



TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB00000FC
Revision No:
0

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

This is to certify:

That the Radar equipment

with type designation(s)
FAR-1518(-BB)/FAR-1528(-BB)

Issued to

Furuno Electric Co., Ltd.
Nishinomiya, Japan

is found to comply with the requirements in the following Regulations/Standards:

Regulation **MSN 1874 Amendment 6,**

item No. UK/4.64 SOLAS 74 as amended, Reg. V/18, 19, X/3, IMO Res. MSC.36(63)-(1994 HSC Code) 13, IMO Res. MSC.97(73)-(2000 HSC Code) 13, IMO Res. A.278 (VIII), A.694(17), MSC.191(79), 192(79), 302(87), IMO MSC.1/Circ.1349, ITU-R M.1177-4 (04/11)

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

This Certificate is valid until **2026-08-17**.

Issued at **London** on **2022-12-28**

DNV local unit:
Kobe



for **DNV UK Ltd.**

Approval Engineer:
Frederik Tore Elter

Approved Body No.: **0097**

Christine Mydlak-Röder
MER Service Responsible



**Maritime &
Coastguard
Agency**

UK Approved Body Authorised
by the MCA

The Mark of Conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. The product liability rests with the manufacturer or his representative in accordance with the Merchant Shipping (Marine Equipment) Regulations 2016.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV UK Ltd. of any changes to the approved equipment. Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply. This certificate remains valid unless suspended, withdrawn, re-called, or cancelled.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: MER 201.GBR

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Product description

The radars FAR-1518/1518-BB, FAR-1528/1528-BB consist of the following units:

Unit	Location
Main processing unit	Protected
Display unit	Protected
Operation Panel /control unit(s)	Protected
Antenna unit	Exposed

For details, see Appendix.

Application/Limitation

- The FAR-15x8(-BB) radar is found to be in compliance with the standards RADAR for ships; CAT 2 and CAT 3 (reliant on the monitor installed, ref. Appendix).
- The FAR-15x8(-BB) radar is found to be in compliance with the standards for high-speed craft RADAR CAT 2H.
- The FAR-15x8(-BB) radar shall be installed and tested onboard in accordance with the Installation Manual IME-36380-F12 (or later version).

Type Examination documentation

- See Appendix.

Tests carried out

- IEC 62388 (2013)
- IEC 61162-1 (2016)
- IEC 61162-2 (1998)
- IEC 62288 (2014)
- IEC 60945 (2002) incl. Corr. 1 (2008)
- IEC 62923-1 (2018) and IEC 62923-2 (2018)

Marking of product

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

APPENDIX

Product description

The Radar FAR-1518/FAR-1518-BB/FAR-1528/FAR-1528-BB comprises combinations of the following units:

Unit	Model Name	Components	Remark
Processing Unit	RPU-024		
Data Interfaces	(embedded)	2 ports	IEC 61162-2/IEC 61162-1
	(embedded)	4 ports	IEC 61162-1
	RGB output	1 port	To VDR
Monitor unit(s) (CAT2 & CAT3)	MU-190 or JH 19T14 FUD-xx1-xxxx ¹⁾ or JH 19T14 MMD-MA1-AABA ¹⁾ or JH 20T17 FUD-xx1-xxxx ¹⁾ or HD 19T22 FUD-MA1-xxxx ¹⁾ or		¹⁾ DVI Connection
Optional monitor units(s) (CAT3)	MU-150HD or MU-152 or HD 15T22 FUD-MA1-xxxx ¹⁾ or JH 15T17 FUD-xx1-xxxx ¹⁾		
Control unit Trackball control unit ²⁾	RCU-028 RCU-030 ²⁾		²⁾ Option
Antenna unit	12 kW	XN12AF-RSB-120-100 XN12AF-RSB-121-100 ³⁾ XN20AF-RSB-120-100 XN20AF-RSB-121-100 ³⁾	(Scanner/Gear/- Transceiver)
	25 kW	XN20AF-RSB-120-101 XN20AF-RSB-121-101 ³⁾ XN24AF-RSB-120-101 XN24AF-RSB-121-101 ³⁾	
			³⁾ Applicable for HSC (48 rpm)
Performance monitor	PM-32A		
Switching HUB	HUB-100		Option
Software versions	0359296-01.xx (PM)	Antenna unit	
	0359344-02.xx(SPU)	Processor unit	
	0359348-01.xx(KEY)	Control unit	
	1.xx	Display unit	

Type Examination documentation

DNV No.	Document ID	Rev.	Description
102 ⁴⁾	LIC 12-17-074		MU-152 IEC62288 -CSD report
101 ⁴⁾	LIC 12-17-073		MU-152 IEC62288 -test report
100 ⁴⁾	LIC 12-17-072		MU-152 IEC60945 others -test report
99 ⁴⁾	LIC 12-17-071		MU-152 IEC60945 test report
98 ⁴⁾	LIC 12-17-070		MU-152 EMC test report
83 ⁴⁾	Applica 21122	0	HD19T22 MMD-MA1-FOGA-ES: EMC radiated emission
82 ⁴⁾	Applica 21089	0	HD19T22 MMD-MA1 -EMC-FAGP-ES: EMC testing
81 ⁴⁾	170421001T		HD19T22 MMD-MA1 -EMC-FAGP-ES: EMC & environmental testing
80 ⁴⁾	170703002T		HD19T22 MMD-MA1 -EMC-FHGA-ES-1: EMC & environmental testing
142	DOC206446-1	Revision 01	Report: Hatteland, IEC62288 flicker test report_HD 15T22 MMD

DNV No.	Document ID	Rev.	Description
140	DOC208880-1	Revision 01	Report: Hatteland, IEC62288 Ed. 2.0 Display Test JH 15T17 FUD-MR1-AOAA
139	DOC208044-1	Revision 01	Report: Hatteland, IEC 62288: Minimum brightness test of PCA200865-1 keypad
137	INB10036-4	Rev 00_01	Manual: User Manual Series 1 G2 - Maritime Multi Display Models
136	K03-17-3209	17. SEP 2021	Report: Internal test report of marine radar Hatteland Monitor
135	MRA0000016	Rev. 3	Certificate: IEC 60945 Monitors
134	MRA0000006	Rev. 4	Certificate: IEC 60945 Monitors
133	MRA0000003	Rev 1	Certificate: IEC 60945 Monitors
132	DOC208568-1	Rev 1	Statement: JH 20T17 FUD-xR4-xxxx ECDIS Compliance Statement
131	DOC208098-1	Rev 1	Statement: JH 19T14 FUD-xR4-xxxx ECDIS Compliance Statement
130	DOC208098-1	Rev 1	Report: Conformance test report JH 19T14 MMD-AR4-AOBC
129	DOC208089-1	Rev 1	Report: IEC 62288 Hatteland: Conformance test report JH 20T17 MMD-MR4-AABA
128	DOC208088-1	Rev 1	Report: IEC62288 Hatteland: Flicker test report JH 20T17 MMD-MR4-AABA
127	DOC208044-1	Rev 1	Report: IEC 62288 Hatteland: Minimum brightness test of PCA200865-1 keypad
126	DOC206735-1	Rev 1	Statement: HD 19T22 FUD - ECDIS Compliance statement
125	DOC206405-1	Rev 1	Report: IEC 62288 Hatteland: Conformance Test Report of LCD for use in RADAR and ECDIS 19T22 MMD-MA1-FOGP_HTB30-DVI-D_R02_SIGNED
124	DOC206081-1	Rev 03	Report: IEC 62288 Hatteland: Flicker test report HD 19T22 MMD
123	DOC205958-1	Rev 5	Report: IEC 62288 Hatteland: Minimum brightness test of GDCX
92	OME-36380-E12	E12	Manual: Operator's Manual - MARINE RADAR - MODEL FAR-1513/1523/1513-BB/1523-BB/FAR-1518/1528/1518-BB/1528-BB
91	IME-36380-F12	F12	Manual: Installation Manual - MODEL FAR-1513/1523/1513-BB/1523-BB/FAR-1518/1528/1518-BB/1528-BB
90	K03-17-3402	1.03	Report: Furuno IEC62923 MARINE RADAR FAR 2xx8 series / FAR 15x8 series
89	K03-17-3402	ver1.01	Report: IEC62923 Furuno RADAR TA test procedure
82	K03-17-2700		Type approval testing report FAR-1518(-BB)/1528(-BB)
57	DELTA-L102798-4751/2/3		Test of flicker from 17,19,20 inch monitor for use as ECDIS monitor
56	DOC101909-1	04	Keypad P004511-1 Minimum brightness measurement
53	DOC102116-2		IEC62288: JH 20T17 MMD-AA1-AABA-HW06
52	DOC102116-3		IEC62288: JH 19T14 MMD-MA1-SABA-HW09
51	DOC101909-1	3	Hatteland Displays: KeyPad P004511-1: minimum brightness measurement
50	DNV 2008-3511	2	IEC60945: JH 20T17 MMD-AA1-AABA
49	DNV 2013-3038		IEC60945: JH 19T14 MMD-MA1-AAAA
48	DNV 2008-3528		IEC60945: JH 19T14 MMD-AA1-AOAA
47	DNV 2009-3442	2	IEC60945: JH 19T14 MMC-AA1-AABR

DNV No.	Document ID	Rev.	Description
43	K03-17-1877		FAR-3xx0; DNV type approval testing report for Pending items
42	K03-17-1538		FCR-2xx9; DNV type approval testing report for Pending items
41	FLI 12-10-039	3	Test report (IEC62288 and IEC62388) MU-190
40	FLI-12-10-068	1	Test report (IEC60945) Monitor unit MU-190
31	K03-17-2100	1	IEC62388; - Result of TT and Association Scenario test
30	FLI12-15-044	1	IEC62288 ed.2.0 test of MU-150HD
29	BSH/6522/1114-8/2004		Conformance test of FAR-2xx7 RADAR series
27	K03-17-2263		FAR-15x8 Radar Antenna Pattern Data
25	3 August 2015		Test report IMO RADAR; STCW FAR-15x8 function test report.
24	K03-17-2162		Performance in sea and rain clutter
23	K03-17-2130		Software correction report
22	MLG-36380-Z7		Operator's guide
21	IME-36380-E11		Installation manual
20	OME-36380-D11		Operator's manual
19	Applica 20587	0	Performance testing of two radar systems
18	BSH.4543.4342577.13-1	1.0	Test report FURUNO FAR-2xx7 (IEC 62388 Ed.2)
17	K03-17-2129		Detection performance of a navigation buoy
15	K03-17-2099	1.02	Radar TA Test procedure
11	FLI12-15-042		Electromagnetic radiofrequency radiation test report
10	FLI12-15-027		Test report IEC61162-1/-2
9	FLI12-15-026		Test report IEC60945
8	FLI12-15-025		EMC test report
7	FLI12-15-024		Compass Safe Distance
4	QinetiQ/15/00826	V1.1	Unwanted emission measurements of Furuno radar systems FUR(X)207, FUR(X)208, FUR(X)209

⁴⁾The NPS document number refers to NPS-folder 344.1-006649