# EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
**MEDB00002AU**
Revision no.:
**13**

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as “Forskrift om Skipsutstyr” by the Norwegian Maritime Authority. This Certificate is issued by DNV AS under the authority of the Government of Norway.

## 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 Implementing Regulation **(EU) 2024/1975** for
Item no. **MED/4.64** (Row **1 of 1**)
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: **2025-08-06**

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

DNV local unit:
**Japan CMC**

Approval Engineer:
**Steinar Kristensen**

Notified Body
no.: **0575**

for **DNV AS**

*Digitally Signed By:*
Christine Mydlak-Röder

**Christine Mydlak-Röder**
**Head of Notified Body**

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the Agreement between the United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment signed 17 October 2005, and amended by Decision No 1/2023 dated August 21st, 2023.

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-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
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.

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

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| • 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.:
**MEDB00002AU**
Revision no.:
**13**

| 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 |

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|---|---|---|
| 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 |

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|---|---|---|
| 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 |

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|---|---|---|
| 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 |

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| 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) |

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|---|---|---|
| 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.:
**MEDB00002AU**
Revision no.:
**13**

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<br>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<br>MU-270W or<br>WE270FU or<br>HD26T21 MMD-MAx or<br>HD26T22 FUD-MAx or<br>HD27T22 FUD-MAx or<br>HD32T22 FUD-MAx or<br>HD32T40 FUD-xAx or<br>HD55T22 FUD-xAx or<br>HD55T40 FUD-xAx or<br>JH 23T14 FUD-xx1 or<br>WA460-01-MON-01-xxFU or<br>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<br>MU-192 or<br>MU-192HD or<br>HD24T22 FUD-MAx or<br>HD24T21 MMD-MAx or<br>HD19T22 FUD-MAx or<br>JH 19T14 FUD-xx1 or<br>JH 20T17 FUD-xx1 | | |
| Optional Monitor Units for CAT 3 | MU-152 or<br>HD15T22 FUD-MAx or<br>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<br>FAR-2218(-BB)* | RTR-105 | XN12CF-RSB-128<br>XN20CF-RSB-128<br>XN24CF-RSB-128 | *4 ft*<br>*6.5 ft* *CAT 2/3/2H<br>*8 ft* |
| | FAR-2328<br>FAR-2228(-BB)* | RTR-106 | XN12CF-RSB-128<br>XN20CF-RSB-128<br>XN24CF-RSB-128 | |
| | FAR-2328W | RTR-108 | XN20CF-RSB-130<br>XN24CF-RSB-130 | |
| | FAR-2328-NXT<br>FAR-2228-NXT(-BB)* | RTR-123 | XN12CF-RSB128<br>XN20CF-RSB128<br>XN24CF-RSB128 | Solid State<br>*CAT 2/3/2H |
| | FAR-2018-MARK-2 | RTR-131 | XN12AF-RSB146<br>XN20AF-RSB146<br>XN24AF-RSB146 | |
| | FAR-2028-MARK-2 | RTR-132 | XN12AF-RSB146<br>XN20AF-RSB146<br>XN24AF-RSB146 | |
| S-band Transceiver | FAR-2338S<br>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<br>FAR-2238S-NXT(-BB)* | RTR-111 | SN36CF-RSB-133 | *Solid State*<br>*CAT 2/3/2H |
| Performance monitors | PM-32A<br>PM-32B [2)]<br>PM-52A<br>PM-52B [2)] | X-band<br>X-band<br>S-band<br>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 |