

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2014/93/EU, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom of Norway.

This is to certify:

That the Radar equipment CAT 1C

with type designation(s)
Navi-Radar 4000, Navi-Radar 4000 MFD

Issued to
Transas Marine Limited
Cork, Ireland

is found to comply with the requirements in the following Regulations/Standards:
Annex A.1, item No. A.1/4.38 and Annex B, Module B in the Directive. SOLAS 74 as amended, Regulation X/3, IMO Res A.278(VIII), A.694(17) & A.820(19), IMO Res MSC. 191(79) & 192(79), ITU-R M.1177-4 (04/11)

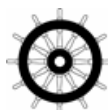
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2021-01-31**.

Issued at **Høvik** on **2016-02-01**

DNV GL local station:
Gothenburg

Approval Engineer:
Steinar Kristensen



Notified Body
No.: **0575**

for **DNV GL AS**

Vidar Dolonen
Head of Notified Body

Job Id: **344.1-003567-5**
Certificate No: **MEDB00000KZ**

Product description

Navi-Radar 4000 / Navi-Radar 4000 MFD systems consisting of the following units:

Unit	Location
- Main Processing Unit	Protected
- Operating and control unit	Protected
- Display unit	Protected
- Transceiver unit	Exposed
- Scanner unit	Exposed

Except transceiver units below, all hardware modules are described in detail as hardware profile **HW2** in Transas Hardware certificate. See Type Examination documentation for reference to certificate.

Software version. 3.00.xxx

Operating system: Windows XP, Windows 7

Northrup Grumman Sperry Marine (NGSM) transceivers and antennas:

Component	Name/model		Notes
X-band Transceivers and turning units	NGSM 10 kW, X-band up-mast or	65810 xAy or 65910 xAy	x= W or N y= P or R
	NGSM 25 kW, X-band up-mast	65810 xAy or 65910 xAy	
X-band Transceivers	NGSM 10 kW, X-band down-mast	65810 x	x= E or F or H
	NGSM 25 kW, X-band down-mast	65825 x	x= E or F or H
X-band Turning Units	NGSM X-band, turning unit, down-mast	65801 xAy or 65901 xAy	x= B or C y= P or R
S-band Transceivers and turning units	NGSM 30 kW, S-band, up-mast	65830MxR or 65830NxR	x = E or F or G or H or J or K or L or M or P or Q or R or S
S-band Transceivers	NGSM 30 kW, S-band, down-mast	65831 x	X= A or B
S-band turning units	NGSM 30kW, S-band, down-mast	65830xyR	x= B or C y = E or F or G or H or J or K or L or M or P or Q or R or S
S-band Scanner control unit:	NGSM, S-band Scanner controller unit	65837 Ax	x = B or C or E or H
Antennae units	NGSM X-band 6 ft array or	65606A	
	NGSM X-band 8 ft array	65608A	
	NGSM S-band 12 ft array	65612A	

Application/Limitation

- The scope of approval recognise the integration of positional data from EPFS, the integration and display of AIS information and the display of selected parts of Electronic Navigational Charts.
- The equipment is to be installed in compliance with the installation guide referred to in the appendix.
- The 2 x RJ45 LAN interfaces of the Main Processing Unit may only be used for interconnecting other TRANSAS Main Processing Units.
- Additional MFD functions for Navi-Radar 4000 MFD (functions tested in a MFD environment and found not to interfere with the Radar functions):
 - The Navi-Sailor 4000 ECDIS MFD, Navi-Sailor 4100 ECDIS MFD and AlphaChart-T
 - Transas Wave application
 - Firewall & Antivirus Protector
 - Remote Service Functionality
 - BNWAS 5000 (Bridge Navigational Watch Alarm System)
 - BAM 5000 (Bridge Alert Management)
 - Navi-Conning 4000 / Navi-conning 5000

Note: The AIS user interface of the ECDIS may satisfy the NAUT-class requirement for remote AIS MKD.

Tests carried out

- Performance testing: IEC 62388 (2013)
- Environmental testing IEC 60945 (2002)
- Serial interface testing IEC 61162-1 (2010) and 61162-2 (1998)
- Presentation of information: IEC 62288 (2014)

Note:

- Interconnection with VDR is tested in accordance with IEC61996-1(2013) annex E, and Ethernet interconnection IEC 61162 - 450 (2011)

Type Examination documentation

DNV GL No	Doc Ref.	Rev.	Description
61	QinetiQ/D&TS/SES/TC0609653	1.0	Certificate: QinetiQ, S-band EMC 2GHz Test Certificate
103		3.00.340	Manual: Transas, MFD Additional Functions
104		3.00.340	Manual: Transas, MFD Functional Description
101		3.00.340	Manual: Transas, MFD Installation Guide Part I
102		3.00.340	Manual: Transas, MFD Installation Guide Part II
107		3.00.340	Manual: Transas, MFD RADAR Quick Guide
105		3.00.340	Manual: Transas, MFD RADAR Quick Reference
106		3.00.340	Manual: Transas, MFD RADAR User Manual
73	20307	0	Report: Applica, Performance testing of X- and S-band radar systems
29	BSH/4312/4340336/08	2008-02-12	Report: BSH, Conformance test of Chart Radar -TRANSAS NaviRadar 4000
28	BSH/4312/4340336/08	2008-02-11	Report: BSH, Conformance test of TRANSAS NaviRadar 4000
30	BSH/4612/4340336/08	2008-02-21	Report: BSH, Conformance test of TRANSAS NaviRadar 4000 - AIS on Radar
31	BSH/4612/4340336/08	2008-02-20	Report: BSH, Conformance test of TRANSAS NaviRadar 4000 - ARPA
63	DERA/SS/CI/R/TT-20/98	1.1 (1999)	Report: DERA, Type Testing of Bridgemaster E-series (X-band) radar equipment

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DNV GL No	Doc Ref.	Rev.	Description
65	DERA/SS/WI/R/TT-22/97	1.0 (1998)	Report: DERA, Type Testing of Bridgemaster E-series (X-band) radar system
64	DERA/SS/WI/R/TT-12/97	1.0 (1997)	Report: DERA, Type testing of Bridgemaster II series S-band
79	5042/9A8	1992-04-16	Report: ERA Technology, EMC test report for marine radar system
2	QinetiQ/MS/EES/TS TR0900738/2	2009-04-30	Report: QinetiQ, Performance Compliance Testing - NAVI-RADAR MFD 4000
16	QINETIQ/MS/EES/C R1002282/2	2010-09-28	Report: QinetiQ, Performance test report High and Standard speed radar
76	QinetiQ/S&E/SPS/M ATS/R/TT 20/02	1.0	Report: QinetiQ, Report on selected EMC Type Tesing
75	QinetiQ/MS/EES/TS TR0801808/1	1.0	Report: QinetiQ, Testing of NGSM X-band turning unit to selected clauses of EN 60945
71	QINETIQ/FST/CMT/CR01225	2001-10-24	Report: QinetiQ, Unwanted emissions S-band, Litton Marine Navigation Radar
72	QINETIQ/FST/CMT/TR022173	2002-03-21	Report: QinetiQ, Unwanted emissions X-band, Litton Marine Navigation Radar
78	65604-6-8A		Report: Racal Marine Electronics Ltd, Environmental test report for X-Band Antennae
60	OObEvidenceFor62388Ed2-2	2014-02-13	Report: Sperry Marine, Assessment of spectral compliance with IEC62388 Ed 2.0
108			Report: Transas, Test Report NaviRadar 4000 MFD, Additional testing according IEC 62288-2014
74			Report: Transas, Performance test report for IEC 62388 Ed.2.0
40	IEC 61162-1	1	Report: Transas, Test report IEC61162-1 (2010)
62	75920230	01	Report: TÜV, Shock testing of X-band and S-band Masthead Turning Units

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.