conditions set out in the agreement and maintain the accreditation status for the scope defined above. Change in the accreditation scope may render this statement invalid.

Documentation

- Assessment of the Laboratory dated 10.06.2017
- Accreditation certificate D-PL-11203-01-02 dated 22.05.2017 valid until 29.06.2019
- Accreditation certificate D-PL-11203-01-01 dated 11.09.2015 valid until 29.06.2019

Certificate Retention Survey

The scope of the renewal assessment is to verify that the quality conditions stipulated for the recognition are complied with and that no alterations are made to the relevant processes without appraisal by the Society.

A renewal assessment will be performed at renewal of the certificate.

END OF STATEMENT