EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00001B0
Revision No:
8

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 Electronic chart display and information system (ECDIS)

with type designation(s)
TECDIS

Issued to
Telko AS
TJØME, **Norway**

is found to comply with the requirements in the following Regulations/Standards:
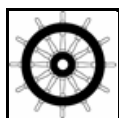Regulation **(EU) 2020/1170,**
  item No. **MED/4.30. SOLAS 74 as amended, Regulations V/18, V/19, V27 & X/3, IMO Res. A.694(17), IMO Res. MSC.36(63), IMO Res. MSC.97(73), IMO Res. MSC.191(79), IMO Res. MSC.232(82), IMO Res. MSC.302(87), IMO MSC.1/Circ.1503 Rev.1**

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

This Certificate is valid until **2021-08-29**.

Issued at **Høvik** on **2021-04-28**

DNV local station:
 Norway Fleet in Service, East-South

Approval Engineer:
 Frederik Tore Elter

Notified Body
No.: **0575**

for **DNV AS**

Sverre Olav Bergli
Head of Notified Body

Product description

TECDIS may be installed in a main processing and separate display unit combination or as an panel computer, consisting of the following components:

Unit	Components	Remark
Main processing and separate display units;		
Main processing unit:	HT C01 TEL-A596,or HT C01 TEL-D596, or Enix-2077-TEL-D1, or HT C02HJ TEC-C44-AA00, or HT C02HJ TEC-C44-DA00, or HT B30GI TEC or, HTC03-i5-MP C732836-2139C	*Embedded graphics*
Display unit:	Hatteland Display JH19T14 MMD, or Hatteland Display JH20T17 MMD, or Hatteland Display JH23T12 MMD, or Hatteland Display JH23T14 MMD, or Hatteland Display HD19T03 BOAA, or Hatteland Display HD19T21 MMD, or Hatteland Display HD19T22 TID, or Hatteland Display HD 19T22 FUD, or Hatteland Display HD24T21 MMD, or Hatteland Display HD24T22 TID, or Hatteland Display HD24T22 FUD, or Hatteland Display HD26T21 MMD, or Hatteland Display HD 26T22 TID, or Hatteland Display HD 26T22 FUD, or Hatteland Display HD 27T22 TID, or Hatteland Display HD 27T22 FUD, or Furuno MU-201CE, or Furuno MU-231CE	*DVI connection* *TID and FUD models are branded versions of standard models.*
or panel computer;		
Panel Computer:	HD 24T21 MEC-M3D-ACB2, or HD 24T21 DEC-M3D-ACB2, or HD 24T21 EEC-M3D-ACB2, or HD 27T22 DEC-M53-41AB2D or, HD 27T22 EEC-M53-41AB2D	*Combined Display and processing unit.* *DEC and EEC models are branded versions of standard models.*
Main processing and display unit or panel computer to be installed with:		

Unit	Components	Remark
Keyboard/ Trackball[1]:	BTC5100C PS/2, or Cherry G84-4100LCMGB-2 or Keytouch Panel QWERTY, *and* MouseTRAK B-MPIND-XROHS, or MouseTRAK B-USBID-XROHS, or Logitech Trackman Marble – ELK, or Keytouch Panel Trackball, or Cursor Controls E38-16A19D-E003, or Cursor Controls E38-16A19D-E004, or Trackball NSI TBE38NO Keytouch Panel Combo[2], or NSI RKCT92S[2], or TECDIS Keypad[3] (Keytouch PN17610415), or RCU-018	[1]*Both keyboard and a trackball are required* [2]*Combined unit* [3]*Option*
Loudspeakers(option):	DNH HP-6, or DNH HPS-6	*Loudspeaker is required only when display unit does not include a buzzer and RCU-018 is not connected.*
Serial Interface:	Moxa Opt.8 Moxa CP-114EL-I(CV-150k)[4] Hatteland Display PCA100293-1[5]	[4]*Enix-2077 only* [5] *Installed with:* *HD 24T21 MEC-M3D-ACB2,* *HT C02HJ TEC-C44-AA00,* *HD 27T22 DEC-M53-41AB2D,* *HD 27T22 EEC-M53-41AB2D,* *HT C02HJ TEC-C44-DA00,* *HT B30GI TEC and* *HTC03-i5-MP*
LAN interface:	Intel IQ87-PLH3 Ethernet Switch: Moxa EDS-208A, Moxa EDS-308 and/or Weidmüller IE-SW-BL08-8TX	
Software Versions:		
TECDIS	4.8.3.x	
Presantation Library	4.0.x	
Telko Chart Loader	2.nn	[6] *HT C01 TEL-A596 and HT C01 TEL-D596*
OS	Windows 7, Windows XP[6] or Windows 10[7]	
Screen sender	1.xx	[7] *HT CO-i5-MP*

Application/Limitation

- A dual installation of TECDIS is found to comply with the requirements for ECDIS with Back-up arrangements.
- TECDIS may optionally be provided with radar overlay functionality.
- TECDIS may optionally be provided with weather information overlay functionality. [1]
- TECDIS may optionally be provided with *C-Routes* routing advisory functionality.
- TECDIS may optionally be connected to internet via "secure web-tunneling". [1]
- TECDIS may optionally support uploading of SENC delivery (CM93/3 format) via external link. [1]
- TECDIS may be optionally provided with C-Map Update Service functionality. [1]
- TECDIS may be optionally provided with Navtor NavSync chart update functionality. [1]
- TECDIS may be optionally provided with chart synchronization functionality.
- The TECDIS monitor may optionally be interconnected with a video source via a separate input port for presentation of video. The ECDIS monitor shall be marked with "**ECDIS**".
- TECDIS may provide conning information to a separate monitor.

- o Conning image is found to be in accordance with requirements listed in DNV Rules for Ships Pt. 6 Ch.8 and Pt. 6 Ch.20, January 2014, for forward and aft orientation.
  - o Fallback arrangement may be achieved by connecting conning monitor to TECDIS and a dedicated conning computer or to two TECDIS computers.
  - o For Conning installation components listed under TECDIS product description are to be used.
- TECDIS may be interfaced to either RADAR or AIS, or both, for target presentation.
- The TECDIS shall be commissioned and tested onboard according to the Installation Manual.
- TECDIS may receive IEC 61162-1 formatted sentences (as defined in product documentation) on Ethernet in accordance to IEC 61162-450 (2011), (including amendment 2016) in addition to binary image transfer and RTZ route transfer.

Note:
1) *A physical disconnection device (e.g. switch) shall be provided in the vicinity of the TECDIS – and be properly marked. Firewall is to be provided onboard. For ship external data exchange; connection is only towards remote access nodes specified by the Manufacturer.*

Tests carried out

- Performance testing: IEC 61174 (2015)
- Performance testing, presentation: IEC 62288 (2014)
- Environmental testing: IEC 60945 (2002) incl. Corr. 1 (2008)
- Serial interface testing: IEC 61162-1 (2016)

Type Examination documentation

DNV GL No	Title	Drawing No	Rev.
296	Manual: TECDIS Installation Manual - Software Edittion 4.8.3.x		3.06
294	Report: TECDIS Test Report HTC03-i5-MP Computer upgrade test 2021-03-23		
290	Report: Nemko IEC 60945: HTC03-i5-MP C732836-2139C Technical Report E21014.00 Rev.0	PDF209224-1	
262	Report: TECDIS Test Report - Update ECDIS display tests		Rev 1
254	Report: Hatteland, Minimum brightness test of GDCX found in HD 27T22 MEC-CGU-AABR	DOC102332-1	rev-01
253	Report: Hatteland, IEC62288 flicker test report HD27T22 MMC-CGU-AABR-ES (signed)	DOC205812-1	rev 02
251	Report: Hatteland, Conformance test report HD 27T22 MEC-CGU-AABR	DOC102331-1	Rev-1
250	Certificate: Series X G2 Maritime Multi Computer	MRA0000014	Revision 1
249	Certificate: Maritime Computers HT B06, HT C02Hx, HT C02Hi, HT 221Hx, HM C02HK	MRA0000008	Revision 2
242	Certificate: Moxa Ethernet Switch EDS-208A	TAA000006N	Revision 1
241	Moxa and Weidmuller equivalence statement		
238	EDS-200A Corrosion Waiver (Moxa Switch)		
235	Report: Conformance test report HD 27T22 MMD-MA1-FAGA HTB30-DVI-D	DOC206417-1	
234	HD 27T22 MMD – ECDIS Compliance Statement	DOC206166-1-1	Revision 3
233	Report: IEC62288 flicker test report_HD 27T22 MMD	DOC206156-1	Revision 2
232	Report: Minimum brightness test of GDCX SIGNED	DOC205958-1	Rev. 5
227	Certificate: Maritime Multi Display HD 15T22 MMD, HD 17T22 MMD, HD 19T22 MMD, HD 24T22 MMD, HD 26T22 MMD,	MRA0000016	Rev. 1
225	Report: IEC60945 EMC and Environmental testing of Maritime Multi Computer HD 19T21 MMC-M2D-MBAA	20588	Rev. no.: 0
224	HD 19T22 MMD - IEC 60945 & IACS E10 Statement	DOC205975-1-1	Revision 4
223	Report: TELKO Conformance test of TECDIS with IEC61174, IEC61162-450 and IEC61162-1 for RTZ route plan exchange		2
222	Report Applica: IEC60945 EMC Radiated Emission testing of HD 19T22 MMD-MA1-FOGA-ES Maritime Multi Display	21122	Rev. no.: 0
217	Report Applica: IEC60945 EMC HD 19T22 MMD-MA1-FAGP-ES Maritime Multi Display	21089	Rev. no.: 0

DNV GL No	Title	Drawing No	Rev.
216	Statement: Hatteland - HD 19T22 MMD - IEC 60945 & IACS E10 Statement	DOC205975-1	Rev.1
213	Report: Hatteland - IEC62288 flicker test report HD 19T22 MMD R02	DOC206081-1	
212	Report: Hatteland - Conformance test report HD 19T22 MMD-MA1-FOGA-ES HT221-DVI-D	DOC206080-1	
208	Report: DELTA - IEC 60945 - Corrosion - Salt Mist test	117-21066 - DANAK-1918104	
207	Report: IEC 60945 Test for Marine Type Approval E38-16A19D-E003 Trackball right handed and E38-16A19D-E003 Trackball left handed	T208006-2 - DANAK 1914159	
225	Report: IEC60945 EMC and Environmental testing of Maritime Multi Computer HD 19T21 MMC-M2D-MBAA	20588	Rev. no.: 0
224	HD 19T22 MMD - IEC 60945 & IACS E10 Statement	DOC205975-1-1	Revision 4
205	Certificate: Monitors HD 24T22 MMD, HD 26T22 MMD, HD 27T22 MMD, HD 32T22 MVD, HD 55T22 MVD	MRA0000016	
199	Report: IEC62288 flicker test report HD24T22 SIGNED	DOC205967-1	
198	Report: Conformance test report HD 24T22 MMD-MA1-FAGA-ES_HTC02-DVI-D_SIGNED	DOC102352-2	
197	Report: Conformance Test Report of LCD for use in RADAR and ECDIS HD 24T22 MMD-MA1-FAGA-ES	DOC102352-1	
194	Report: IEC62288 flicker test report HD26T22 SIGNED	DOC205969-1	
192	Conformance Test Report of LCD for use in RADAR and ECDIS HD 26T22 MMD-MA1-FAGA-ES	DOC102352-4	
191	Conformance Test Report of LCD for use in RADAR and ECDIS HD 26T22 MMD-MA1-FAGA-ES	DOC102352-3	
181	EDS-308 309 316 series DNV Test Report		
163	Manual: TECDIS Manual EN Full		4.00 beta 4
158	Report: TECDIS IEC 61162-1 for NRM-NRX-NSR test report - signed		
151	Report: Confirmace test of TECDIS with IHO test data sets for ECDIS (S-64) - Signed		
150	Report: Confirmace test of TECDIS with IEC61174 ed-4 - Signed		
138	Report: Witnessed Conformance Test of TECDIS with IEC 61162-450 (receiving IEC 61162-1 sentences)		
137	Quick reference guide - 61162-450 in TECDIS		1
135	TECDIS IEC 61162-450 serial input validation		1
134	Quick reference guide - TelkoTranslator 1_0		1
132	Report: Conformance test of Conning DNV Rules for ships		
128	Manual: Telko Conning User Manual		1
124	Report:Conformance test or TECDIS binary image transfer with IEC61162-450		
123	Report: Conformance test of TECDIS with IEC62288 2nd edition		
121	TECDIS Conning installation for fall-back arrangements		
106	Appendix IEC62288 JH20T17	DOC101936-1R2	Rev. 2
105	Appendix IEC62288 JH19T14 HW06	DOC101935-1R2	Rev. 2
104	Appendix IEC62288 JH 23T14	DOC101901-1R2	Rev. 2
103	Appendix IEC62288 HD 19T21	DOC101900-1R2	Rev. 2
102	Appendix IEC62288 HD 24T21	DOC101896-1R2	Rev. 2
101	Appendix IEC62288 HD 26T21	DOC101895-1R5	Rev. 5
97	Statement from ITAC - trackball B-MPIND-XROHS REV C		2015-08-10
96	Report: EMC testing og USB Mouse - Track IEC60945	SP05980	2015-11-03
92	LAN and Serial interface documentation	IQ87-PLH3 and MAX3535E	
91	TECDIS Installation Manual	DNV 2013-3135	3.01
90	EMC and environmental testing of HT B22GE STC-C4K-M100	DNV 2013-3135	0
89	EMC and environmental testing of HT 221HK STC-A6D-A000-ES12	Applica 20385	0
88	EMC and environmental testing of HT 221HJ STC-A4D-A000-ES1	Applica 20287	0
87	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES2	Applica 20286	0

DNV GL No	Title	Drawing No	Rev.
86	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES11	Applica 20373	0
85	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES1	Applica 20285	0
84	Interconnection test of Moxa Multiport Serial board -IEC61162	20316	0
83	TECDIS Keypad Conformance test w/video switch	2014.03.04	1
80	Installation notes - TECDIS Keypad EN	25.02.2014	1.1
78	DNV Environmental & EMC test report: Keytouch	2008-3425	2
77	IEC60945 - Test Report: enix-2067/3076/3000/2077	Nemco E12134.04	
76	ENIX-2067-TEL-D1 -TECDIS Conformance test of a Electronic Chart Display and Information System	26-Aug-13	1
74	EMC and Environmental Testing of Maritime Computer HT B22GE STC-C4K-M100	2013-3135	0
72	EMC and Environmental Testing of Maritime Multi Display HD 24T21 MMD-MA1-FAGP	2012-3372	0
71	EMC and Environmantal Testing of JH 26T11 MMD-MA1-AOBC Maritime Multi Display	2011-3396	2
70	HD 26T21 MMD-MA4-FAGA -Conformance Test Report of LCD for use in Radar and ECDIS –	DOC101183-1	2
69	HD 24T21 MMD-MA1-FAGA- Conformance Test Report of LCD for use in Radar and ECDIS –	DOC101257-1	1
68	HD 19T21 MMD-MA1-FOGA- Conformance Test Report of LCD for use in Radar and ECDIS –	DOC101223-1	1
67	HD 24T21 MMC-MJD-AAB2- Conformance Test Report of LCD for use in Radar and ECDIS –	DOC101028-1	1
61	EMC and Environmental Testing of Maritime Display HD 26T21 MMD-MA1-FAGA, Doc. No.: 2012-3362 Rev.0	2012-3362	0
60	EMC and Environmental Testing of HD 24T21 MMD-MA1-FAGA Maritime Multi Display	2011-3481	1
59	EMC and Environmental testing of Maritime Display HD 19T21 MMD-MA1-FAGA	2012-3302	2
58	EMC and Environmental testing of panel computer HD 24T21 MMC-MJD-AAB2	2011-3475	1
57	Conformance test of chart synchronization and new updating means dated 27. June 2013	27. June 2013	1
56	TECDIS Synchronization User Guide 27. June 2013	27. June 2013	1
55	TECDIS Synchronization Installation Guide 25. June 2013	25. June 2013	1
53	TECDIS Operator Manual		2.3
51	JH23T14MMD-MA1-AABA-Conformance Test Report of LCD for use in RADAR and ECDIS - JH23T14MMD-MA1-AABA	DOC100883-4	4
45	JH23T14MMD-MA1-AOBA- Conformance Test Report of LCD for use in RADAR and ECDIS	DOC100883-3	1
44	Technical Report - Hatteland Display AS - EMC AND ENVIRONMENTAL TESTING OF MARITIME DISPLAY JH 23T14 MMD-MA1	2010-3124	2
43	TECHNICAL REP - HATTELAND DISPLAY AS - EMC AND ENVIRONMENTAL TESTING OF MARITIME COMPUTER HT C01 STD-D100	DNV 2010-3243	4
41	Survey Report - interfcae with Furuno monitors MU-series	40.9a	2010-09-09
40	Survey report		2010-04-07
38	EMC and Environmental type testing of QWERTY keyboard and cursor control L50 Trackball	2009-3482	1
34	EMC and Environmental type testing of Maritime computer HT C01 STD	2009-3161	2
33	EMC and Environmental type testing of HD19T03MMDII-A1, 19 inch AC monitor	2006-3107	1
32	Telko Conformance test report 19T03	DOC100828-4	
31	Telko Conformance test report 23T12	DOC100828-3	
30	Telko Conformance test report 20T17	DOC100828-2	
29	Telko Conformance test report 19T14	DOC100828-1	
28	TYPE TESTING OFHM20T07 MIL-E1 Rev. 1 - 2007-3008.pdf		

DNV GL No	Title	Drawing No	Rev.
26	JH19T12MMD-AA1-AAAC Technical Report 2008-3143.pdf		
25	JH 19T12 MMD-DA1-AAAA Technical Report 2008-3146.pdf		
24	MONITOR MODEL JH19T12MMD -AA1-AAAA Technical Report Rev.2.pdf	2008-3190	2
21	TECDIS conformance test report		3
16	EMC and Environmental testing of JH23T12MMD	2008-3142	1
15	EMC and Environmental testing of JH20T17MMD	2008-3511	2
14	EMC and Environmental testing of JH19T14MMD	2008-3528	1
6	Conformance Test Report JH19T14MMD-AA1-AOAA-1	DOC100496-1	
5	Conformance Test Report JH23T12MMD-AA1-AAAA	DOC1O0495-1	
3	Telco - S63 Loader Manual (User Guide) EN	TELKO S63	1

Marking of product

The name and contact address of the manufacturer and type designation of the product is to be affixed 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.