

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB000013U
Revision No:
1

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)
K-Bridge Radar, K-Nav Radar

Issued to

Kongsberg Maritime AS
KONGSBERG, Norway

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

Regulation (EU) 2021/1158,

item No. MED/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)

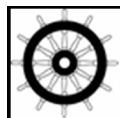
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2026-10-24**.

Issued at **Høvik** on **2021-10-25**

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

Approval Engineer:
Steinar Kristensen



Notified Body
No.: **0575**

for **DNV AS**

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Sverre Olav Bergli
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 1/2019 dated February 22nd, 2019.

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 300,000 USD.



Product description

Kongsberg Maritime Radar is available in two versions:

1. K-Bridge Radar, with support for Multi-Function Display (MFD) in combination with other K-Bridge systems or
2. K-Nav Radar, intended as standalone radar

See Appendix for further details.

Application/Limitation

- The K-Bridge and K-Nav Radar meets the requirements for Radar with Chart option for CAT 1, CAT 2, CAT 1H and CAT 2H for K-Bridge and K-Nav Operator Stations, subject to display size and transceiver types applied in the installation:
 - Minimum display size for CAT 1 and CAT 1H is 27", minimum display size for CAT 2 and CAT 2H is 24".
 - Transceivers for CAT 1H and CAT 2H: See Transceivers Units with Antenna for HSC, JRC in Appendix below.
- The installation shall be installed and tested on board according manufacturers manuals.
See Type Examination documentation below for details
- The K-Bridge Radar meets the requirements for Multi-Function Display (MFD), when connected in a KM network. The MFD may serve as Radar, ECDIS, back-up ECDIS, HCS, TCS and BNWAS.
- K-Bridge and K-Nav Radar with Radar Interface Network (RIN) is equivalent to an inter-switch facility required by DNV Rules Pt.6 Ch.3 Sec. 3 and Sec. 5.
- K-Bridge and K-Nav Radar is found to comply with the requirements for binary image transfer to VDR as defined in IEC 61162-450 (2018) and IEC 61996-1 (2013)

Tests carried out

- Performance testing: IEC 62388 (2013)
- Environmental testing: IEC 60945 (2002) incl. Corr. 1 (2008)
- Serial interface testing: IEC 61162-1 (2016)
- Presentation of information: IEC 62288 (2014)
- Bridge Alert Management: IEC 62923-1 (2018) and IEC 62923-2 (2018)

Type Examination documentation

See appendix for details.

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

Product description

K-Bridge Radar system comprises:

<u>Item:</u>	<u>Model/Type:</u>
• K-Bridge Operator Station	: As defined in separate certificate*)
• Software Modules	: As defined in separate certificate*)
• Radar Interface	: See below
• Transceivers and Antenna Units	: See below

K-Nav Radar system comprises:

<u>Item:</u>	<u>Model/Type:</u>
• K-Nav Operator Station	: As defined in separate certificate*)
• Software Modules	: As defined in separate certificate*)
• Radar Interface	: See below
• Transceivers and Antenna Units	: See below

For K-Bridge and K-Nav Radar systems:

<u>Item:</u>	<u>Model/Type:</u>
• Radar Interface:	
Radar Interface Network	: RIN rev A or rev C
Ethernet switch	: Moxa EDS-G509
• Transceivers and Antenna Units	: Ref details on next page for options

The K-Bridge Radar and K-Nav Radar can be delivered in K-Bridge Console KM05 or as built in version for other consoles incl. KM18

*) Certificate TAA00000FJ for K-Bridge and K-Nav system platforms (see Type Examination documentation below) in its latest revision at the date of placing the system on the market is part of this certificate.
 For the relevant revision see also <https://approvalfinder.dnv.com/>.

Transceivers and Antenna Units, Northrop Grumman Sperry Marine:

<u>Transceivers:</u>			<u>See Notes:</u>
X-band Transceiver/Turning Unit (10kW) or Transceiver/Bulkhead (10kW)	Type	65910#A#	*1, 2, 3, 6
	Type	65810A,B,E,F,G,H,L,P,T or W	*6
X-band Transceiver/Turning Unit (25kW) or Transceiver/Bulkhead (25kW)	Type	65925#A#	*1, 2, 3, 6
	Type	65825A,B,E,F,G,H,L,P,T or W	*6
Turning unit X-band (w/Bulkhead Tx)	Type	65901BAR or CA#	*2, 3, 6
S-Band Transceiver/Turning Unit (30kW) or Transceiver/Bulkhead (30kW)	Type	65830M\$R or N\$#	*3, 4, 6
	Type	65831A or B	
Turning unit S-band (w/bulkhead Tx)	Type	65830B\$# or C\$#	*3, 4, 6
Scanner Control unit S-band	Type	65837Aø	*5, 6

Antenna Units:

Array 12' S-unit	Type	65612A	*6
Array 8' X-unit	Type	65608A	*6
Array 6' X-unit	Type	65606A	*6

** Notes:*

1. A 1st. letter (#) suffix (M,N,P,T or W) is used to denominate the choice Bias limiter, Extra short pulse transmit or Additional facilities.
2. This item is link selectable on installation to 24 or 48 RPM antenna rotation speed.
3. A 3rd letter (#) suffix (R,T or U) is used for denote the choice of pulse and/ or syncro azimuth signal.
4. A 2nd letter (\$) suffix (E,F,G,H,J,K,L,M,P,Q,R or S) is used to denote the choice of operating voltage and 24 or 48 RPM antenna speed.
5. A 2nd letter (ø) suffix (B,C,E,F or H) is used to denote the choice of operating voltage and 24 or 48 RPM antenna speed.
6. The type number may be followed by suffix /KM.

Transceivers Units with Antenna, JRC:

X-band Transceiver (10kW), 27 rpm, 6ft antenna	Type	NKE-2103-6/KM
or		
X-band Transceiver (25kW), 24 rpm, 9ft antenna	Type	NKE-1125-9/KM
or		
S-Band Transceiver (30kW), 24 rpm, 12ft antenna	Type	NKE-1130-12S/KM
or		
S-band Transceiver, Solid State (250W), 24 rpm, 8ft antenna	Type	NKE-2632-8S/KM

Transceivers Units with Antenna for HSC, JRC:

X-band Transceiver (10kW), 48 rpm, 6ft antenna	Type	NKE-2103-6-HS/KM
or		
S-band Transceiver, Solid State (250W), 48 rpm, 8ft antenna	Type	NKE-2632-8S-H/KM

Type Examination documentation

DNV No	Document ID	Rev.	Description
368	463763	A	Manual: Kongsberg Maritime, KM Marine Radar Scanner, Maintenance Manual
367	463736	B	Manual: Kongsberg Maritime, KM Marine Radar Scanner, Installation Manual
366	477915	C	Report: Kongsberg Maritime, K-Bridge and K-NAV CAM BAM Type Approval Test report
365	480424	A	Report: Kongsberg Maritime, K-Bridge/K-Nav VDR communication IEC61162-450:2018 Type Approval Report
364	476824	A	Report: Kongsberg Maritime, Radar HSC Test Report
363	462698	C	Report: Kongsberg Maritime, JRC Radar Transceiver Test Report
362	R07002/ R07003/ R07004/ R07005/ R07006/ R07007	2007-08-14	Report: JAEA, Wind Tunnel Test Report for NKE-1130-12, NKE-1125-9, NKE-2103-6, NKE-2103-6HS
360	YN0801004-3	2008-03-28	Report: Chemitox, EMC Immunity test report for marine radar JMA-9123-9XA (NKE-1129, NTG-3225=NKE-1125 variant)
359	YN0801004-1	2008-03-13	Report: Chemitox, EMC Immunity test report for marine radar incl NKE-1130
357	YN0712004-1	2008-02-27	Report: Chemitox, EMC Emission test report for marine radar JMA-9123-9XZ (NKE-1129, NTG-3225=NKE-1125 variant)
356	YN0712002-1	2008-12-18	Report: Chemitox, EMC Emission test report for marine radar JMA-5332-12(NKE-1130)
355	YN0709007-1	2008-01-31	Report: Chemitox, EMC Emissions test report for marine radar incl NKE-2103
354	YN0709007-11	2008-01-28	Report: Chemitox, EMC Immunity test report for marine radar JMA-9110-6XAH (NKE-2103)
353	YN0708005-1	2007-12-07	Report: Chemitox, EMC Emission test report for JMA-5312-6HS (NKE-2103)
352	YN0708005-12	2008-03-28	Report: Chemitox, EMC Immunity test report for NKE-2103 and NJU-85
350	YN0706005-1	2007-11-13	Report: Chemitox, EMC Emission test report for marine radar JMA-7110-6XAH (NKE-2103)
349	YN0706005-13	2007-12-11	Report: Chemitox, EMC Immunity test report for AC-DC converter unit, scanner unit and performance monitor unit (NBA-5135, NKE-2103, NJU-85)
346	QINETIQ/14/00249	1.1	Report: QinetiQ, Unwanted emission test report for S-band radar JRS(S)402, ITU-R M1177 (NKE-2632HS)
345	QINETIQ/EMEA/TS/ CR0803478/2	2008-02	Report: QinetiQ, Unwanted emission test report for JRC(S)200, JRC(X)200 and JRC(X)201, ITU-R M1177 (NKE-1130, 2103, 1125)
340	13-326(E)	2013-10-15	Report: Research Institute of Marine Engineering, Compass Safe Distance Measurement, NKE-2103, NKE-2632 and NKE-2632-H
339	07-511(E)	2008-01-31	Report: Research Institute of Marine Engineering, Compass Safe Distance Measurement, NKE-2103, NKE-1125 and NKE-1130 Scanner Units
337	Z071C-13420	2013-12-11	Report: TÜV SÜD, Environmental testing of JRC JMR-9272S, JMR-9282-SH, JMR-7272S, JMR-7282SH Radars, IEC 60945 (incl NEK-1632, NKE-2632H)
334	75923142 Report 05	Issue 3	Report: TÜV SÜD, Environmental testing of JRC JMR-9200 Series Radar Scanners, IEC 60945 and IEC 62388 (2007) (NKE-2632 NKE-1632)
333	75923142 Report 01	Issue 3	Report: TÜV SÜD, Environmental testing of JRC JMR-9200 Series Radar, IEC 60945 (NKE-1130 and aux equipment)
331	75901288 Report 03	Issue 1	Report: TÜV SÜD, Limited Type Approval testing of JRC JMA-9100 Radar System, IEC 60945 (NKE-1130, NKE-1125-9)
330	75901288 Report 02	Issue 1	Report: TÜV SÜD, Limited Type Approval testing of JRC JMA-7100 Radar System, IEC 60945 (NKE-1125-9, NKE-1130)
329	75901288 Report 01	Issue 1	Report: TÜV SÜD, Limited Type Approval testing of JRC JMA-5300 Mk2 Radar System, IEC 60945 and IEC 62388 CDV (2006-11) (NKE 2103-6-HS)

DNV No	Document ID	Rev.	Description
328	QINETIQ/14/01532	1.2	Report: QinetiQ, Unwanted emission measurement of JRC S-band radar NKE-2632
327	QINETIQ/14/01531	1.1	Report: QinetiQ, Unwanted emission measurement of JRC S-band radar NKE-2632-H
318	429330	D	Manual: Kongsberg Maritime, K-Nav Radar, Operator Manual, Release 8.2
317	429323	J	Manual: Kongsberg Maritime, K-Bridge Radar, Operator Manual, Release 8.2
313	394356	B	Manual: Kongsberg Maritime, K-Bridge Built-in 3rd Party WS MK3 RoLAN Operator Station, Maintenance Manual
312	394343	C	Manual: Kongsberg Maritime, K-Bridge Built-in 3rd Party WS MK3 RoLAN Operator Station, Installation Manual
311	418199	B	Report: Kongsberg Maritime, Test report for K-Bridge CCRS -Clause 6
310	415226	A	Report: Kongsberg Maritime, K-Bridge & K-Nav Radar Type Approval Test report, IEC 62388 (2013), IEC 62288 (2014) and IEC 61162 (2010)
307	OObEvidenceFor62388Ed2	2	Report: NGSM, Assessment report for S- and X-band radar towards IEC62388 Ed2.0
306	399058	B	Manual: Kongsberg Maritime, Installation Manual for K-NAV Radar
304	399059	B	Manual: Kongsberg Maritime, Maintenance Manual for K-NAV Radar
303	401092	A	Report: Kongsberg Maritime, Protocol tests on interface for K-NAV Radar
301	QinetiQ/MS/EES/TST R0801808/1	2008-08-29	Report: QinetiQ, Environmental test report for 65925 X Band turning unit
298	396352	A	Drawing: Kongsberg Maritime, RIN Sperry 230VAC IP66 Copper
297	396351	A	Drawing: Kongsberg Maritime, RIN Sperry 230VAC IP66 Fibre
288	DANAK-19/12398	1	Report: Delta, Environmental test report for Radar Interface Network (RIN)
287	393373	A	Report: Kongsberg Maritime, RoLAN Radar Functionality, Type Approval performance test report
286	393352	A	Report: Kongsberg Maritime, RoLAN network test report
285	387381	A	Report: Kongsberg Maritime, RoLAN Target tracker Scenario 1 test report
283	346867	C	Manual: Kongsberg Maritime, Radar turning unit (S-band, upmast), Installation manual
282	346861	C	Manual: Kongsberg Maritime, Radar turning unit 25kW (X-band, upmast), Installation manual
281	331489	A	Manual: Kongsberg Maritime, Guidelines for the installation of shipborne radar equipment
280	300552	G	Manual: Kongsberg Maritime, Radar sensors (Decca), Maintenance manual
274	352102	A	Manual: Kongsberg Maritime, Radar cable kit 67m (S-band), Installation manual
273	347015	A	Manual: Kongsberg Maritime, Radar cable kit 67m (X-band), Installation manual
272	TAA000006N	4	Certificate: DNV, Moxa EDS series ethernet switches, KM Doc. No 427138/F
271	TAA00000FJ	Latest rev.	Certificate: DNV, K-Bridge and K-Nav system platforms
242	328811/P	2010-03-05	Report: Kongsberg Maritime, K-Bridge Radar test procedure
218	QINETIQ/FST/CMT/T R022173	March 2002	Report: QinetiQ, Unwanted Emissions Measurements of a Litton Marine X Band Navigation Radar
216	QINETIQ/D&TS/SES/TC0609653	1.0	Certificate: QinetiQ, Certificate of Test, 30 kW Turning Unit and Scanner Control Unit
215	DERA/SS/WI/R/TT-22/97	Oct 1998	Report: DERA, Page 2 of Appendix B from DERA/SS/WI/R/TT-22/97
214	DERA/SSWI/R/TT-12/97	Oct 1998	Report: DERA, Extracted page from report DERA/SSWI/R/TT-12/97
212	QINETIQ/S&E/SPS/CR050588/1.0	1.0	Report: QinetiQ, BME in FST Pedestal
211		2009-11-20	Report: Prediktor, Radar Tracking Report, date 2009-11-20

DNV No	Document ID	Rev.	Description
209	DERA/SSWI/R/TT-12/97	1.0	Report: DERA, Type testing of Bridgemaster II Series S-Band
208	DERA/SS/CI/R/TT-20/98/1.1	1.1	Report: DERA, Type testing of Bridgemaster E Series Radar Equipment
207	QINETIC/MS/EES/TSTR0801152/ 1.1	1.1	Report: QinetiQ, Performance Compliance Testing
35	KLM1.00.0061 Rev B	B	Report: Kongsberg Fimas, Environmental Test Report Verification Test on AIM Safe System