



**TECHNICAL CIRCULAR** No. 412 of 05<sup>th</sup> May 2017

<b>To:</b>	:	<b>All Surveyors/Auditors</b>
<b>Applicable to flag</b>	:	<b>All Flags</b>
<b>Subject:</b>	:	<b>Radio-navigation receivers</b>
<b>Reference:</b>	:	<b>SOLAS V/19</b>

**PERFORMANCE STANDARDS FOR MULTI-SYSTEM SHIPBORNE RADIONAVIGATION RECEIVERS**

Revised performance standards for multi-system ship borne radio-navigation receivers.

The revision is applicable for all ship GT>500, compliance date 31<sup>st</sup> December 2017.

**RECEIVER EQUIPMENT (MODULE A)**

2.1 The term "multi-system shipborne radionavigation receiver equipment is used in these performance standards includes all the components and units necessary for the system to properly perform its intended functions.

The equipment should include the following minimum components and capabilities:

- .1 antennas capable of receiving all radionavigation signals required to support the functionality of the receiver equipment;
- .2 receiver(s) and processor(s) capable of processing the radionavigation signals required to support the functionality of the receiver equipment;
- .3 means of accessing the computed PVT information (e.g. display of latitude, longitude, COG, SOG, time, sources; and the phase(s) of navigation currently supported)
- .4 interface for supplying data controlling/ configuring the receiver;
- .5 display;
- .6 raw data output, for the provision of additional information, such as range measurements and GNSS's navigation data;
- .7 indication of the quality and reliability of the computed and distributed PVT data to the user; and
- .8 indication of radionavigation system(s) currently used for the PVT information to the user.

**Customer Service Center**  
5201 Blue Lagoon Drive, 9<sup>TH</sup>. Floor,  
Miami, Fl., 33126  
Tel: 1 (305) 716 4116,  
Fax: 1 (305) 716 4117,  
E-Mail: [joel@conarinagroup.com](mailto:joel@conarinagroup.com)

**Technical Head Office**  
7111 Dekadine Ct.  
Spring, Tx., 77379  
Tel: 1 (832) 451 0185,  
1 (832) 258 4050,  
E-Mail: [cbozenovici@vcmaritime.com](mailto:cbozenovici@vcmaritime.com)

## **OPERATIONAL AND FUNCTIONAL REQUIREMENTS (MODULE B)**

The equipment should:

- .1 Operate using civil access navigation signals of at least two independent GNSS recognized by the Organization as part of WWRNS, provided in the radionavigation satellite service (space-to-Earth) frequency bands designated in article 5 of the Radio Regulations<sup>5</sup>
- .2 Provide PVT data with the necessary level of resilience and integrity, whether it is used directly as input to other equipment, or provided for use within Integrated Navigation Systems (INS);
- .3 Where terrestrial radionavigation system(s) signals are provided and used in the protected frequency bands, have the possibility to operate using terrestrial radionavigation system(s) signals provided in the protected frequency bands;
- .4 Have the facilities to process augmentation data, in accordance with the appropriate methods
- .5 Provide the facility for the user to select or deselect radionavigation and augmentation

## **DOCUMENTATION**

Documentation for the equipment should be provided, preferably in an electronic format, and should include:

- .1 Operating manuals, which should contain an overall function description.
- .2 Installation manuals, which should contain details of the components and the interconnections between them and details of interfaces and connections for data input/output, and interconnection diagrams;
- .3 Familiarization material, which should explain all configurations, functions, imitations, controls, displays, alerts, indications and standard operator checks of the equipment;

**REFERENCES:** SOLAS V/19, MSC.401 (95)

**ATTACHMENTS:** No

**kindest Regards,**  
 **Cosmin Bozenovici**  
 **Naval Architect – Conarina Technical Head Office**

**Customer Service Center**  
5201 Blue Lagoon Drive, 9<sup>TH</sup>. Floor,  
Miami, Fl., 33126  
Tel: 1 (305) 716 4116,  
Fax: 1 (305) 716 4117,  
E-Mail: [joel@conarinagroup.com](mailto:joel@conarinagroup.com)

**Technical Head Office**  
7111 Dekadine Ct.  
Spring, Tx., 77379  
Tel: 1 (832) 451 0185,  
1 (832) 258 4050,  
E-Mail: [cbozenovici@vcmaritime.com](mailto:cbozenovici@vcmaritime.com)