



中国船级社  
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.  
BG19PTB00028\_02

型式认可证书  
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。

This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

Kongsberg Maritime AS (Kongsberg)

地址/Address

Kirkegardsveien 45, P.O. Box 483 N-3601 Kongsberg Norway

产品名称/Product

雷达设备  
Radar Equipment

认可标准/Approval Standard

- 国际海事组织大会决议A.694(17)《作为全球海上遇险和安全系统(遇险和安全系统)组成部分的船载无线电设备和电子助航设备的一般要求》  
IMO Resolution A.694(17) General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids
- 国际海事组织海安会决议MSC.191(79)《船载航行显示器有关航行信息显示的性能标准》  
IMO Resolution MSC.191(79) Performance Standards for the Presentation of Navigation-Related Information on Shipborne Navigational Displays
- 国际海事组织海安会决议MSC.192(79)《经修订的〈关于雷达设备性能标准的建议案〉》  
IMO Resolution MSC.192(79) Adoption of the Revised Performance Standards for Radar Equipment
- 国际海事组织大会决议Res.A.278(VIII)《航海雷达设备控制符号》  
IMO Res.A.278(VIII) Control Symbol of Navigation Radar Equipment
- 国际海事组织大会决议Res.A.823(19)《船用自动雷达标绘仪性能标准(ARPA)》  
IMO Res.A.823(19) Performance Standards for Automatic Radar Plotting Aids (ARPAs)
- 国际电联联盟建议书ITU-R M.1177-4(04/2011)《对于雷达系统无用发射的测量技术》  
ITU-R M.1177-4(04/2011) Techniques for Measurement of Unwanted Emissions of Radar Systems
- IEC 62388:2013/COR1:2014 Edition 2.0 (2014-02-12)《导航和无线电设备-船用雷达-性能要求、测试方法和要求的测试结果》  
IEC 62388:2013/COR1:2014 Edition 2.0 (2014-02-12) Maritime navigation and radiocommunication equipment and systems - Shipborne radar - Performance requirements, methods of testing and required test results
- IEC 60945:2002/COR1:2008《船用航行和无线电通信设备及系统-通用要求-试验方法和试验结果的要求》  
IEC 60945:2002/COR1:2008 Maritime Navigation and Radiocommunication Equipment and Systems - General Requirements - Methods of Testing and Required Test Results

证书有效期至/This Certificate is valid until 2024年07月01日/ Jul. 01,2024

发证机构 中国船级社卑尔根办事处  
Issued by CCS Bergen Office

签发日期 2020年07月01日  
Date Jul. 01,2020

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Form No: T01.

联系方式/Contact Us, 见本社官方网站/See official web site of the Society (<http://www.ccs.org.cn>)



UTN:P020-65621964





## 用于/Intended for

船舶与海上设施/Ships and Offshore Installations

## 产品明细/Product Description

## 雷达设备/Radar Equipment (M0001)

名称/Name	属性(值)/Value	单位/Unit
型号/Type	K-Bridge & K-Nav Radar	
系统组成/System Component	1. K-Bridge Radar system: K-Bridge Operator Station, Software Modules, Radar Interface, Transceivers and Antenna Units 2. K-Nav Radar system: K-Nav Operator Station, Software Modules, Radar Interface, Transceivers and Antenna Units	
峰值功率/Peak of Output Power	10, 25 or 30	kW
天线长度/Length of Antenna	6, 9 or 12	foot
软件版本号/Software Version	8. x (8.2 onwards)	
工作频率/Operating Frequency	50-60	Hz
最小操作显示区直径/Minimum Operation Display Area Diameter	320, 250	mm
是否具有自动捕获目标功能/Whether Includes Auto Acquisition of Targets Function	Yes	
是否具有试操船功能/Whether Includes Trial Manoeuvre Function	Yes	
最少被捕获的雷达目标数/Minimum Acquired Radar Targets Capacity	100	pcs.
最少被激活的AIS 目标数/Minimum Acquired Ais Targets Capacity	300	pcs.
最少休眠AIS 目标数/Minimum Sleeping Ais Targets Capacity	300	pcs.
罗经安全距离/Compass Safe Distance	90	cm
性能监测器型号/Performance Monitor Type	Transponder	
是否集成电子标绘(EPA)功能/Whether Electric Plotting Aid Function Be Integrated Into The Radar Equipment	Yes	
是否集成自动目标跟踪(ATA)功能/Whether Automatic Tracking Aid Function Be Integrated Into The Radar Equipment	Yes	
是否集成自动雷达标绘(ARPA)功能/Whether Automatic Radar Plotting Aid Function Be Integrated Into The Radar Equipment	Yes	
额定电压/Rated Voltage	AC230-400, DC24	V

## 批准的图纸/Approved Drawings

图纸批准号/Drawings Approval No.: BG20PPP20002

## 产品认可试验报告/Approval Test Report

试验报告编号/Test Report No.: See "Additional page"

试验报告日期/Test Report Date:

试验单位/Laboratory: See "Additional page"

试验单位地址/Test Address: See "Additional page"

## 认可后的产品检验方式/Method of Product Inspection after Approval



按规范认可后应进行产品检验的产品/The product should be inspected in term of the rules:  
认可后的产品检验应由本社验船师根据本社规范规定按批准的产品检验计划进行检验, 经检验合格后由本社颁发船用产品证书。

After approval, product inspection should be carried out by the Surveyor of the Society in accordance with the approved product inspection scheme, and the Marine Product Certificate will be issued by the Society upon satisfactory inspection.

### 认可保持条件/ Maintenance Requirements of Approval

1. 型式认可后, 如果产品及其重要零部件的设计、所用材料或制造方法有所改变, 且影响到产品的主要特性、特征; 或产品的性能指标有所更改, 且超过认可的范围, 则有关图纸和文件应经检验机构审批。并在检验机构认为必要时, 经本社检验人员见证有关试验和进行检查, 其结果应能证实仍符合认可条件。

After type approval, if there are changes to the design, materials used or manufacturing method of the product and important components and such changes affect major characteristics and properties of the product, or property indexes of the product are changed and exceed the scope of approval, related drawings and documents are to be examined and approved by the concerned survey office. Where deemed necessary by the survey office, the surveyor to the Society will go to witness relevant tests and conduct inspection and the results should be able to demonstrate compliance with the approval conditions.

2. 工厂的质量管理体系应保持有效运行, 并且与认可时一致。如果质量管理体系发生改变, 应经原体系认证机构审核并报本社批准。

The quality management system of the factory shall be ensure effective operation, and shall be the same as the situation of approval. If there are any changes to the quality management system, auditing of the original certification organization for quality management system and the society's approval shall be obtained.

3. 认可证书有效期内, 如果出现可能导致本社取消认可的情况, 工厂应及时采取有效的纠正措施。

Within the validity of the approval certificate, if cases occur that may cause the Society to withdraw the approval, the manufacturer should take corrective actions in a prompt and effective manner.

4. 在认可证书有效期内, 本社检验人员可在未经事先通知的情况下对工厂的产品制造过程进行审核, 以验证产品的生产是否符合业经本社批准的图纸和文件。工厂应予以配合。

Within the validity of the approval certificate, the surveyor to the Society may pay unannounced audit to the manufacturing process of the product in order to confirm whether it is in compliance with the drawings and documents approved by the Society. The factory should provide an active cooperation and necessary for the surveyor.

5. 如果属于获得型式认可B 模式证书, 且无需颁发船用产品证书/等效证明文件的情况, 证书获得者应接受本社每年一次的定期审核, 定期审核日为认可证书期满之日对应的每一周年日, 检查工作应在周年日的前后三个月内进行。

If belong to the situation of the product has type approval mode B certificate, and marine product certificate/equivalent document is not necessary, those who have obtained the certificate should be subject to periodical audit every year. The date of periodical audit shall be each anniversary date which corresponds to the date of expiry of the relevant certificate and the periodical audit shall be done within a time span of three months before and after the annual surveillance date.





**备注/Remarks**

1. 本证书由原型式认可证书 (No. BG14T00003\_02) 换新并替代原证书。  
This certificate is renewed from and supersedes the previous Type Approval Certificate No. BG14T00003\_02.
2. Approval history:
  - Initial approval: GB10T00029\_02
  - First update: GB12T00030\_02
  - Second update: BG14T00003\_02
  - Third update: BG19T00028\_02
3. Regarding other product description, please refer to "Additional pages"
4. The system shall be installed and tested on board according to manufacturers manuals as attached in this certificate.
5. For designated vessel, the arrangement drawings of the system are to be approved by the society in advance before FAT.
6. 本社已审核了产品厂无石棉声明, 但本社的审核不免除产品厂按照合同关系向订货方保证产品无石棉的责任。  
The declaration of asbestos-free submitted by manufacturer has been reviewed by the Society. However, liability of the manufacturer to guarantee the products are asbestos-free to purchaser under contract will not be exempted.

中国船级社卑尔根办事处  
CCS Bergen Office 09

注: 本证书含有附页, 共3页  
Note: The certificate is attached with additional 3 page(s)



## 一、 Other product description

- (一) Regarding the definition of K-Bridge Operator Station, K-Nav Operator Station and Software Modules, please refer to type approval certificate BG19PTB00028\_06.
- (二) Radar Interface Network : RIN rev A or rev C, which is only supported in combination with Northrup Grumman Sperry Marine transceivers and antenna units in an up-mast configuration
- (三) Ethernet switch : Moxa EDS-G509
- (四) The details of the Radar connected to this system are as follows:  
(Manufacturer: Northrup Grumman Sperry Marine)

Name	Type	Notes
X-Band Transceiver/Turning Unit(10 kW) or Transceiver/Bulkhead(10 kW)	65910#A≠ 65910A,B,E,F,G,H,L,P,T or W	*1,2,3,6 *6
X-Band Transceiver/Turning Unit(25 kW) or Transceiver/Bulkhead(25 kW)	65925#A≠ 65925A,B,E,F,G,H,L,P,T or W	*1,2,3,6 *6
Turning unit X-band (w/Bulkhead Tx)	65901BAR or CA≠	*2,3,6
S-Band Transceiver/Turning Unit(30 kW) or Transceiver/Bulkhead(30 kW)	65830M § R or N § ≠ 65831 A or B	*3,4,6 *6
Turning unit S-band (w/bulkheadTx)	65830B § ≠ or C § ≠	*3,4,6
Scanner Control unit S-band	65837Aφ	*5,6
Antenna Units: Array 12' S-Unit/ Array 8' X-Unit/ Array 6' X-Unit: 65612A/65608A/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 rotation speed.
5. A 2nd letter (φ) 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.





## 二、 Approval Test reports

No.	Report No.	Report date	Lab./Test Address	Note
1	677684301	2019.12.17	Kongsberg Maritime/Norway	Renewal testing & FAT report
2	418199	2017.01.31	Kongsberg Maritime/Norway	Test report for K-Bridge & K-Nav CCRS - Clause 6
3	415226	2017.01.25	Kongsberg Maritime/Norway	K-Bridge & K-Nav Radar Type Approval Test report, IEC 62388 (2013), IEC 62288 (2014) and IEC 61162 (2010)
4	401092	2015.05.22	Kongsberg Maritime/Norway	Protocol tests on interface for K-Nav Radar
5	387381	2014.04.28	Kongsberg Maritime/Norway	RoLAN Target tracker Scenario 1 test report
6	OOBEvidenceFor 62388Ed2	2014.02.13	SPERRY MARINE BV/Netherlands	Assessment report for S- and X-band radar towards IEC62388 Ed2.0
7	393352	2014.04.25	Kongsberg Maritime/Norway	RoLAN network test report
8	393373	2014.07.15	Kongsberg Maritime/Norway	RoLAN Radar Functionality, Type Approval performance test report
9	DANAK-19/12398 Rev. 1	2012.10.05	DELTA/Denmark	Report: Delta, Environmental test report for Radar Interface Network (RIN)
10	328811/P	2010.03.05	Kongsberg Maritime/Norway	K-Bridge Radar test procedure
11	QinetiQ/MS/EES /TSTR0801808/1	2008.08.29	QinetiQ/UK	Report: QinetiQ, Environmental test report for 65925 X Band turning unit
12	---	2009.11.20	Prediktor /Norway	Radar Target Tracking
13	QINETIQ/MS/EES /TSTR0801152/ 1.1	2008.07.08	QinetiQ/UK	Performance Compliance Testing
14	QINETIQ/D&TS/S ES/TC0609653 Issue 1.0	2006.07.24	QinetiQ/UK	Certificate of Test, 30 kW Turning Unit and Scanner Control Unit
15	QINETIQ/S&E/SP S/CR050588/1.0	2005.04.08	QinetiQ/UK	BME in FST Pedestal
16	QINETIQ/FST/CM T/TR022173	2002.03.21	QinetiQ/UK	Unwanted Emissions Measurements of a Litton Marine X Band Navigation Radar- LM(X)001, LM(X)002, LM(X)003
17	KLM1.00.0061 Rev A	2002.01.09	Kongsberg Fimas /Norway	Environmental Test Report, Verification Test on AIM Safe System
18	DERA/SS/CL/R/T T-20/98/1.1	1999.06.16	DERA /UK	Type testing of Bridgemaster E Series Radar Equipment
19	DERA/SSWI/R/TT -12/97/1.0	1997.10.28	DERA /UK	Type testing of Bridgemaster II Series S-Band





20	DERA/SSWI/R/TT-12/97/1.0	1997.10.28	DERA /UK	Extracted page from report DERA/SSWI/R/TT-12/97
21	DERA/SS/WI/R/T-22/97/1.0	1997.10.28	DERA /UK	Page 2 of Appendix B from DERA/SS/WI/R/TT-22/97

### 三、 Kongsberg Maritime Radar manuals

No.	Document Id.	Rev.	Description
1	451423	C	K-Bridge MFD KMOS/BI OS INS Operator Station Maintenance Manual
2	458447	A	K-Bridge MFD KMOS/BI OS INS Operator Station Installation Manual
3	429330	B	Manual: Kongsberg Maritime, K-Nav Radar, Operator Manual, Release 8.2
4	429323	F	Manual: Kongsberg Maritime, K-Bridge Radar, Operator Manual, Release 8.2
5	346867	C	Manual: Kongsberg Maritime, Radar turning unit (S-band, upmast), Installation manual
6	346861	C	Manual: Kongsberg Maritime, Radar turning unit 25kW (X-band, upmast), Installation manual
7	331489	A	Manual: Kongsberg Maritime, Guidelines for the installation of shipborne radar equipment
8	300552	G	Manual: Kongsberg Maritime, Radar Decca, Maintenance manual
9	352102	A	Manual: Kongsberg Maritime, Radar cable kit 67m (S-band), Installation manual
10	347015	A	Manual: Kongsberg Maritime, Radar cable kit 67m (X-band), Installation manual
11	425861	B	K-Nav Radar Built-In Operator Station Installation Manual
12	425862	C	K-Nav Radar Built-In Operator Station Maintenance Manual
13	437565	A	K-Nav Radar KM05 OS-650 DL Operator Station Maintenance Manual
14	437566	A	K-Nav Radar KM05 OS-650 DL Operator Station Installation Manual

