TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MERB00002AU
Revision no.:
5

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-2218, FAR-2218-BB, FAR-2228, FAR-2228-BB, FAR-2228-NXT, FAR-2228-NXT-BB, FAR-2238S, FAR-2238S-BB, FAR-2238S-NXT, FAR-2238S-NXT-BB, FAR-2318, FAR-2328, FAR-2328W, FAR-2328-NXT, FAR-2338SW, FAR-2338S, FAR-2338S-NXT, FAR-2018-MARK-2, FAR-2028-MARK-2

issued to
Furuno Electric Co., Ltd.
Nishinomiya, **Japan**

is found to comply with the Regulation **(UK) MSN 1874 Amendment 10** for
Item no. **UK/4.64** (Row **2 of 2**)
according to the following requirements:
SOLAS 74 Reg. V/19, IMO Res. A.278(VIII), IMO Res. A.694(17), IMO Res. MSC.191(79), IMO Res. MSC.192(79), IMO Res. MSC.302(87), IMO MSC.1/Circ.1349, ITU-R M.1177-4 (04/11), SOLAS 74 Reg. V/18, And for High Speed Craft:SOLAS 74 Reg. X/3, IMO Res. MSC.36(63)-(1994 HSC Code) 13, IMO Res. MSC.97(73)-(2000 HSC Code) 13

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

Date of issue: **2025-08-26**

Expiry date: **2026-08-29**

DNV local unit:
Japan CMC

Approval Engineer:
Steinar Kristensen

Approved Body No:: 0097

for **DNV UK Ltd.**

Digitally Signed By:
Christine Mydlak-Röder

Christine Mydlak-Röder
MER Service Responsible

Maritime & Coastguard Agency
UK Approved Body Authorised by the MCA

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.
During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved Body.
"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. In case limitations of use apply, these should be indicated in the Annex.

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 USD 300 000.

Product description

Please see Appendix: Product Description

Application/Limitation

- The radar types FAR-23x8(-nn) and FAR-20x8(-nn) is found to be in compliance with RADAR for ships and high speed crafts; CAT 1, CAT 2, CAT 3, CAT 1H and CAT 2H (dependent of monitor installed and antenna rpm).
- The radar types FAR-22x8(-nn) and FAR-20x8(-nn) is found to be in compliance with RADAR for ships and high speed crafts; CAT 2, CAT 3 and CAT 2H (dependent of monitor installed and antenna rpm).
- The radar types FAR-2xx8(-nn) CAT 1H/2H: -antenna rotation shall be setup to 42 rpm;
- The FAR-radar supports a DVI-I port and Ethernet port in compliance with IEC 61996-1 for interconnection with the VDR.
- The DVI interface shall be used for video signal transfer between Processor Unit and Monitor Unit.
- The FAR-radar shall be installed and tested onboard in accordance with the Installation Manual (ref. appendix)
- RADAR CAT 1, CAT 2 and CAT3 used with ARPA, ATA and ETA require separate US certification.
- The FAR-2xx8 has been tested for Cyber Security requirements according to DNV CS SP1 (Essential) (incorporating IACS UR E27 Ed. Sept. 2023). Cyber secure installation shall be according to DNV Type Approval Certificate TAA00003MX.

Type Examination documentation

Please see Appendix: Type Examination Documentation

Tests carried out

• Performance:	IEC 62388 (2013)
• Interface:	IEC 61162-1 (2016)
• Interface:	IEC 61162-2 (1998)
• Interface:	IEC 61162-450 (2018)
• Presentation:	IEC 62288 (2021)
• Environmental:	IEC 60945 (2002) incl. Corr.1 (2008)
• Bridge Alert Management:	IEC 62923-1 (2018) and IEC 62923-2 (2018)

Marking of product

The type designation and name and contact address of the manufacturer shall be affixed visibly, legibly and indelibly to the product. In addition, the product shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

APPENDIX

Type Examination documentation

Certificate no.:
MERB00002AU
Revision no.:
5

Document No.	Rev.	Title
FLI 12-10-039		IEC62288 & IEC62388 test report for MU-190 and MU-231
BSH 6522/1114-8/2004		FAR-2xx7 radar Series : IEC61162 conformance test
BSH/4543/4342577/13-1		Marine Radar FAR-2xx7: IEC62388(2013)
LIC 12-16-012		IEC62288 ed.2.0: Monitor unit MU-270W
QINETIQ/MS/MAR/CR1303326/V1.2		Unwanted emission measurements of RTR-105/106/107/111 XN-12CF, XN-24CF, SN36CF
K03-17-2567		Result of TT and Association scenario test: FAR-2xx8
K03-17-2549		DNVGL type test report marine Radar FAR-2xx8
K03-17-1899	1	Performance in sea and rain clutter : FAR-3xx0
K03-17-1894	1	Performance in sea clutter : FAR-3xx0
K03-17-1888	1	Performance in sea and rain clutter : FAR-3210 with XN-20CF
K03-17-1869		Radar antenna radiation pattern data : FAR-3xxx series
K03-17-1815		DNV type approval report Marine Radar: FAR-3xx0
K03-17-1814		Result of TT and Association scenario test marine Radar: FAR-3xx0
K03-17-1759		Wind tunnel test report: Radiator/scanner SN36CF/RSB-129
K03-17-1758		Wind tunnel test report: Radiator & scanner XN12CF/XN20CF/XN24CF and RSB-128
K03-17-1538		DNV type approval testing report for pending items: FCR-2xx9 series
RET-17-009		The answer of DNVGL comment about FAR-2xx8 type approval
Applica 20128	0	Report: Applica, Performance testing of Radar FAR-3000 series
LIC 12-17-018		EMC IEC60945: FAR-2xx8
LIC 12-17-019		Temp. & vibration IEC60945: FAR-2xx8
LIC 12-17-020		IEC60945 others: FAR-2xx8
LIC 12-17-021		CSD IEC60945: FAR-2xx8
LIC 12-17-022		IEC61162-1/2 report: FAR-2xx8
LIC 12-17-023		IEC61162-450 report: FAR-2xx8
K03-17-2549	1.04	DNVGL Type approval testing report
DOC102116-2		IEC62288: JH 20T17 MMD-AA1-AABA-HW06
DOC102116-3		IEC62288: JH 19T14 MMD-MA1-SABA-HW09
DOC102116-4		IEC62288: JH 15T17 MMD-AA1-AABR-HW09
2011-3494	01	IEC60945 test report: JH 15T17 MMD-AA1-AABA
2008-3324		IEC60945 technical report: JH 15T17 MMD-DA1-AOAA
2009-3442		IEC60945 technical report: JH 19T14 MMC-AA1-AABR
2008-3528		IEC60945 technical report: JH 19T14 MMD-AA1-AOAA
2013-3038		IEC60945 technical report: JH 19T14 MMD-MA1-AAAA
2008-3511		IEC60945 technical report: JH 20T17 MMD-AA1-AABA
doc102352-3		IEC62288: Conformance test report HD 26T22 MMD-MA1-FAGA-ES
doc205958-1	2	Minimum brightness test of GDCX Rev 5

doc205969-1	01	IEC62288 Flicker test report HD26T22 MMD
Applica 21008	0	Report: Applica, HD 24T21 MMD: EMC and environmental testing
Applica 21009	0	Report: Applica, HD 26T22 MMD: EMC and environmental testing
doc102352-2	2	IEC62288: Conformance test report 24T22 MMD
doc205958-1		minimum brightness test of GDCX rev 5
doc205967-1		Flicker test report HD24T22
Applica 20885	0	Report: Applica, EMC and environmental testing of HD 27T22 MEC
Applica 20941	0	Report: Applica, EMC and environmental testing of HD 27T22 MEC
doc206155-1	1	HD 27T22 MMD-MA1-FAGA-ES: IEC62288 and colour calibration
doc206156-1	01	HD 27T22 MMD - IEC62288 FLICKER TEST
doc205970-1		IEC62288 flicker test HD32T22
doc205992-1		IEC62288 conformance test report HD32T22
Nemko E16240.01		HD55T22 Vibration test
Applica 20869	1	Report: Applica, HD55T22 EMC and environmental testing
Applica 21007	0	Report: Applica, HD55T22 EMC and environmental testing (2)
doc205971-1		IEC62288: HD55T22 flicker test
doc205984-1		IEC62288: HD55T22 conformance test
TAA00000S1		DNVGL TA-certificate Wave series monitors
DOC100829-6		JH23T14-MMD-MA1-OBA Flicker test
DOC101909-1R3		Keypad P004511-1 minimum brightness test
DOC102116-1	1	JH23T14 MMD-MA1-AABA IEC62288 Conformance test report
DNV 2010-3124	02	JH23T14 MMD-MA1 -EMC and environmental testing
170703002T		HD19T22 MMD-MA1 -EMC-FHGA-ES-1: EMC & environmetal testing
170421001T		HD19T22 MMD-MA1 -EMC-FAGP-ES: EMC & environmetal testing
Applica 21089	0	Report: Applica, HD19T22 MMD-MA1 -EMC-FAGP-ES EMC testing
Applica 21122	0	Report: Applica, HD19T22 MMD-MA1-FOGA-ES EMC radiated emission
Applica 20588	0	Report: Applica, HD19T21 MMC-M2D-MBAA EMC & environmental testing
Applica 21121	0	Report: Applica, HD15T22 MMD-MA1-FHGA-ES EMC & environmental testing
Applica 21120	0	Report: Applica, HD15T22 MMD-MA1-FOGA-ES Radiated emission & compass safe distance
Applica 21009	0	Report: Applica, HD26T22 MMD-MA1-FAGP-ES EMC & environmental testing
DNV 2012-3177	0	HD15T21 MMD-FA1-FHGA: EMC & environmental testing
Applica 20589	0	Report: Applica, HD15T21 MMC-M2N-PCAA EMC & environmental testing
VS-TV-060720-04		Vibration test: HD 19T22 MMD-MA1-FHGA-ES-1
Applica 21008	0	Report: Applica, HD 24T22 MMD IEC60945 testing
LIC 12-17-070		MU-152 EMC test report
LIC 12-17-071		MU-152 IEC60945 test report
LIC 12-17-072		MU-152 IEC60945 others -test report
LIC 12-17-073		MU-152 IEC62288 -test report
LIC 12-17-074		MU-152 IEC62288 -CSD report
2010-3253	01	Report: DNV, JH 20T17 MMD Radiated emission testing
2010-3421	01	Report: DNV, JH 20T17 MMD EMC and environmental testing
LIC 12-19-014	1	RPU-025. EMC test report
LIC 12-19-015	1	RPU-025: IEC60945 env. test report
LIC 12-19-016	1	RPU-025: IEC60945 CSD test report
LIC 12-19-019	1	RPU-025: IEC60945 other test report

OSE-36520-C10		Operator's Guide FAR-2xx8 series
K03-17-2929	0	Performance in Sea and Clutter
Applica 30215	0	Report: Applica, Performance testing of X-band NXT antenna and transceiver
LIC 12-20-002		Test report (ITU-R M.1177) for transceiver type RTR-123
K03-17-2885	1.03	DNVGL type approval
LIC 12-19-152		IEC 60945, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - dangerous voltage
LIC 12-19-153		IEC 60945, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - temperature
LIC 12-19-154		IIEC 60945, IEC62388 Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - vibration and shock
LIC 12-19-155		IEC 60945, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - CSD
LIC 12-19-156		IEC 60945, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - Electromagnetic RF radiation
K03-17-2892		IEC 62388, Result of TT Marine Radar F A R 2x 2 8 NXT
LIC 12-19-151		IEC 60945, ETSI EN 301 843-1, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT
K03-17-3402	1.03	Report: Furuno IEC62923 - MARINE RADAR FAR 2xx8 series FAR 15x8 series
LIC 01-20-047	28 January 2021	Report: Reference document for IEC 61162-450 test performed by LIC
LIC 12-21-008	28 January 2021	Report: LABOTECH - Test Report (IEC 61162-450) Trade name: Furuno Model: MARINE RADAR Type: FAR-2218/2218-BB/2318/2228/2228-BB/2328/2228-NXT/2228-NXT-BB/2328-NXT/2328W/2238S/2238S-BB/2338S/2338SW/2238S-NXT/2238S-NXT-BB/2338S-NXT
DOC205958-1	Rev. 5	Report: IEC 62288 Hatteland: Minimum brightness test of GDCX
DOC206081-1	Rev. 03	Report: IEC 62288 Hatteland: Flicker test report_HD 19T22 MMD
DOC206405-1	Rev. 02	Report: IEC 62288 Hatteland: Conformance test report HD 19T22 MMD-MA1-FOGP_HTB30-DVI-D
DOC208044-1	Rev. 01	Report: IEC 62288 Hatteland: Minimum brightness test of PCA200865-1 keypad
DOC208060-1	Rev. 01	Report: IEC 62288 Hatteland: Flicker test report JH 23T14 MMD-MR4-AABA
DOC208070-1	Rev. 01	Report: IEC 62288 Hatteland: Conformance test report JH 23T14 MMD-MR4-AABA
DOC208088-1	Rev. 01	Report: IEC 62288 Hatteland: Flicker test report JH 20T17 MMD-MR4-AABA
DOC208089-1	Rev. 01	Report: IEC 62288 Hatteland: Conformance test report JH 20T17 MMD-MR4-AABA
DOC208098-1	Rev. 01	Report: IEC 62288 Hatteland: Conformance test report_JH 19T14 MMD-AR4-AOBC
MRA0000006	Rev. 2	Certificate: IEC 60945 Monitors
MRA0000016	Rev. 3	Certificate: IEC 60945 Monitors
MRA0000003	Rev. 4	Certificate: IEC 60945 Monitors
K03-17-3209	17. SEP 2021	Report: Furuno FAR TA test procedure Monitor
INB10036-4	Rev 00_01	Manual: UserManual Series 1 G2 - Maritime Multi Display Models

CEBDLB-WTW-P21041117	May 04, 2021	Report: BV IEC60945, Radiated and Immunity - Partial IEC 60945 Test Report HD 24TT22 (representative report for HD 26T22 and HD 55T22 Power Module Change)
DOC206446-1	Revision 01	Report: Hatteland, IEC62288 flicker test report_HD 15T22 MMD
DOC208044-1	Revision 01	Report: Hatteland, IEC62288 Minimum brightness test of PCA200865-1 keypad
DOC208880-1	Revision 01	Report: Hatteland, IEC62288 Ed. 2.0 Display Test_JH 15T17 FUD-MR1-AOAA
210426002T	2021.07.15	Report: CAL-TECH IEC60945 HD 24T22 MEC-MP9-4AAH1A-ES3 Technical Report (representative report for HD 26T22 and HD 55T22 Power Module Change)
VS-TV-100708-01	2021.07.08	Report: VST, IEC60945 Vibration, HD 24T22 MEC-MP9-4AAH1A-ES3 (representative report for HD 26T22 and HD 55T22 Power Module Change)
K03-17-1793	17th July 2013	Report: Furuno, IEC 62388 Ed.2 6.10.2,.3,.4 Model: FAR-2xx7, Type: XN12AF/20AF/24AF,SN36AF, Radar Antenna Pattern Data, testing equivalent for MARK-2 antennas IEC 62388, 6.10.3, 6.10.2, 6.10.4
LIC 12-20-002	6 January 2020	Report: LABOTECH: ITU-R M.1177, Model: Transceiver for MARINE RADAR FAR-2228-NXT/2228-NXT-BB/2328-NXT FAR-3220-NXT/3220-NXT-BB/3320-NXT Type: RTR-123
K03-17-3278	Appendix	Report: Furuno: DNVGL type approval testing report FAR-2018-MARK-2/2028-MARK-2/FAR-3015/3025
K03-17-3282	12th April 2022	Report: Furuno IEC62388 ed.2 (Target tracking scenarios, Association scenario 1-4) Result of TT Scenario Test Model : Marine Radar, Type : FAR-3015/3025
OSE-36520-E10	2202, REFU	Manual: Furuno, Operator's Guide Controls des cription for the RCU-014 Control Unit FAR2xx8 MARK2
CW-109		Statement: Furuno: Statement for request to waive the corrosion test (8.12 OF IEC 60945: 2002 08) on MARINE RADAR Type FAR 2 018 MARK 2 2028 MARK 2
LIC 12-17-020	26 May 2017	Report: LABOTECH IEC 60945, MARINE RADAR FAR-2218/2218-BB/2318/2228/2228-BB/2328/2328W/2238S/2238S-BB/2338S/2338SW/2238S-NXT/2238S-NXT-BB/2338S-NXT
LIC 12-22-087	31 August 2022	Report: LABOTECH IEC 60945 and IEC 62388 (Vibration/Shock) Marine Radar F AR-2018-MARK-2, FAR-3015
LIC 12-22-111	31 August 2022	Report: LABOTECH IEC 60945, ETSI EN 301 843-1 and ETSI EN 302 248, Marine Radar F AR-2018-MARK-2, FAR-3015
LIC 12-22-112	31 August 2022	Report: LABOTECH IEC 60945 (TEMP) Marine Radar F AR-2018-MARK-2, FAR-3015
LIC 12-22-113	31 August 2022	Report: LABOTECH IEC 60945 (Dangerous voltage) Marine Radar F AR-2018-MARK-2, FAR-3015
LIC 12-22-114	31 August 2022	Report: LABOTECH IEC 60945 (Electromagnetic RF radiation) Marine Radar F AR-2018-MARK-2, FAR-3015
LIC 12-22-115	31 August 2022	Report: LABOTECH IEC 60945 (CSD) Marine Radar F AR-2018-MARK-2, FAR-3015
LIC 12-22-088	31 August 2022	Report: LABOTECH. IEC 60945 and IEC 62388 (Vibration Shock) Marine Radar F AR-2028-MARK-2, FAR-3025
LIC 12-22-089	31 August 2022	Report: LABOTECH. IEC 60945 and IEC 62388 (rain and spray) Marine Radar F AR-2028-MARK-2, FAR-3025
LIC 12-22-122	31 August 2022	Report: LABOTECH. IEC 60945 and IEC 62388 (EMC) Marine Radar F AR-2028-MARK-2, FAR-3025
LIC 12-22-123	31 August 2022	Report: LABOTECH. IEC 60945 and IEC 62388 (TEMP) Marine Radar F AR-2028-MARK-2, FAR-3025
LIC 12-22-124	31 August 2022	Report: LABOTECH. IEC 60945 and IEC 62388 (Excessive conditions/dangerous voltage) Marine Radar F AR-2028-MARK-2, FAR-3025

LIC 12-22-125	31 August 2022	Report: LABOTECH. IEC 60945 and IEC 62388 (Electromagnetic RF radiation) Marine Radar F AR-2028-MARK-2, FAR-3025
LIC 12-22-126	31 August 2022	Report: LABOTECH. IEC 60945 and IEC 62388 (CSD) Marine Radar F AR-2028-MARK-2, FAR-3025
K03-17-3279	Rev.0 - 25th March 2	Report: Furuno, IEC 62388, 6.9.3.2, 6.9.3.3, 6.9.3.4, Performance in sea and rain clutter Model: FAR 2028 MARK 2 with XN 24A and Model: FAR-3015 with XN 12A F
LIC12-22-142	9 September 2022	Report: LABOTECH ITU-R M.1177, FURUNO Model: Transceiver for MARINE RADAR FAR-2018-MARK-2, FAR-3015 Type: RTR-131
LIC 12-22-143	9 September 2022	Report: LABOTECH ITU-R M.1177, FURUNO Model: Transceiver for MARINE RADAR FAR-2028-MARK-2, FAR-3025 Type: RTR-132
LIC12-22-007	10 February 2022	Report: LABOTECH, IEC 62388 Clause 15.5.2 Wind Tunnel, Model: MARINE RADAR, Type: FAR-2018-MARK-2/2028-MARK-2, FAR-3015/3025
31140	1.0	Report: Applica IEC 62388 Ch.6 Overseas testing, Radar Test Report Furuno FAR-2018-MARK-2, FAR-2028-MARK-2, FAR-3015, FAR-3025
K03-17-3278	2023.3.9	Report: Furuno IEC 62388 Ch. 6. Overseas Testing, Model: MARINE RADAR, Type: FAR-2018-MARK-2/2028-MARK-2, FAR-3015/3025
DOC206850-2	Revision 01	Statement of Manufactor Similarity for HD 24T22 FUD-MA4-FAGx
LIC 12-22-134	8 September 2022	Report: LABOTECH, IEC 60945 EMC Furuno Marine Display MU-192HD
LIC 12-22-135	8 September 2022	Report: LABOTECH, IEC 60945 Temperature Furuno Marine Display MU-192HD
LIC 12-22-136	8 September 2022	Report: LABOTECH, IEC 60945 excessive conditions, acoustic noise, VDU emission Furuno Marine Display MU-192HD
LIC 12-22-137	8 September 2022	Report: LABOTECH, IEC 60945 CSD Furuno Marine Display MU-192HD
LIC 12-22-144	16 September 2022	Report: LABOTECH, IEC 60945 Vibration Furuno Marine Display MU-192HD
LIC 12-22-161	20 October 2022	Report: LABOTECH, IEC 62288 Furuno Marine Display MU-192HD
DOC207208-1	R09	Hatteland: Statement of Manufactor Similarity for HD 24T22 FEC-MP9-4AAH1A
DOC209115-1	R01	Report: Conformance test report HD 24T22 MMD-MA1-FAGA-30001
DOC209117-1	R01	Report: IEC62288 flicker test report HD 24T22 MMD-MA1-FAGA-30001
PDF202100-1	REV 0	Report: HD 24T22 MMD-MA1-FAGP Technical Report 2017-21008 Maritime
PDF208404-1	REV 1	Report: HD 24T23 WAC-DFA-4GP0AA-1 Technical Report 191220001T
DOC205825-1	R08	Hatteland: HD 24T22 MMD - IEC 60945 & IACS E10 Statement_R08
TAA00002TT	Rev. 1	Type Approval Certificate, Bridge Monitor WE270
TAA000028U	Rev. 2	Type Approval Certificate, Bridge Monitor WE270
15-2021	Rev. 1.0	Manual: Display WaveII-UM
P18-0006	Rev. 2	Report: IEC60945 IACS E10 WE270 Monitor
K03-17-3327	20 Oct 2022	Report: Furuno, Marine Radar FAR-3xx0/3xx8 series NorthInvent WE270FU
NI/0004/rev1.0/2020	10-06-2020	Report: North Invent, IEC 62288-62388 WE270 Bridge Display
K03-17-3393-0	2023-09-22	Report: Furuno, Type Approval test report for FAR-2xx8 series and FAR-15x8 series marine radar according to IEC 62288 (2021)

IME-36520-T30	2023-09-26	Manual: Furuno, Installation Manual for FAR-2xx8 series Marine Radar
DELTA-L102798-475n	n=1,2,3	Test of Flicker from 15, 19, 20 inch monitors for use as ECDIS monitor
DOC209275-1	01	Report: Hatteland, IEC 62288/ IEC 61174/ IHO-S-52 test report for HD 32T40
DOC209276-1	01	Report: Hatteland, IEC 62288 flicker test report for HD 32T40
DOC209419-1	01	Report: Hatteland, IEC 62288 Minimum brightness test of buttons and status indicators
DOC209420-1	01	Report: Hatteland, IEC 62288 Minimum brightness test of buttons and status indicators HD 32T40
CEBDLB-WTW-P23070246	2023-08-25	Report: BV, Partial IEC 60945 Test Report for HD 32T40
230704001T	2023-09-28	Report: CAL-TECH, IEC60945 and CG-0339 test report for HD 32T40
DOC209183-1	01	Report: Hatteland, IEC 62288/ IEC 61174/ IHO-S-52 test report for HD 55T40
DOC209185-1	01	Report: Hatteland, Flicker Test for HD 55T40
E21234.01	01	Report: Nemko, IEC60945 and CG-0339 test report for HD 55T40
31098	0	Report: Applica, IEC 60945 and CG-0339 test report for HD 55T40
REP009121	A	Report: Nemko, IEC 60945 test report for HD 55T40 MVD-MA1-CAJG-ES02
LIC 12-24-005	2024-04-10	Report: Labotech, IEC 60945 EMC test report for MU-192
LIC 12-24-006	2024-04-10	Report: Labotech, IEC 60945 Vibration test report for MU-192
LIC 12-24-007	2024-04-10	Report: Labotech, IEC 60945 CSD test report for MU-192
LIC 12-24-008	2024-04-10	Report: Labotech, IEC 60945 test report for MU-192
LIC 12-24-009	2024-04-18	Report: Labotech, IEC 60945 Operational checks, Maintenance, Manuals and Markings for MU-192
LIC 12-24-010	1	Report: Labotech, IEC 62288 test report for MU-192
K26-17-377	1	Report: Furuno, Colour Calibration Report for MU-192 Monitor Unit
	2023-03-31	Manual: Hatteland, HD55T40 MVD-MAx-Cxxx
	2023-03-31	Manual: Hatteland, HD32T40 MVD-MAx-Cxxx
OMC-44670-H10	H	Manual: Operator's manual for monitor unit MU-190/MU-192
30999	0	Report: Applica, IEC 60945 test report for HD 55T40
RNT-24-001	1	Procedure: Furuno, Color calibration procedure for MU-series Monitor Units
K03-17-3513-1	6	Report: Furuno, DNV Type Approval testing report for FAR-30x5 and 2xx8 with Risk Visualzier function
OME-36520-Q11	Q11	Manual: Furuno, Operator's Manual for FAR-2xx8-series Marine Radar

APPENDIX
Product Description

Certificate no.:
MERB00002AU
Revision no.:
4

The Furuno 2xx8 Marine Radars are categorized and comprise combinations of units as specified below:

- **CAT 1/1H:** FAR-2318, FAR-2328, FAR-2328W, FAR-2328-NXT, FAR-2338SW, FAR-2338S, FAR-2338S-NXT, FAR-2018-MARK-2, FAR-2028-MARK-2

- **CAT 2/3/2H**: FAR-2218, FAR-2218-BB, FAR-2228, FAR-2228-BB, FAR-2228-NXT, FAR-2228-NXT-BB, FAR-2238S, FAR-2238S-BB, FAR-2238S-NXT, FAR-2238S-NXT-BB, FAR-2018-MARK-2, FAR-2028-MARK-2

Unit	Model Name	Components	Remark
Processor Unit	RPU-025		
Data Interfaces (embedded)	03P9648 03P9652	I/O board	*IEC61162-2/ IEC61162-1*
	Ethernet 100 Base-T	2 ports	*IEC61162-450*
	VDR-connection	DVI-I or Ethernet	*LAN2 port*
	HMC-200CE-A	LAN signal converter	*option*
Monitor Units for CAT 1/2/3/1H/2H	MU-231 or MU-270W or WE270FU or HD26T21 MMD-MAx or HD26T22 FUD-MAx or HD27T22 FUD-MAx or HD32T22 FUD-MAx or HD32T40 FUD-xAx or HD55T22 FUD-xAx or HD55T40 FUD-xAx or JH 23T14 FUD-xx1 or WA460-01-MON-01-xxFU or WA270-01-MON-01-xxFU		*x=variable letter/number according to manufacturer's type number identification*
Optional Monitor Units for CAT 2/3/2H	MU-190 or MU-192 or MU-192HD or HD24T22 FUD-MAx or HD24T21 MMD-MAx or HD19T22 FUD-MAx or JH 19T14 FUD-xx1 or JH 20T17 FUD-xx1		
Optional Monitor Units for CAT 3	MU-152 or HD15T22 FUD-MAx or JH 15T17 FUD-xx1		
Radar Control Unit	RCU-014 or RCU-015 and RCU-016 [1)]		[1)]*optional*

Unit	Model Name	Components		Remark
X-band Transceiver		*Transceiver Unit*	*Antenna Unit*	
	FAR-2318 FAR-2218(-BB)*	RTR-105	XN12CF-RSB-128 XN20CF-RSB-128 XN24CF-RSB-128	*4 ft* *6.5 ft* *CAT 2/3/2H *8 ft*
	FAR-2328 FAR-2228(-BB)*	RTR-106	XN12CF-RSB-128 XN20CF-RSB-128 XN24CF-RSB-128	
	FAR-2328W	RTR-108	XN20CF-RSB-130 XN24CF-RSB-130	
	FAR-2328-NXT FAR-2228-NXT(-BB)*	RTR-123	XN12CF-RSB128 XN20CF-RSB128 XN24CF-RSB128	Solid State *CAT 2/3/2H
	FAR-2018-MARK-2	RTR-131	XN12AF-RSB146 XN20AF-RSB146 XN24AF-RSB146	
	FAR-2028-MARK-2	RTR-132	XN12AF-RSB146 XN20AF-RSB146 XN24AF-RSB146	
S-band Transceiver	FAR-2338S FAR-2238S(-BB)*	RTR-107	SN36CF-RSB-129	*12.5 ft* *CAT 2/3/2H
	FAR-2338SW	RTR-109	SN36CF-RSB-131	
	FAR-2338S-NXT FAR-2238S-NXT(-BB)*	RTR-111	SN36CF-RSB-133	*Solid State* *CAT 2/3/2H
Performance monitors	PM-32A PM-32B [2)] PM-52A PM-52B [2)]	X-band X-band S-band S-band		[2)] *Solid State*
LAN switching HUB	HUB-100			*Option – for* proprietary LAN interface.
LAN intelligent HUB	HUB-3000			*Option – for IEC 61162-450 external LAN interface.*
Junction Box	RJB-001			*Option*
Software	*0359377-xx.xx*	*RPU-025 (main)*		
	0359380-xx.xx	*RPU-025 (sub)*		

Location classification of Radar units:

Unit	Location
Processor Unit	Protected
Monitor Unit	Protected
Radar Control Unit	Protected
Data interface	Protected
Transceiver unit (Up-mast)	Exposed
or Transceiver unit (down-mast)	Protected
Antenna unit	Exposed