



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:-
C & C Technologies, Inc.
730 E Kaliste Saloom Road
Lafayette
Louisiana 70508, USA

Manufacturer:-
NavCom Technology, Inc.
20780 Madrona Avenue
Torrance
CA 90503 USA

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

MARINE GLOBAL POSITIONING SYSTEM (GPS) EQUIPMENT (Commission Directive 2002/75/EC – Item A.1/4.14)

Of system type known and designated as:-

Marine GPS Receiver system – C-Nav2050

(Comprising component parts and having technical characteristics shown in shedule 1)

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

BS EN 61108-1:2003, "Global navigation satellite system (GNSS); Part 1, GPS Receiver Equipment "
BS EN 60945 : 2002 "General Requirements for Marine Navigation Equipment"

(being specifications for Technical Characteristics and Methods of measurements equivalent to IEC 61108-1 and IEC 60945, and published by the British Standards Institute).

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 Resolution MSC.112(73) and the relevant parts of Resolution A694(17).

SIGNED:

P J Goddard Authorised Signatory

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

DATE of ISSUE:

7th April 2006

DATE of EXPIRY :

6th April 2011

Certificate Number:

QQ-MED-06/06-01

USCG Approval Number:

165.130/EC0191/0606-01

This Certificate is Valid until expiry date shown, subject to the standard conditions of issue printed on the attached schedule

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



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

*1 Commission Directives 2002/75/EC & 2002/84/EC

Under the terms of the United Kingdom Statutory Instrument, No 1957 : 1999, the QinetiQ Group PLC (formerly known as DERA) 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 on Marine Equipment and issue Certificates of Type Approval.

Certificate of Type Approval - Schedule 1

Marine GPS 'Black Box' Receiver - C-Nav2050

The applicant declared that the following units comprise a GPS Position fixing equipment of the designation given on page 1. These units have been assessed & tested, and satisfactory details of these units were included in the technical file. This equipment capable of the reception of Position fixing information from GPS Satellites as listed in Item Description A1/4.14, given in Annex A1 of Directive 2002/75/EC

MAIN UNIT Comprising:-

		<i>Part No.</i>		
C-Nav2050G	GPS Receiver Unit	C-Nav2050G	925G001-0	*1, 2, 3, 4
	Tri-band Antenna	C-Nav2050 Tri Band	8250001-0	
or C-Nav2050M	GPS Receiver Unit	C-Nav2050M	925M001-0	*1, 2, 3, 4
	Tri-band Antenna	C-Nav2050 Tri Band	8250001-0	
or C-Nav2050R	GPS Receiver Unit	C-Nav2050R	925R001-0	*1, 2, 3, 4
	tri-band Antenna	C-Nav2050 Tri Band	8250001-0	
	High Latitude Antenna	L-Band	825R003-0	
SOFTWARE: Receiver			VER 3.0_40	*5

-----End of List.

NOTES:-

- The C-Nav2050 is a 'Black Box receiver within the meaning defined in clause 4.2.2
"GPS black box receiver fed with operational parameters from external devices/remote locations and feeding an integrated system with means of access to the computed position via an appropriate interface, and the positional information available to at least one remote location"
- The C-Nav2050 provides IEC 61162-1 serial data outputs that will enable the transfer of data such that the provision for display of: Latitude, Longitude, COG, SOG, UTC, RAIM information, HDOP information in accordance with IEC 61108-1:2003 can be met by suitable external displays.
- This GPS receiver is intended for applications where a survey standard position fixing is required and so has additional facilities for reception of L2 frequencies and other processing techniques to enhance the accuracy to greater than the IEC 61108-1 standard requirement.
- The C-Nav2050 is also available in 2 variants; C-Nav2050M which has extended data output ports for specialist applications and the C-Nav2050R has separate antenna port for a high gain L Band antenna.
- Software Modification: This approval is valid for equipment including subsequent software versions only where written details of such versions have been submitted to and accepted by QinetiQ.

Technical Characteristics

FREQUENCY OF OPERATION	1575.42MHz – L1 1227.60MHz –L2	GPS RECEIVE	
DISPLAY TYPE	None	Black Box Receiver	
GPS SYSTEM TYPE	Differential (StarFire™) RTK & Pseudo-range	StarFire™ is C-Nav subscription correction service, L Band. Standard DGPS serial messages need external receiver	
POSITIONAL ACCURACY	<10 metre <2metre	Basic GPS Mode, 2D RMS (HDOP ≤ 4) always available StarFire, RTK and RMS modes, worst case	
SATELLITES in track	12 Channel	Receiver Maximum capacity	
Accuracy of COG and SOG	COG @ ≤17kt - ±3° COG @ >17kt - ±1° SOG- 2% or ±0.2kt	COG Not available under 1 knot - not exceeding 70kt. Whichever is the greater	As provided In serial data form.
IEC 61162-1 SERIAL PORTS	Listener - 2 Talker - 2	Conformity to IEC 61162-1:2000. 25Hz rate settable GGA,GSA, GST, RMC, VTG, ZDA output messages.	
TEMPERATURE RANGE & IEC 60945 CLASS	Exposed Protected	-25°C to +70°C -15°C to +55°C.	-- Antenna -- Receiver
POWER SOURCE	12V DC		

Conditions of Issue of this certificate are printed the reverse of this sheet.

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) the equipment remains satisfactory in service and the regulations and standards cited in the appropriate Directives do not change.
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 annual renewal and surveillance are maintained.
4. This certificate does not confer any approval status to this equipment other than defined by, and tested according to the specifications listed on sheet 1.
5. The labelling 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.
6. No unit of apparatus shall be advertised or labelled 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;
7. The manufacturer must advise QinetiQ of any intended changes to the design or production of the equipment which might affect the equipment performance.
8. 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.
9. 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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