IEC PAS 61174-1

Edition 1.0 2021-03

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

colour inside

Maritime navigation and radiocommunication equipment and systems – Part 1: Route plan exchange format (RTZ) – General requirements, methods of testing and required test results

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 47.020.70; 47.060

ISBN 978-2-8322-9482-6

Warning! Make sure that you obtained this publication from an authorized distributor.

® Registered trademark of the International Electrotechnical Commission

CONTENTS

FOREWORD 4
INTRODUCTION 6
1 Scope 7
2 Normative references 7
3 Terms, definitions and abbreviated terms 7
3.1 Terms and definitions 7
3.2 Abbreviated terms 7
4 Requirements 8
4.1 General 8
4.2 RTZP data container 9
4.3 High-level description of the RTZ format 10
4.4 Adaption to third-party extensions and handling of optional data 10
4.4.1 Generic idea 10
4.4.2 Unique identification of a waypoint 10
4.4.3 Creation of new waypoints 11
4.4.4 Change of geographic data for a waypoint 11
4.4.5 Waypoint removal 11
4.4.6 Waypoint modification 11
4.5 Detailed RTZ format description 11
4.5.1 File components 11
4.5.2 Route node description 11
4.5.3 RouteInfo node description 12
4.5.4 Waypoints node description 13
4.5.5 DefaultWaypoint node description 13
4.5.6 Waypoint node description 14
4.5.7 Storing date and time for legs 15
4.5.8 Schedules node description 16
4.5.9 Schedule node description 16
4.5.10 Extensions node description 18
4.5.11 Extension node description 19
4.6 XML schema to be met by RTZ route files 19
4.6.1 RTZ schema version 1.0 19
4.6.2 RTZ schema version 1.2 19
4.7 Basic RTZ v1.0 route example 19
4.8 RTZ v1.2 test files 21
5 Methods of testing and required test results 21
5.1 General 21
5.2 User manual 21
5.3 Schema compliance 21
5.4 RTZP data container 22
5.5 Revision attribute 22
5.6 Schedules 22
5.7 Manufacturer extensions and handling of optional data 23
5.8 Default data 23
5.9 Application of leg element values 23
Annex A (normative) RTZ schema version 1.2 24

Annex B (normative) RTZ v1.2 test files 48
B.1 RTZ v1.2 with minimum mandatory elements 48
B.2 RTZ v1.2 with leg elements 48
B.3 RTZ v1.2 with all optional elements and attributes 48
B.4 RTZ v1.2 not fully conforming to schema (errors) 48
B.5 RTZ v1.2 in RTZP data container 49
B.6 RTZ v1.2 with extensions from 3rd party manufacturer 49
B.7 RTZ v1.2 using revision attribute 49
B.8 RTZ 1.2 with default waypoint 49
Annex C (informative) UML model of the route plan exchange format (RTZ v.1.2) 50
Annex D (informative) Comparison of schema versions 51
Bibliography 52

Figure 1 – Description of route plan – Distance between WP 2 and WP 3 8
Figure 2 – Description of route plan – Leg parameters belonging to WP 3 9

Table D.1 – Schema changes 51

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS –

Part 1: Route plan exchange format (RTZ) – General requirements, methods of testing and required test results

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

A PAS is an intermediate specification made available to the public and needing a lower level of consensus than an International Standard to be approved by vote (simple majority).

IEC PAS 61174-1 has been processed by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
80/978/DPAS	80/986/RVDPAS

Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned may transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of 2 years starting from the publication date. The validity may be extended for a single period up to a maximum of 2 years, at the end of which it shall be published as another type of normative document, or shall be withdrawn.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

A route plan exchange format RTZ was published as Annex S of IEC 61174:2015.

This route plan exchange format is intended be used for many purposes. For example it can be used on board for route plan exchange between main and backup ECDIS, ECDIS and radar, ECDIS and optimization systems, etc.. Another example use is between ship and shore where it can be used to inform the shore about the plan of the vessel, the shore can recommend a route, the shore can optimize a route, etc.

This route plan exchange format is based on standardizing a single route plan. The application level of the sender and receiver is assumed to be able to handle multiple route plans for use cases which require availability of multiple routes, for example alternative route plans for the same voyage or route plans for different purposes.

Since publication of IEC 61174:2015, typographical errors have been identified in the original route plan exchange format. Issues relating to ambiguity in the underlying requirements have also been identified. Testing has uncovered further issues, including (among others) route import failures, highlighting a lack of robustness in the RTZ testing clauses specified in IEC 61174:2015.

During the implementation of route exchange as part of a collaborative industry project, the Sea Traffic Management (STM) Validation Project[1], an iteration of the RTZ XML schema, version 1.1, was developed in order to correct the errors that had been identified in version 1.0 and to expand the schema to accommodate the project's needs.

Further development has led to RTZ schema version 1.2 which incorporates schema version 1.1 and contains a further change by permitting extensions in the Leg element.

This PAS includes the following significant technical changes with respect to IEC 61174:2015:

- modifications to the body text of IEC 61174:2015 Annex S intended to correct typographical errors, properly align the text with the original RTZ schema, and to add clarification and remove ambiguity from the requirements;
- modifications to the testing clauses in IEC 61174:2015 6.9.2 to expand the existing tests for route plan exchange by introducing testing clauses covering the full range of requirements specified in IEC 61174:2015 Annex S;
- an updated RTZ schema to revised version 1.2 in order to expand the original schema and to correct errors and weaknesses in the original schema.

Details of the substantive changes between version 1.0 and version 1.2 of the schema are given in Annex D.

---

1 https://www.seatrafficmanagement.info/projects/stm-validation/

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS –

Part 1: Route plan exchange format (RTZ) – General requirements, methods of testing and required test results

1 Scope

This PAS specifies requirements, methods of testing and required test results for route plan exchange format (RTZ).

This PAS has been developed to improve interoperability between equipment implementing route plan exchange format by addressing issues uncovered in the original RTZ specification (Annex S of IEC 61174:2015), and in recognition of the fact that some manufacturers have identified a pressing business need to implement an improved and expanded version of the RTZ format.

This PAS is intended to complement the original RTZ specification. This PAS provides a revised version 1.2 of the RTZ schema but retains the original version 1.0 of the schema unchanged. The intention is that compliance with this PAS can be achieved without compromising compliance with IEC 61174:2015.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61174:2015, *Maritime navigation and radiocommunication equipment and systems – Electronic chart display and information system (ECDIS) – Operational and performance requirements, methods of testing and required test results*