

TYPE EXAMINATION CERTIFICATE

This is to certify:

That the Bridge Monitor

with type designation(s)
Wave series monitors

Issued to

North Invent Norway A/S
Haugesund, Norway

is found to comply with

MSC.191(79) Performance standards for presentation of navigation-related information on shipborne navigational displays

IMO Res. A.694(17) General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids

Application :

See page 2.

Issued at **Høvik** on **2016-10-17**

for **DNV GL**

This Certificate is valid until **2020-06-30**.

DNV GL local station: **Haugesund**

Approval Engineer: **Frederik Tore Elter**

Jan Tore Grimsrud
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.

Product description

North Invent Wave series monitors intended for use on various applications on Navigation Bridge.

Monitors:

Type	Description	Power supply	Resolution (pixles)	ECDIS Compliant
WA190-01.MON.01-xxxx	Wave 19" monitor	90-264VAC and/or 19-36 VDC	1280 x 1024	Yes
WA240-01.MON.01-xxxx	Wave 24" monitor	90-264VAC and/or 19-36 VDC	1920 x 1080	Yes
WA270-01.MON.01-xxxx	Wave 27" monitor	90-264VAC and/or 19-36 VDC	1920 x 1080	Yes
WA460-01.MON.01-xxxx	Wave 46" monitor	90-264VAC and/or 19-36 VDC	1920 x 1080	Yes
WA190-01.HIN.01-xxxx	Wave 19" hinge (stand)	90-264VAC and/or 19-36 VDC	1280 x 1024	Yes
WA240-01.HIN.01-xxxx	Wave 24" hinge (stand)	90-264VAC and/or 19-36 VDC	1920 x 1080	Yes
WA270-01.HIN.01-xxxx	Wave 27" hinge (stand)	90-264VAC and/or 19-36 VDC	1920 x 1080	Yes
WA215-01.MON.01-xxxx	Wave 21,5" monitor	90-264VAC and/or 19-36 VDC	1920 x 1080	No
WA215-01.HIN.01-xxxx	Wave 21,5" hinge (stand)	90-264VAC and/or 19-36 VDC	1920 x 1080	No

Operator panels :

Type	Description
WA-01.HMI.01-xxxx	Wave HMI for hinge (stand)
WA-01.HMI.02-xxxx	Wave HMI for panel mounting

Application/Limitation

- Installation to be according to manufacturer's documentation.
- Monitors marked as ECDIS compliant are calibrated for ECDIS by the maker, if installed according to manufacturer's documentation.
- Monitors are found to be in accordance with relevant parts of IEC 62388.
- Monitors may be installed without the Wave HMI panel, provided that required monitor functions are made available for the operator by utilizing the serial line or DDC protocol.

Type Examination documentation

DNVGL No	Drawing No	Rev.	Title
48	DELTA-L102798-4832		Report DELTA: WA460 ECDIS Test report for discrimination in chrominance
47	DELTA -L102798-4785		Report DELTA: WA460 Monitor Test report for homogeneity and contrast
44	DELTA-L102798-4780		Report DELTA: WA460 Test of flicker from a 46 inch monitor for use as ECDIS monitor
37			Report: Wave viewing angle and active area
34		1.0	Wave XL460 Monitor - User Manual

Job Id: **262.1-017859-2**
Certificate No: **TAA00000S1**

DNVGL No	Drawing No	Rev.	Title
33	259507/Vi01	1	Report: NEMKO Test Report Color Verification ECDIS WA270
30	4P02292	1	Type approval testing of 46" Monitor (IEC60945)
28		1	User Manual WA 190, 215, 240, 270
24	BSH_46162_0071113_09	1	Report: BSH 23,1" monitor
23	NI/0003/rev1.0/2014	1	Report: Conformance test report 19, 24 and 27"
21	DELTA-T207236-2	2	Report: IEC 60945 DANAK 1914469 - North Invent - 19"
20	DELTA-L102733-4326	1	Report: Test of flicker from a 27" wide screen monitor for use as ECDIS monitor
17	DELTA-L102733-4323	1	Report: Test of flicker from a 24" wide screen monitor for use as ECDIS monitor
16	DELTA-L102733-4322	1	Report: Calibration of FPD for use as ECDIS monitor with VGA (24 inch monitor)
15	DELTA-L102733-4321	1	Report: Calibration of FPD for use as ECDIS monitor with DVI (24 inch monitor)
14	DELTA-L102692-4207	1	Report: Calibration of FPD for use as ECDIS monitor with VGA (19 inch monitor)
13	DELTA-L102692-4206	1	Report: Calibration of FPD for use as ECDIS monitor with DVI (19 inch monitor)
12	DELTA-L102692-4176	1	Report: Test of flicker from a 19 inch monitor for use as ECDIS
10	DELTA-L102733-4326	1	Report: Delta Test Report - Test of flicker from a 27"wide screen monitor for use as ECDIS monitor
9	DELTA-L102733-4325	1	Report: Delta Test Report - calibration of FPD for use as ECDIS 27" monitor with VGA connection
8	DELTA-L102733-4324	1	Report: Delta Test Report - calibration of FPD for use as ECDIS 27" monitor with DVI connection
6	DELTA-T207236-1	1	Report: Delta Test Report IEC60945, 21,5- 24- 27-monitor

Tests carried out

- Enviromantal testing: IEC 60945 (2002), including IACS E10
- Performance testing: Relevant parts of IEC 62288 (2014)
- Color calibration testing: Relevant parts of IEC 61174 (2008)

Marking of product

The Manufacturer and Type Designation to be applied to the equipment in a clearly visible location. In addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

Certificate Retention Survey

A retention survey is to be performed at least once a year, and upon renewal of this certificate. The scope of the retention/ renewal survey is to verify that the production quality conditions stipulated for the type approval are complied with and that no alterations have been made to the product design or its components and/or materials without appraisal by the Society.