

Sperry Marine

Product Group: Radar SBU
SBU Director: John Robinson
For Further Info, Tel: +44 208 329 2162

MIB No. 105
13th October 2008

Marketing Information Bulletin

VisionMaster FT 250 Compact Tabletop Radar & Chart Radar

Northrop Grumman Sperry Marine is pleased to announce that the new VisionMaster FT 250 Compact Tabletop Radar & Chart Radar is now fully Type Approved.

The VisionMaster FT 250 Compact Tabletop Radar and Chart Radar products have been developed using the latest technology, whilst building on the success of the BridgeMaster E. These new radar solutions are everything you expect from a world class radar system.



- Seamless integration of radar & chart functionality for improved watch keeping efficiency and enhanced safety at sea
- Comprehensive range of tools & features for the navigator.
- Simple user interface – identical in both radar & chart radar modes
- Comprehensive context sensitive help facilities (iHelp)
- Built in upgrade path for future solutions
- Direct compatibility with existing BridgeMaster E and BridgeMaster II top units.

Type Approval

The VisionMaster FT 250 Compact Tabletop Radar and Chart Radar is fully type approved and wheel-marked to the latest international standards of **IEC 62388** for both standard and high speed craft. Type approval certificates are attached.

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Configurations

The VisionMaster FT 250 Compact Tabletop Radar and Chart Radar are available in the following display configurations:

- CAT 2 Radar
- Enhanced CAT 2 Radar (All features & functionality of a CAT 1 Radar but with a 250 size screen)

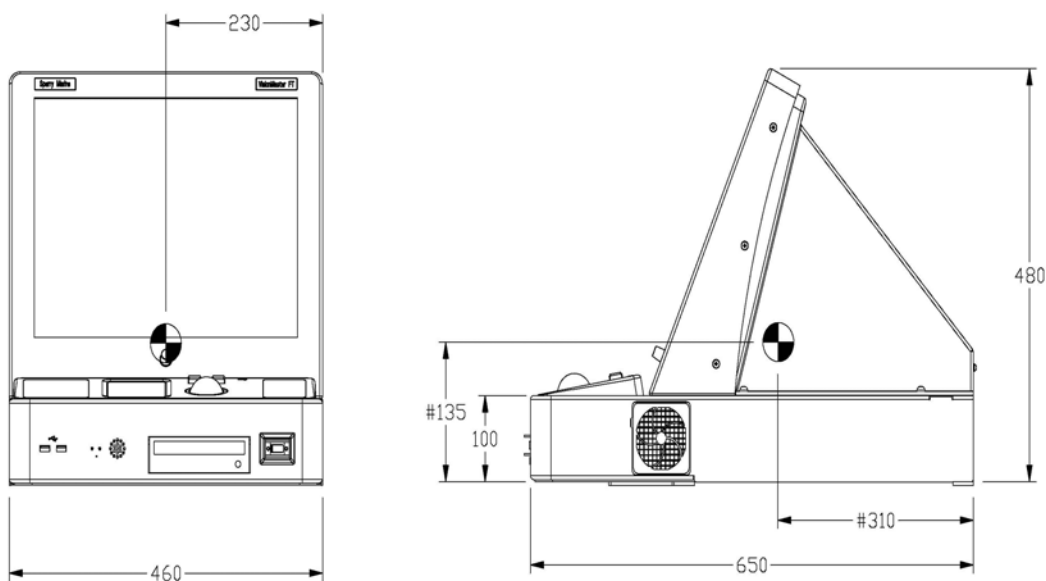
The Radar and Chart Radar systems are available with Sperry's full range of antenna/ transceiver systems - X Band (10 & 25kW) and S Band (30kW), masthead and bulkhead transceivers for high speed and standard speed craft.

Availability & Pricing

Sperry Marine is now accepting orders for VisionMaster FT Radar & Chart Radar for firm deliveries commencing the 1st October 2008. Please contact your Sperry Sales Representative for pricing information.

Installation and Configuration Drawings

For outline & installation drawings in PDF and AutoCAD format contact our Application Engineering team via e-mail apps.uk@sperry.ngc.com.

Dimensions



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:-

Northrop Grumman Sperry Marine B.V.
118 Burlington Road, New Malden
Surrey, KT3 4NR
United Kingdom

Manufacturer:-

Northrop Grumman Sperry Marine B.V.
118 Burlington Road, New Malden
Surrey, KT3 4NR
United Kingdom

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

Shipborne Radar Equipment (IEC 62388 Category 2)
(COMMISSION DIRECTIVE 2008/67/EC – ITEM A.1/4.35) *1
(ALSO COMMISSION DIRECTIVE 2008/67/EC – ITEM A.1/4.45, CHART RADAR)

Of system types known and designated as:-

- a) VisionMaster FT, CAT2 25, - Radar Systems
- b) VisionMaster FT, ECAT2 25, - Radar Systems
- c) VisionMaster FT, ECAT2C 25, - Chart Radar Systems

(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"

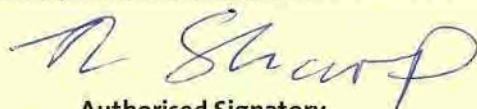
(being Standards for Technical Characteristics and Methods of measurements published by the International Electrotechnical Commission)

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.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 is not yet recognised in the Annexes of the Marine Equipment Directive but has replaced the old standards as detailed in the statement.

SIGNED:



R Sharp

Authorised Signatory

DATE of ISSUE:

6th October 2008

DATE of EXPIRY :

5th October 2010

Interim Certificate Number: QQ-MED-14/08-03i

This Certificate is Valid until expiry date shown, subject to the standard conditions of issue printed on the attached schedule Northrop Grumman Sperry Marine BV are Module D registered with QinetiQ in accord with standard condition 3, ref; Certificate DQAS-16/04-NGS001R2.

QinetiQ iX

Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX



The MCA is an Executive Agency of the Department for Transport

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.

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 1st 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 2002/75/EC and a revision is expected in 2008.

Nether the current 3rd Amendment, or the draft 4th Amendment of the MED refer to the revised IMO PS, MSC.192(79) or the new IEC 62388 technical standard. However, in accordance with Amending Directive 2002/84/EC, that International Instruments and testing standards shall be used “in their up-to-date version” this certificate is issued following successful testing and assessment to IEC 62388.

The current MED Annex A.1 equipment list still details the 7 replaced IEC standards against the 6 radar items and so this **statement** also details how QinetiQ will allocate the appropriate categories against MED equipment items for radar systems tested to IEC 62388.

MED Item.	Description	IEC 62388 Category	Radar Display area
A.1/4.34	Radar with ARPA	Cat 1	320mm Dia.
A.1/4.35	Radar with ATA	Cat 2 or Cat 3	250 or 180mm Dia.
A.1/4.36	Radar with EPA	Not Used. (EPA no longer recognised)	
A.1/4.37	HSC with ARPA	Cat 1H	320mm Dia.
A.1/4.38	HSC Radar with ATA	Cat 2H	250mm Dia.
A.2/4.21	Chart Radar	Not Used. Suffix 'C' on any above	

IEC 62388 was also written to include all the appropriate Presentation criteria and performance standards for a shipborne navigation displays as detailed in IMO Resolution MSC.191(79) and therefore any radar compliant with IEC 62388 is also deemed to have presentation standards compliant with Resolution MSC.191(79).

Because no multilateral arrangements are available QinetiQ is issuing such certificates as detailed above for a two year interim validity period.

QinetiQ iX
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number **QQ-MED-14/08-03i**

**Schedule 2a –Category 2 & 2C Radar
VisionMaster FT, CAT2 25 Radar Systems
VisionMaster FT, CAT2C 25 Chart Radar Systems**

The applicant declared that the following units form the radar processing and display 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. These units form a system consistent with the Item Description A1/4.35, given in Annex A1 of Commission Directive 2002/75/EC.

MAIN UNIT Comprising:-

Radar LCD Monitor (Desktop)	65919T with 65919605	
Radar LCD Monitor (Deckstand)	65919C	*1
Radar LCD Monitor (Kit form)	65817G or 4301665-1	*2
Processor - Radar	65901AT	*1, 2
VMFT PCIO Interface Unit	65900AA or 65900AB	*1, 2
Control Panel (Desktop)	65909AF or 65909 AG	
Control Panel (Deckstand)	65903AF or 65903 AG	*1
Control Panel (Kit form)	65903KF OR 65903KG	*2
19 inch Integrated Tabletop Display	65920ATAF, ATAG, ATBG or ATBF	*7
Security Device (ECAT2 Radar)	32SDV001	*3
Security Device (CAT2 Radar)	32SDV008	*3
Security Device (ECAT2C Chart Radar)	32SDV002	*3
Security Device (Multi-node)	32SDV005	*3, 4, 5
Security Device (Total Watch)	32SDV006	*3, 5
SOFTWARE:- Main System Software	Version 3.0.0 or 3.1.0	*6

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

The system will include a suitable transceiver selected from schedule 2b, and may also include items from the list of optional items found in schedule 3 on Page 5.

NOTES:-

- 1 These units integrate with the deck mount console (See schedule 5) to form a stand alone deck mount Radar system.
- 2 These units are provided in kit form for possible inclusion in a shipyard built navigation console.
- 3 The appropriate security device is selected from these 5 options.
- 4 The 32SDV005 security device allows operation as part of an integrated multi display ships bridge. Sperry Marine will also provide a security string to define product type on all network node for a particular vessel's bridge operating plan. The product type must be set on commissioning to "CAT1 radar" (for ECAT2) or "CAT1C Chart Radar" (for ECAT2C) or "CAT2 Radar (for CAT2) or "Total Watch" operation as appropriate.
- 5 "Total Watch" is the Sperry Marine name for a Multi-Function workstation. This additional function allows the operator to 'Hot Switch' between Chart Radar, ECDIS and Coming Display (All share identical hardware elements). Such operation may be subject to 'Flag' or 'Class' installation approval for a particular vessel's bridge operating plan. The approval status approval status conferred by this certificate only applies when the operation mode is set to "Chart Radar".
- 6 This approval remains valid for subsequent Minor software amendments, as allowed by the 3.x.x format (x represents a numeral), where written details of any such modifications have been submitted to and accepted by QinetiQ.
- 7 The 19inch Integrated Tabletop Display contains a monitor, processor and control panel but requires a security device as in note 3.

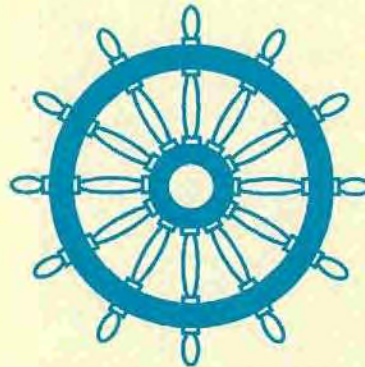
Conditions of Issue of this certificate are printed on Page 8.

QinetiQ
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number **QQ-MED-14/08-03i**

Technical Characteristics

RADAR DISPLAY CIRCLE	275 mm	Cat 2 requirement is ≥ 250 mm
RADAR TARGET CAPACITY ACQUIRED	60 targets (CAT 2) 100 targets (ECAT2/2C)	30 targets minimum for Cat2 systems
AUTO ACQUISITION OF TARGETS	Yes	Not required for Cat 2 systems
TRIAL MANOEUVRE	Yes for ECAT2/2C	Not required for Cat 2 systems
AIS TARGET CAPACITY ACTIVATED SLEEPING	200 combined capacity of activated and sleeping	Minimum for Cat 2 of 30 Activated Targets and 150 Sleeping Targets is exceeded.
IEC 61162-1 SERIAL (NMEA) PORTS	Listener - 6 Talker - 4 Listener - 3 Talker - 2	} Conformity to IEC 61162-1:2000. } Conformity to IEC 61162-2:2001
TEMPERATURE RANGE Protected & IEC 60945 CLASS	-15°C to +55°C.	-- All units
POWER SOURCE	100-240V AC, 50/60Hz	



Notified Body 0191

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

QinetiQ
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number *QQ-MED-14/08-03i*

**Schedule 2b –Category 2 & 2C Radar
VisionMaster FT, CAT2 25 Radar Systems
VisionMaster FT, CAT2C 25 Chart Radar Systems**

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. These units form a system consistent with the Item Description A1/4.35, given in Annex A1 of Commission Directive 2002/75/EC.

X-Band Transceivers:-

Transceiver/Turning Unit (10kW or 25kW)	65810#A# or 65825#A#	* 8, 9,10
Transceiver/Turning Unit (10kW or 25kW) or Transceiver Bulkhead (10kW) or Transceiver Bulkhead (25kW) and Turning Unit	65910#A# or 65925#A# 65810E, F, G, H, or L 65825E, F, G, H, or L 65801BAR or CA#	* 8, 9,10
X-Band Antenna (4, 6 or 8ft)	65604A or 65606A or 65608A	* 9, 10

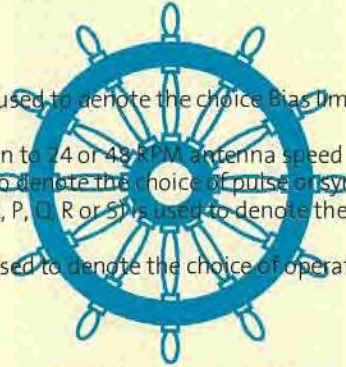
S-Band Transceivers:-

Transceiver/Turning Unit (30kW) or Bulkhead Transceiver (30kW) and Turning Unit	65830M§R or N§# 65831A or B 65830B§R or C§#	*10, 11 *10, 11
Scanner Control Unit	65837Aø	*12
S-Band Antenna 12ft	65612A	

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

NOTES:-

- 8 A 1st letter (#) suffix (M, N, P, T or W) is used to denote the choice Bias Limiter, extra short pulse transmit or additional facilities
- 9 This item is link selectable on installation to 24 or 48 RPM antenna speed
- 10 A 3rd letter (ø) suffix (R, T or U) is used to denote the choice of pulse or synco azimuth signal.
- 11 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.
- 12 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.



Technical Characteristics

Notified Body 0191

FREQUENCY OF OPERATION	9.410 GHz - X-Band 3.050 GHz – S-Band	±30MHz ±10MHz
PULSE REPETITION FREQUENCY	1800, 1800, 785	3000 on 'G' & 'L' 1 st Suffix TxRx
PULSE LENGTHS	0.05µs, 0.25µs, 0.75µs	
EMISSION CODE	3M00P0NAN	
POWER CHARACTERISTIC	10kW or 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 -- All other units
POWER SOURCE	100 -240V AC, 50/60Hz	

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

QinetiQ
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number **QQ-MED-14/08-03i**

Certificate of Type Approval - Schedule 3

VisionMaster 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 Visionmaster FT series radar systems, and satisfactory details are included in the technical files.

ANCILLARY UNITS:-

Monitor Chassis	65923605	*1
or Monitor Chassis	65919605	
Deck mount Pedestal	65923665 or 65923675	*1
Plinth (for Pedestal above)	65923200 or 65923201 or 65923202	*1
6 way Interswitch Unit (6x6)	65846A	
2 way Interswitch Unit (2x4)	65842A	
Networking Kit and PSU	4500216-\$ and 4303090-1	*2
Network Serial Interface	4802181-\$	*2
Slave Junction Box	65849A	

MODULAR UNITS (Kit Form Only):-

Trackerball	65900614 or 65900615 or 65900650	*3
Control Panel	65900667	*3
On/Off Switch	65900625	*3
USB Port	65900635	*3



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

*** NOTES:-**

- 1 Standard items when used together with LCD Monitor, Radar processor, PCIO interface unit and Control Panel to form integrated Deck mount console Radar.
- 2 The symbol \$ is shown where a number suffix is used to indicate a minor variant.
- 3 These units are identified individually when the Kit Form Processors and Monitors are used in a system

Notified Body 0191

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

QinetiQ
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number **QQ-MED-14/08-03i**

Certificate of Type Approval - Schedule 4

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

The following Radar Transceivers, which forms 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 RM.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 this Radar Transceiver is compliant with the criteria contained in the stated standards.

The Transceivers Measured were:-

Description	Model No.	Modulator PCB	Magetron
Transceiver/Turning Unit (10kW)	65810###* ^{1,3}	65810812	MG5473
Transceiver/Turning Unit (10kW)	65910###* ^{1,3}	65810812	MG5473
Transceiver/Turning Unit (25kW)	65825###* ^{1,3}	65825812	MG 5424
Transceiver/Turning Unit (25kW)	65925###* ^{1,3}	65825812	MG 5424
Transceiver/Turning Unit (30kW)	65830###* ^{1,3}	65830812	MG5223 or M1302A

The test reports detailing the tests and test results obtained are:-

QinetiQ/FST/CMT/CR012225
QinetiQ/FST/CMT/TR022173

These also detail the magnetron, modulator circuit, rotary joint² and any filters fitted to the test unit to which the results specifically apply.

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 waveguide/helix feeder is known to have limiting properties, a presumption of conformity can be applied by analogy

Transceiver Bulkhead (10kW)	65810#* ^{1,3}
Transceiver Bulkhead (25kW)	65825#* ^{1,3}
Bulkhead Transceiver (30kW)	65831#* ^{1,3}

- Note *1 The symbol # or ### denotes a 1 or 3 letter suffix detailing aspects of the build standard. Details of the suffixes are provided on the appropriate equipment schedule pages.
- *2 The manufacturer declared that the build standard of the rotary joint is suitably defined within the turning unit designation.
- *3 These transceivers are recognised by the USA, Federal Communications Commission (FCC) and bear their Identifier numbers as follows:

65810### or 65810# or 65910###	FCC Identifier	BT9BME10
65825### or 65825# or 65925###	FCC Identifier	BT9BME25
65830### or 65831#	FCC Identifier	BT9BVT30

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

QinetiQ
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number **QQ-MED-14/08-03i**

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.

QinetiQ Ltd
Marine Approval and Testing Service
Cody Technology Park, Room 1005/A5
Ively Road, Farnborough
Hants, GU14 0LX
United Kingdom



NOTIFIED BODY
No 0191

CERTIFICATE OF TYPE APPROVAL

(EC Certificate of Type Examination - Module B)

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

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Surrey, KT3 4NR
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Manufacturer:-

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118 Burlington Road, New Malden
Surrey, KT3 4NR
United Kingdom

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(COMMISSION DIRECTIVE 2008/67/EC – ITEM A.1/4.38)
(ALSO COMMISSION DIRECTIVE 2008/67/EC – ITEM A.1/4.45, CHART RADAR)

Of system types known and designated as:-

- a) VisionMaster FT, CAT2H 25, - Radar Systems
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(being Standards for Technical Characteristics and Methods of measurements published by the International Electrotechnical Commission)


Notified Body 0191

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SIGNED:



R Sharp

Authorised Signatory

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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 acquired radar target capacity	20	30	40
Minimum activated AIS target capacity	20	30	40
Minimum sleeping 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 2002/75/EC and a revision is expected 2008.

Nether the current 3rd Amendment, or the draft 4th Amendment of the MED refer to the revised IMO PS, MSC.192(79) or the new IEC 62388 technical standard. However, in accordance with Amending Directive 2002/84/EC, that International Instruments and testing standards shall be used “in their up-to-date version” this certificate is issued following successful testing and assessment to IEC 62388.

The current MED Annex A.1 equipment list still details the 7 replaced IEC standards against the 6 radar items and so this statement also details how QinetiQ will allocate the appropriate categories against MED equipment items for radar systems tested to IEC 62388.

MED Item.	Description	IEC 62388 Category	Radar Display area
A.1/4.34	Radar with ARPA	Cat 1	320mm Dia.
A.1/4.35	Radar with ATA	Cat 2 or Cat 3	250 or 180mm Dia.
A.1/4.36	Radar with EPA	Not Used. (EPA no longer recognised)	
A.1/4.37	HSC with ARPA	Cat 1H	320mm Dia.
A.1/4.38	HSC Radar with ATA	Cat 2H	250mm Dia.
A.2/4.21	Chart Radar	Not Used. Suffix ‘C’ on any above	

IEC 62388 was also written to include all the appropriate Presentation criteria and performance standards for a shipborne navigation displays as detailed in IMO Resolution MSC.191(79) and therefore any radar compliant with IEC 62388 is also deemed to have presentation standards compliant with Resolution MSC.191(79).

Because no multilateral arrangements are available QinetiQ is issuing such certificates as detailed above for a two year interim validity period.

QinetiQ iX
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number **QQ-MED-14/08-04i**

**Schedule 2a –Category 2H & 2HC Radar
VisionMaster FT, CAT2H 25 Radar Systems
VisionMaster FT, CAT2HC 25 Chart Radar Systems**

The applicant declared that the following units form the radar processing and display 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. These units form a system consistent with the Item Description A1/4.38, given in Annex A1 of Commission Directive 2002/75/EC.

MAIN UNIT Comprising:-

Radar LCD Monitor (Desktop)	65919T with 65919605	
Radar LCD Monitor (Deckstand)	65919C	*1
Radar LCD Monitor (Kit form)	65817G or 4301665-1	*2
Processor - Radar	65901AT	*1, 2
VMFT PCIO Interface Unit	65900AA or 65900AB	*1, 2
Control Panel (Desktop)	65909AF or 65909 AG	
Control Panel (Deckstand)	65903AF or 65903 AG	*1
Control Panel (Kit form)	65903KF or 65903KG	*2
19 inch Integrated Tabletop Display	65920ATAF, ATAG, ATBG or ATBF	*7
Security Device (ECAT2 Radar)	32SDV001	*3
Security Device (CAT2 Radar)	32SDV008	*3
Security Device (ECAT2C Chart Radar)	32SDV002	*3
Security Device (Multi-node)	32SDV005	*3, 4, 5
Security Device (Total Watch)	32SDV006	*3, 5

SOFTWARE:- Main System Software Version 3.0.0 or 3.1.0 *6

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

The system will include a suitable transceiver selected from schedule 2b, and may also include items from the list of optional items found in schedule 3 on Page 5.

NOTES:-

- 1 These units integrate with the deck mount console (See schedule 5) to form a stand alone deck mount Radar system.
- 2 These units are provided in kit form for possible inclusion in a shipyard built navigation console.
- 3 The appropriate security device is selected from these 5 options.
- 4 The 32SDV005 security device allows operation as part of an integrated multi display ships bridge. Sperry Marine will also provide a security string to define product type on all network nodes for a particular vessel's bridge operating plan. The product type must be set on commissioning to "CAT1 Radar" (for ECAT2) or "CAT1C Chart Radar" (for ECAT2C) or "CAT2 Radar (for CAT2) or "Total Watch" operation as appropriate.
- 5 "Total Watch" is the Sperry Marine name for a Multi-Function workstation. This additional function allows the operator to 'Hot Switch' between Chart Radar, ECDIS and Conning Display (All share identical hardware elements). Such operation may be subject to 'Flag' or 'Class' installation approval for a particular vessel's bridge operating plan. The approval status approval status conferred by this certificate only applies when the operation mode is set to "Chart Radar".
- 6 This approval remains valid for subsequent Minor software amendments, as allowed by the 3.x.x format (x represents a numeral), where written details of any such modifications have been submitted to and accepted by QinetiQ.
- 7 The 19inch Integrated Tabletop Display contains a monitor, processor and control panel but requires a security device as in note 3.

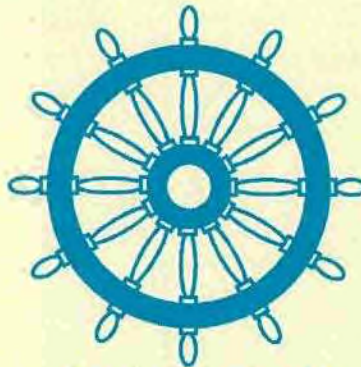
Conditions of Issue of this certificate are printed on Page 8.

QinetiQ
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number **QQ-MED-14/08-04i**

Technical Characteristics

RADAR DISPLAY CIRCLE	275 mm	Cat 2 requirement is ≥ 250 mm
RADAR TARGET CAPACITY ACQUIRED	60 targets (CAT 2H) 100 targets (ECAT2H/2HC)	30 targets minimum for Cat2 systems
AUTO ACQUISITION OF TARGETS	Yes	Not required for Cat 2 systems
TRIAL MANOEUVRE	Yes for ECAT2H/2HC	Not required for Cat 2 systems
AIS TARGET CAPACITY ACTIVATED SLEEPING	200 combined capacity of activated and sleeping	Minimum for Cat 2 of 30 Activated Targets and 150 Sleeping Targets is exceeded.
IEC 61162-1 SERIAL (NMEA) PORTS	Listener - 6 Talker - 4 Listener - 3 Talker - 2) Conformity to IEC 61162-1:2000.) Conformity to IEC 61162-2:2001
TEMPERATURE RANGE Protected & IEC 60945 CLASS	-15°C to +55°C.	-- All units
POWER SOURCE	100-240V AC, 50/60Hz	



Notified Body 0191

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

QinetiQ
Cody Technology Park
Ively Road, Farnborough
Hampshire. GU14 0LX

Certificate Number *QQ-MED-14/08-04i*

Schedule 2b –Category 2H & 2HC Radar VisionMaster FT, CAT2H 25 Radar Systems VisionMaster FT, CAT2HC 25 Chart Radar Systems

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. These units form a system consistent with the Item Description A1/4.38, given in Annex A1 of Commission Directive 2002/75/EC.

X-Band Transceivers:-

Transceiver/Turning Unit (10kW or 25kW)	65810#A# or 65825#A#	* 8, 9,10
Transceiver/Turning Unit (10kW or 25kW) or Transceiver Bulkhead (10kW) or Transceiver Bulkhead (25kW) and Turning Unit	65910#A# or 65925#A# 65810E, F, G, H, or L 65825E, F, G, H, or L 65801BAR or CA#	* 8, 9,10 * 9, 10
X-Band Antenna (4, 6 or 8ft)	65604A or 65606A or 65608A	

S-Band Transceivers:-

Transceiver/Turning Unit (30kW) or Bulkhead Transceiver (30kW) and Turning Unit	65830M§R or N§# 65831A or B 65830B§R or C§#	*10, 11 *10, 11
Scanner Control Unit	65837Aø	*12
S-Band Antenna 12ft	65612A	

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

NOTES:-

- 8 A 1st letter (#) suffix (M, N, P, T or W) is used to denote the choice of Bias limiter, extra short pulse transmit or additional facilities
- 9 For this item the internal link must be set on installation to 48 RPM antenna rotation speed
- 10 A 3rd letter (≠) suffix (R, T or U) is used to denote the choice of pulse or syncro azimuth signal.
- 11 A 2nd letter (§) suffix (J, K, L, M, P, Q, R or S) is used to denote the choice of operating voltage and 48 RPM antenna speed.
- 12 A 2nd letter (ø) suffix (C, E, F or H) is used to denote the choice of operating voltage and 48 RPM antenna speed.



Notified Body 0191

Technical Characteristics

FREQUENCY OF OPERATION	9.410 GHz - X-Band 3.050 GHz – S-Band	±30MHz ±10MHz
PULSE REPETITION FREQUENCY	1800, 1800, 785	3000 on 'G' & 'L' 1 st Suffix TxRx
PULSE LENGTHS	0.05µs, 0.25µs, 0.75µs	
EMISSION CODE	3M00PONAN	
POWER CHARACTERISTIC	10kW or 25kW or 30kW	(PEP) X-Band (PEP) S-Band
TEMPERATURE RANGE Exposed & IEC 60945 CLASS Protected	-25°C to +70°C -15°C to +55°C.	-- Turning Units & Antenna -- All other units
POWER SOURCE	100 -240V AC, 50/60Hz	

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

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Cody Technology Park
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Certificate Number **QQ-MED-14/08-04i**

Certificate of Type Approval - Schedule 3

VisionMaster 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 Visionmaster FT series radar systems, and satisfactory details are included in the technical files.

ANCILLARY UNITS:-

Monitor Chassis	65923605	*1
or Monitor Chassis	65919605	
Deck mount Pedestal	65923665 or 65923675	*1
Plinth (for Pedestal above)	65923200 or 65923201 or 65923202	*1
6 way Interswitch Unit (6x6)	65846A	
2 way Interswitch Unit (2x4)	65842A	
Networking Kit and PSU	4500216-\$ and 4303090-1	*2
Network Serial Interface	4802181-\$	*2
Slave Junction Box	65849A	

MODULAR UNITS (Kit Form Only):-

Trackerball	65900614 or 65900615 or 65900650	*3
Control Panel	65900667	*3
On/Off Switch	65900625	*3
USB Port	65900635	*3

End of List

*** NOTES:-**

- 1 Standard items when used together with LCD Monitor, Radar processor, PCIO interface unit and Control Panel to form integrated Deck mount console Radar.
- 2 The symbol \$ is shown where a number suffix is used to indicate a minor variant.
- 3 These units are identified individually when the Kit Form Processors and Monitors are used in a system

Notified Body 0191

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

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Certificate Number QQ-MED-14/08-04i

Certificate of Type Approval - Schedule 4

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

The following Radar Transceivers, which forms 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 RM.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 this Radar Transceiver is compliant with the criteria contained in the stated standards.

The Transceivers Measured were:-

Description	Model No.	Modulator PCB	Magetron
Transceiver/Turning Unit (10kW)	65810### ^{*1,3}	65810812	MG5473
Transceiver/Turning Unit (10kW)	65910### ^{*1,3}	65810812	MG5473
Transceiver/Turning Unit (25kW)	65825### ^{*1,3}	65825812	MG 5424
Transceiver/Turning Unit (25kW)	65925### ^{*1,3}	65825812	MG 5424
Transceiver/Turning Unit (30kW)	65830### ^{*1,3}	65830812	MG5223 or M1302A

The test reports detailing the tests and test results obtained are:-

QinetiQ/FST/CMT/CR012225
QinetiQ/FST/CMT/TR022173

These also detail the magnetron, modulator circuit, rotary joint² and any filters fitted to the test unit to which the results specifically apply.

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 waveguide/helix feeder is known to have limiting properties, a presumption of conformity can be applied by analogy

Transceiver Bulkhead (10kW)	65810# ^{*1,3}
Transceiver Bulkhead (25kW)	65825# ^{*1,3}
Bulkhead Transceiver (30kW)	65831# ^{*1,3}

- Note *1 The symbol # or ### denotes a 1 or 3 letter suffix detailing aspects of the build standard. Details of the suffixes are provided on the appropriate equipment schedule pages.
- *2 The manufacturer declared that the build standard of the rotary joint is suitably defined within the turning unit designation.
- *3 These transceivers are recognised by the USA, Federal Communications Commission (FCC) and bear their Identifier numbers as follows:

65810### or 65810# or 65910###	FCC Identifier	BT9BME10
65825### or 65825# or 65925###	FCC Identifier	BT9BME25
65830### or 65831#	FCC Identifier	BT9BVT30

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

QinetiQ
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Certificate Number **QQ-MED-14/08-04i**

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.

QinetiQ Ltd
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