



NOTIFIED BODY  
No 0191

## CERTIFICATE OF TYPE APPROVAL

(EC Certificate of Type Examination - Module B)

(Marine Equipment Directive - 96/98/EC, as amended\*1)

**Applicant:-**

Japan Radio Co., Ltd  
C/O J.R.C. Newdigate, The Garden Room Unit  
Dean House Farm, Church Lane  
Newdigate, Surrey RH5 5DL  
United Kingdom

**Manufacturer:-**

Japan Radio Co., Ltd  
1-1 Shimorenjaku  
5-chome, Mitaka-Shi  
Tokyo 181-8510  
JAPAN

This is to certify that the applicant has submitted details of a:-

**Shipborne Radar Equipment (IEC 62388 Category 1C)**

(COMMISSION DIRECTIVE 2008/67/EC – ITEM A.1/4.34, CAT 1 RADAR) \*2

(ALSO COMMISSION DIRECTIVE 2008/67/EC – ITEM A.1/4.45, CAT x C CHART RADAR)

Of system types known and designated as:-

- a) JMA-922B-6XA/9XA – CAT1C, Standalone console, X-Band Chart Radar System
- b) JMA-923B-7XA/9XA – CAT1C, Standalone console, X-Band Chart Radar System
- c) JMA-932B-SA – CAT1C, Standalone console, S-Band Chart Radar System
- d) JMA-933B-SA/SAA – CAT1C, Standalone console, S-Band Chart Radar System

(Comprising component parts and having technical characteristics shown in schedule 2a, 2b, 3 & 4)

and that these have been assessed, tested and when used in a combination of component parts as described in the attached schedules, is CERTIFIED as complying with the relevant parts of:

IEC 62388:2007, "Marine Shipborne Radar Equipment" \*2

IEC 60945 : 2002, "General Requirements for Marine Navigation Equipment"

(being Standards for Technical Characteristics and Methods of measurements published by the International Electrotechnical Commission).

It is also RECOGNISED that the equipment conforms to performance standards not inferior to those adopted by the International Maritime Organisation, and which are contained in the relevant parts of Resolution MSC.191(79), Resolution MSC.192(79) and Resolution A694(17).

\*2 See Statement Re. MED Item No., IEC 62388:2007 and IMO Resolution MSC.192(79) on page 2

This standard and IMO Resolution are currently in transposition into the Annexes of the Marine Equipment Directive with the 5th Amendment and the replacement of the old standards are detailed in the statement.

SIGNED:

R A Sharp

Authorised Signatory

DATE of ISSUE: 12<sup>TH</sup> November 2009

DATE of EXPIRY: 1<sup>ST</sup> June 2014

Certificate Number: QQ-MED-18/08-01R

EU/USCG Mutual Recognition Agreement  
Council Decision 2004/425/EC

USCG Approval Number (part):165.120/EC0191/1808-01  
(Item A.1/4.34 ARPA (Tracking CAT1), display and function only)

This Certificate is Valid until expiry date shown, subject to the standard conditions of issue printed on the attached schedule Japan Radio Co., Ltd are Module D registered with QinetiQ in accord with standard condition 3, ref Certificates DQAS-01/01-JRC001R15.

QinetiQ

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Under the terms of the United Kingdom Statutory Instrument, No 1957 : 1999, QinetiQ Ltd has been Notified to the European Commission by the Maritime and Coastguard Agency as a Body authorised to conduct Conformity Assessment procedures under the provisions of the European Council Directive 96/98/EC (as amended) on Marine Equipment and issue Certificates of Type Approval.



Maritime and Coastguard Agency  
The MCA is an Executive Agency of  
the Department for Transport

## Schedule 1

### Statement on New “Radar Systems” Standard IEC 62388

The International Maritime Organisation (IMO) adopted RESOLUTION MSC.192(79) on 6 December 2004 On the REVISED PERFORMANCE STANDARDS FOR RADAR EQUIPMENT. These standards are mandated to be implemented on or after 1<sup>st</sup> July 2008.

The Scope recognised that radar should provide the integration and display of radar video, target tracking information, positional data derived from own ships position (EPFS) and geo referenced data. The integration and display of AIS information should be provided to complement radar. The capability of displaying selected parts of Electronic Navigation Charts and other vector chart information may be provided to aid navigation and for position monitoring.

Contained within MSC.192(79) were details of the Differences in the performance requirements for various sizes/categories of ship/craft to which SOLAS applies, these were contained in TABLE 1.

Size of ship/craft	Cat 3	Cat 2	Cat 1
	<500 gt	500 gt to <10,000 gt and HSC <10,000 gt	All ships/craft ≥10,000 gt
Minimum operational display area diameter	180mm Dia.	250mm Dia	320mm Dia
Minimum display area	195 x 195 mm	270 x 270 mm	340 x 340 mm
Auto acquisition of targets	-	-	Yes
Minimum <i>acquired</i> radar target capacity	20	30	40
Minimum <i>activated</i> AIS target capacity	20	30	40
Minimum <i>sleeping</i> AIS target capacity	100	150	200
Trial Manoeuvre	-	-	Yes

In addition radar equipment can optionally conform to two other sets of performance criteria for High Speed Craft and/or for electronic chart display.

IMO resolution MSC.192(79) performance standard was taken by the International Electrotechnical Standards Organisation (IEC) and turned into the International Standard IEC 62388, first edition 2008.

IEC 62388 replaces 7 other standards that covered the various aspects of radar performance; these were IEC 60936-1, IEC 60936-2, IEC 60936-3, IEC 60936-5, IEC 60872-1, IEC 60872-2 and IEC 60872-3.

The Marine Equipment Directive (96/98/EC) details the European procedure for conformity assessment and approval for the range of IMO mandated marine equipment. The particular requirements for each equipment item is listed and the test requirement is detailed in the Equipment Annexes, Current version being contained in amending directive 2008/67/EC and the latest (5<sup>th</sup> Amendment) has just been published.

The 4<sup>th</sup> Amendment of the MED failed to refer to the revised IMO PS, MSC.192(79) or the new IEC 62388 technical standard. However, in the 5<sup>th</sup> Amending Directive, 2009/26/EC (currently in the transposition procedure), the International Instruments and testing standards have been updated to their up-to-date version and allocated to existing MED equipment item numbers for radar equipment.

QinetiQ be issuing Radar Equipment certificates as detailed below.

MED Item.	Previous Description	IEC 62388 Category & 5 <sup>th</sup> Amendment listing	Radar Display area
A.1/4.34	Radar with ARPA	Cat 1	320mm Dia.
A.1/4.35	Radar with ATA	Cat 2	250mm Dia.
A.1/4.36	Radar with EPA	Cat 3 (EPA no longer accepted)	180mm Dia.
A.1/4.37	HSC with ARPA	Additional. Suffix “H” on CAT 1 or CAT 2	Dia. as CAT.
A.1/4.38	HSC Radar with ATA	Not used	
A.1/4.45	Chart Radar	Additional. Suffix ‘C’ on Cat 1, Cat 2, Cat1H or Cat 2H above	

IEC 62388 was also written to include all the appropriate Presentation criteria and standards as detailed in IMO Resolution MSC.191(79) for a shipborne navigational radar display and therefore any radar assessed by the QinetiQ Notified Body, as compliant with IEC 62388, Edition 1 : 2008 is also certified to have presentation standards compliant with Resolution MSC.191(79).

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Certificate Number      QQ-MED-18/08-01R

## Schedule 2a –Category 1C Radar

### JMA-9xxB Series – CAT1C, Standalone console, Chart Radar System

The applicant declared that the following units form the radar processing and display section of the system designations a), b),c) or d), given on Page 1. These units have been assessed & tested, and satisfactory details of these units were included in the technical file. The combination of units from schedule 2a & 2b form a system consistent with the Item Descriptions A1/4.34 & A.1/4.45, given in Annex A1 of Commission Directive 2008/67/EC and Category 1C of MSC.192(79) and IEC 62388.

**SYSTEM comprising of:-**

	Bridge Display Terminal	NCD-2096	*1, 2
	Incorporating:- 23.1" Colour LCD Unit	NWZ-170-E	
	Processing Unit	NDC-1444 or NDC-1445	
	Keyboard	NCE-5163-C or NCE-5163-F	
<b>SOFTWARE</b>			
RADAR	Indicator	Ver. 02.00	*3
ECDIS	Process Manager	Ver. 01.00	*3
	ECDIS Application	Ver. 0200	*3
	Chart Portfolio	Ver. 02.00	*3
----- End of List -----			

**NOTES:-**

- 1 Deck mounting pedestal incorporating the main assemblies listed. This unit has dimensions and ergonomic aspects that are consistent with Integrated Bridge requirements.
- 2 This equipment shares identical hardware with the JAN-901B ECDIS and the system software covers all functions. It is therefore a Multi-Function workstation which may allow the operator to 'Hot Switch' between Chart Radar function and ECDIS function. The Approval status conferred by this certificate only applies to operation in the 'Chart Radar' mode. Certificate QQ-MED-12/08-03R, issued on 26 October 2009 gives formal recognition to the ECDIS function as the JAN-901B. It can also form a Back-up ECDIS, conforming to IEC 61174 Ed3, Annex F "Back-up arrangements". Multi-Function workstation and Back-up ECDIS operation may be subject to ships operating plan approval by Flag Administration or Class Society.
- 3 This approval is valid for equipment including subsequent software versions only where written details of any modifications have been submitted to and accepted by QinetiQ.
- 4 This certificate supersedes and replaces certificate QQ-MED-18/08-01i issued on 10 October 2008.

**Technical Characteristics**

RADAR DISPLAY CIRCLE	≥320mm	Effective Diameter
RADAR TARGET CAPACITY	100 targets	40 minimum for Cat 1
AUTO ACQUISITION OF TARGETS	Yes	mandatory for Cat 1
TRIAL MANOEUVRE	Yes	mandatory for Cat 1
AIS TARGET CAPACITY <b>ACTIVATED SLEEPING</b>	100 300 (300 max any type)	Minimum for Cat 2 of 40 Activated Targets and 200 Sleeping Targets is exceeded.
IEC 61162-1 SERIAL (NMEA) PORTS	Listner 11 Talker -5	Conformity to IEC 61162-1:2000. Designated ports on CQD-2121 signal interface board for all major sensor inputs. Presence & fault check on messages provide warnings
TEMPERATURE RANGE & IEC 60945 CLASS	Protected. -15°C to +55°C	All units
POWER SOURCE	<b>100-115V or 220-240V AC</b> 50-60Hz	Selection between voltage options by internal switches.

**Conditions of Issue of this certificate are printed on Page 8.**

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**Certificate Number    QQ-MED-18/08-01R**

## Schedule 2b –Category 1C Radar

**JMA-922B-XA– CAT1C, X-Band Chart Radar System (upmast transceiver)**

**JMA-923B-XA – CAT1C, X-Band Chart Radar System (downmast transceiver)**

**JMA-932B-SA – CAT1C, S-Band Chart Radar System (upmast transceiver)**

**JMA-933B-SA/SAA– CAT1C, S-Band Chart Radar System (downmast transceiver)**

The applicant declared that the following units form the radar Transceiver section of the system designations given on Page 1. The resulting system has been assessed & tested, and satisfactory details of these units were included in the technical file. The combination of units from schedule 2a & 2b form a system consistent with the Item Descriptions A1/4.34 & A.1/4.45, given in Annex A1 of Commission Directive 2008/67/EC and Category 1C of MSC.192(79) and IEC 62388.

### S-Band Transceivers:-

Transceiver/Turning Unit (30kW, 12ft Antenna)	NKE-1130-#	*1,2
or Transceiver Bulkhead (30kW)	NTG-3230	
and Turning Unit (12ft Antenna)	NKE-1139-#	*1,2
or Turning Unit (12ft Antenna)	NKE-1139A-#	*1,2,3
Performance Monitor/Sensor	NJU-84	

### X-Band Transceivers:-

Transceiver/Turning Unit (25kW, 6ft Antenna)	NKE-1125-6#	*1,4
or Transceiver/Turning Unit (25kW, 9ft Antenna)	NKE-1125-9#	*1,4
or Transceiver Bulkhead (25kW)	NTG-3225	
and Turning Unit (7ft Antenna)	NKE-1129-7#	*1,4
or Turning Unit (9ft Antenna)	NKE-1129-9#	*1,4
Performance Monitor/Sensor	NJU-85	

### SOFTWARE

RADAR	MTR (Transceiver)	Version	
		<b>Ver. 01.00</b>	*5

----- End of List -----

### NOTES:-

- 1 Suffix #is used to indicate the operating voltage and De-icing heater options as follows:  
"1" = 100-115VAC operation, "2" = 220-240V AC operation, "D" = De-icing heater fitted.
- 2 JMA-932B-SA & JMA-933B-SA /SAA system Scanners incorporate the S-Band performance monitor unit NJU-84.
- 3 The NKE-1139 turning unit is also available with flat side covers as the NKE-1139A and if included the system model number will be JMA-933B-SAA.
- 4 JMA-92xB-XA system Scanners incorporate the X-Band performance monitor unit NJU-85.
- 5 This approval is valid for equipment including subsequent software versions only where written details of any modifications have been submitted to and accepted by QinetiQ.

### Technical Characteristics

FREQUENCY OF OPERATION	9.410 GHz - X-Band 3.050 GHz – S-Band	±30MHz ±20MHz
PULSE REPETITION FREQUENCY	2250, 1900, 1400, 750, 650, 510Hz	(PRF) Automatically changes to suit pulse length
PULSE LENGTHS	0.07µs, 0.2µs, 0.3µs, 0.4µs 0.8µs, 1.0µs, 1.2µs	Automatically changes with range selection Operator selection on 0.75 to 24nm ranges
EMISSION CODE	3M00P0NAN	
POWER CHARACTERISTIC	25kW or 30kW	(PEP) X-Band (PEP) S-Band
TEMPERATURE RANGE & IEC 60945 CLASS	Exposed -25°C to +70°C Protected -15°C to +55°C.	-- Turning Units & Antenna -- Bulkhead transceiver
POWER SOURCE	100-115V or 220-240V AC 50-60Hz	

**Conditions of Issue of this certificate are printed on Page 8.**

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Certificate Number **QQ-MED-18/08-01R**

## Certificate of Type Approval - Schedule 3

### JMA-900B series Radar Systems - Ancillary and Optional Units

The applicant declared that the following units may be added to the basic radar systems illustrated in schedules 1 to 4. These units have been assessed & tested in conjunction with JMA-900B & JMA-9100 series radar systems, and satisfactory details are included in the technical files.

**ALTERNATE AND SLAVE DISPLAYS:-**

Slave Colour LCD Monitor, 19.3 LCD "	<b>JH-19T02 MMD or JH-19T03 BOBA</b>	<b>*1</b>
Slave Colour LCD Monitor, 20.1 LCD "	<b>JH-20T03 MMD or JH-20T06 MMD</b>	<b>*1</b>
Slave Colour LCD Monitor, 23.1 LCD "	<b>JH-23T02 MMD-A1</b>	<b>*2</b>
Slave Colour LCD Monitor, 19 LCD "	<b>Melford MRD19SP-DC or -AC</b>	<b>*1</b>
Slave Colour LCD Monitor, 23 LCD "	<b>Melford MRD23SP-DC or -AC</b>	<b>*2</b>
Slave Colour LCD Monitor, 19 LCD "	<b>Innoscan 1900MII</b>	<b>*1</b>
Slave Colour LCD Monitor, 23 LCD "	<b>Innoscan 2300MII</b>	<b>*2</b>

**ANCILLARY UNITS:-**

Power control Unit	<b>NQE-3167</b>	
Interswitch Unit (2 display x 2 transceiver, Internal)	<b>NQE-3141-2A</b>	<b>*3</b>
Interswitch Unit (4 display x 4 transceiver, External)	<b>NQE-3141-4A</b>	
Interswitch Unit (8 display x 8 transceiver, External)	<b>NQE-3141-8A</b>	

-----End of List-----

**\* NOTES:-**

- 1 Colour Slave display, no operational controls apart from screen brilliance provided. Will present undersize radar picture for non navigational workstation use only.
- 2 Colour Slave display, no operational controls apart from screen brilliance provided. May be used as an alternative to the NWZ-170-E Monitor of the NCD-2096 display assembly in situations where Panel mounting is acceptable.
- 3 This Interswitch is an internal PCB assembly of a JMA-9100 system (mounted inside the Radar Processor (NDC-1399-9) housing of the NCD-4990 Display), the JMA-900B radar system is then connected to the JMA-9100 as the Interswitched pair.

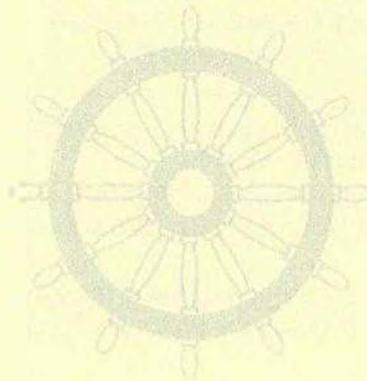
(019) 844 81111

**Conditions of Issue of this certificate are printed on page 8.**

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Notified Body 0191

## Certificate of Type Approval - Schedule 4

### Statement on Spurious and Out of Band Emissions and the Boundary between these emissions

The following Radar Transceiver, represents part of the systems shown on earlier schedules, has been subject to a measurement procedure as detailed in IEC 60936-1, Annex D, as contained in Amendment 1, dated July 2002 and the guidelines contained in ITU-R Recommendation M.1177-3. This standard defines the test method and requirements for shipborne radar to meet in order to comply with Appendix S3 of the Radio Regulations and ITU-R Recommendations SM.1539-1 and SM.1541-1.

The results of the measurement procedure were satisfactory and provide sufficient evidence that these Radar Transceivers are compliant with the criteria contained in the stated standards.

The Transceivers Measured were:-

Description	Model No.	Modulator	Circulator	Magatron
25kW, X-Band, Transceiver, 6ft Antenna	<b>NKE-1125-6</b>	NMA-550	NJC-3901M	M1568BS
30kW, S-Band, Transceiver, 12ft Antenna	<b>NKE-1130</b>	NMA-551	NJC3316	M1555

The test report detailing the tests and test results obtained is:-

QinetiQ/EMEA/TS/CRO8O3478/2

The test results specifically apply to a build standard regarding items such as Antenna, waveguide, rotary joint and any filters fitted to the test unit and detailed in manufacturers drawings and declarations. The NKE-2103 turning unit is also available with a 6ft antenna and the NKE-1125 is also available with a 9ft antenna.

The Transceiver Modules contained in the above Transceiver/Turning units are also found in the following Bulkhead units. Since the applicable electronic circuitry and component parts are identical and the addition of the waveguide/helix feeder is known to have band limiting properties, a presumption of conformity can be applied by analogy to these systems.

Transceiver Bulkhead (25kW)	<b>NTG-3225</b>
and Scanner Unit (7ft Antenna)	<b>NKE-1129-7</b>
Or Scanner Unit (9ft Antenna)	<b>NKE-1129-9</b>
Transceiver Bulkhead (30kW)	<b>NTG-3230</b>
and Scanner Unit (12ft Antenna)	<b>NKE-1139</b>

**Conditions of Issue of this certificate are printed on Page 8.**

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Certificate Number **QQ-MED-18/08-01R**

## Certificates of Type Approval Conditions of Issue

1. Each Certificate will be used in its entirety and not reproduced in part.
2. This certificate remains valid until the date shown (normally 5 years) unless cancelled or revoked, provided:-
  - i) the design and manufacture remain unmodified from the specimen tested and recorded in the Technical Construction File;
  - ii) any conditions contained in the schedule are complied with;
  - iii) Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply;
  - iv) and, the equipment remains satisfactory in service.
3. The mark of conformity may only be affixed to the equipment listed on this certificate and a manufacturer's Declaration of Conformity issued when the production Quality Assurance requirements laid down in Annex B, of the Directive (96/98/EC) is fully complied with and controlled by a written inspection agreement with a Notified Body.  
The use of the QinetiQ Notified Body Number (0191) in combination with the Wheelmark implies that the manufacturer is Registered with the QinetiQ Quality Assurance Scheme. A Certificate of Registration is issued to the manufacturer and should be made available on request. The manufacturer is responsible for ensuring that certification renewal and periodic surveillance are maintained.
4. USCG Approval Number, A Mutual Recognition Agreement (MRA) on marine equipment exists between the European Commission and the US Coastguard but only applies to equipment types included in the listing of marine equipment annexed to the MRA. For included equipment a USCG Approval number may be issued. This can be found under the MED certificate number on the first page and should be used on the main identity label of the equipment. Radio and Radar equipment continues to need separate or additional approval by the USA FCC.
5. This certificate does not confer any approval status to this equipment other than defined by, and tested according to the specifications listed on Page 1.
6. The labeling requirements of IMO Resolution A694(17) shall be met. Descriptions of each unit of apparatus forming part of the equipment will be as given on this Certificate. Each unit of equipment will be marked with the minimum safe distance at which it should be mounted from a standard and steering magnetic compass.
7. No unit of apparatus shall be advertised or labeled as "approved" or "certified" on behalf of the Maritime and Coastguard Agency, the Department of Transport or the QinetiQ Group in any sense other than that it is a type that has been assessed as satisfactory against the specification;
8. The manufacturer must advise QinetiQ of any intended changes to the design or production of the equipment which might affect the equipment performance.
9. Minor Modifications to the equipment will be considered on a case-by-case basis. QinetiQ will review any factory test results, in consultation if necessary, with the test facility that conducted the original Type Approval testing on the equipment. QinetiQ will advise the manufacturer if any further testing is required to maintain valid certification.
10. If an equipment manufacturer wishes to have the type approved equipment designated under alternative names (e.g. agent/distributor's name and model number), a separate application should be completed and sent to QinetiQ.

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