

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Electronic Chart System (ECS)

with type designation(s)
Pathfinder ECS

issued to
RAYMARINE UK LIMITED
Fareham, United Kingdom

is found to comply with

Application:

ECS in accordance with Norwegian Maritime Authority (NMA) RSV 14-2022 and RSV 16-2022

Issued at **Høvik** on **2026-08-04**

This Certificate is valid until **2031-08-03**.
DNV local unit: **UK & Ireland CMC & VMC**

Approval Engineer: **Tommi Juhani Rifaat**



for **DNV**

This document has been digitally signed and will
therefore not have handwritten signature

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 Approval Certificate and not to the approval of equipment/systems installed.

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

The Pathfinder ECS consists of the following components:

Hardware modules:

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	16" ECS	19" ECS	22" ECS
Display	E70661-ECS	E70662-ECS	E70663-ECS
Processor	n/a		
DCU	A80839 or A80792	A80839 or A80792	A80839 or A80792
Optional Trackball	A80788	A80788	A80788
Optional Trackball & Keyboard	A80790	A80790	A80790

	16" MFD	19" MFD	22" MFD	24" MFD
Display	E70661	E70662	E70663	E70664
Processor	E70708-ECS	E70708-ECS	E70708-ECS	E70708-ECS
DCU	A80839 or A80792	A80839 or A80792	A80839 or A80792	A80839 or A80792
Optional Trackball	A80788	A80788	A80788	A80788
Optional Trackball & Keyboard	A80790	A80790	A80790	A80790

Software modules

Version

- Operating System: Android Lighthouse 4.x AOSP
- Pathfinder ECDIS software: V2.x. y where x is greater than 1 and y is 233 or higher
- Pathfinder DCU software: ver. 2.xxx, where xxx is 536 or higher
- Nautilus Chart Kernel: V1.x.y, where x is 9 or higher and where y is greater than 1
- IHO presentation library: ver. 4.0.x

Application/Limitation

- Pathfinder ECS is to be installed in accordance with manufacturers documentation. The product is based om Pathfinder ECDIS approval MEDB000095Z with identical software. Pathfinder ECDIS documentation is to be used for equipment operation reference.
- A dual installation of Pathfinder ECS may function as equipment Back-up arrangement..
- Pathfinder ECS supports interfacing to AIS, including reception of AIS target information.
- Pathfinder ECS supports interfacing to Radar for reception of Radar target information.
- Pathfinder ECS supports interfacing to Radar for Radar overlay via Asterix CAT-240.

Type Examination documentation

DNV No	Drw No	Rev	Title
3	75958876-02	01	Report: TUV Sud, Raymarine Cyclone Pro 110W 6' Antenna 24", 19" and 16" Display processors - IEC 62288 test report
4	75958876-04	02	Report: TUV Sud, Raymarine Display computer models E70661-70664 IEC 60945 environmental test report
5	75958876-05	01	Report: TUV Sud, Raymarine Display computer models E70661-70664 IEC 60945 EMC test report
6	146-25	1	Report: Treo, Pathfinder BlackBox Processor A70708 IEC 60945 Environmental test report
8	208-25	1	Report: Treo, Pathfinder BlackBox Processor A70708 IEC 60945 EMC test report
9	MEDB000095Z		Certificate: DNV, Pathfinder ECDIS Certificate
10	ECDISCAL-TA2FBTM-20260519-113324-TA	2026-05-19	Report: Raymarine, TA2BTM IEC 62288 Annex G Test Report

DNV No	Drw No	Rev	Title
11	ECDISCAL-TAQCB96-20260519-113326-TA	2026-05-19	Report: Raymarine, TAQCB96 IEC 62288 Annex G Test Report
12	ECDISCAL-TAY2642-20260519-113329-TA	2026-05-19	Report: Raymarine, TAY2642 IEC 62288 Annex G Test Report
13	PFECS260519TR	2	Report: Raymarine, Pathfinder ECS RSV-14 & RSV-16 Test Record
14	PFE251112TR	3	Report: Raymarine, Pathfinder ECDIS V1 to V2 Software differences Test Record

Tests carried out

- Performance testing: IEC 61174 Ed. 4.0 (2015)*
- Environmental testing: IEC 60945 (2002) incl. Corr.1 (2008)
- Serial interface testing: IEC 61162-1 (2016) and IEC 61162-450 (2018)
- Presentation of navigation information: IEC 62288 (2021)*
- Bridge Alert Management: IEC 62923-1 (2018) and IEC 62923-2 (2018)

**As amended by Norwegian circulars RSV 14-22 / 16-22*

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.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

A renewal assessment will be performed at renewal of the certificate.

Manufactured by:

Raymarine UK Limited: Marine House, Cartwright Drive Fareham PO15 5RJ, United Kingdom