ISO/TS 22591:2021 (E)

Space systems — Space-based services for a high accuracy positioning system with safety requirements

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Abbreviated terms

5 Service system and risks

5.1 Service system
5.2 Risks

6 Rover safety requirements

6.1 General
6.2 Usage of accurate map data (safety provision 1)
6.3 Indication of positioning quality (safety provision 2)
6.4 Collision avoidance to the obstacles on the course (safety provision 3)
6.5 Dropping avoidance from the course edge (safety provision 4)
6.6 Damaging avoidance through the work (safety provision 5)
6.7 Collision avoidance to other vehicles or pedestrians (safety provision 6)
6.8 Positioning supplement in GNSS unavailable area (safety provision 7)

7 System specifications

7.1 General
7.2 Requirements of usage of high accuracy map
7.2.1 Accuracy of map data
7.2.2 Human machine interface
7.2.3 Maintenance of map data
7.3 Requirements of high accuracy positioning
7.3.1 Positioning accuracy
7.3.2 Positioning method
7.3.3 Reception of augmentation data
7.3.4 Positioning quality (safety provision 2)
7.3.5 Usage of integrated positioning (safety provision 7)
7.3.6 Real-time property
7.3.7 Improvement of availability

8 Verification

8.1 Verification of highly accurate map
8.1.1 Accuracy of map data
8.1.2 Human machine interface
8.1.3 Maintenance of map data
8.2 Verification of highly accurate positioning
8.2.1 Positioning accuracy
8.2.2 Positioning method
8.2.3 Reception of augmentation data
8.2.4 Positioning quality
8.2.5 Usage of integrated positioning
8.2.6 Real-time property

Annex A (Informative) Examples of application

A.1 Snowplough
A.1.1 System configuration
A.1.1.1 General
A.1.1.2 Points of this system configuration example
A.1.2 Operation overview
A.1.2.1 General
A.1.2.2 Basic operation
A.1.2.3 Indication of the self-position
A.1.2.4 Positioning quality indication
A.1.2.5 Indication of distance to road edges or features
A.1.2.6 Indication of snow-throwing availability
A.1.2.7 Collision avoidance by using proximity sensors
A.1.3 Example of human machine interface
A.2 Tractor
A.2.1 System configuration
A.2.1.1 General
A.2.1.2 Points of this system configuration example
A.2.2 Operation overview
A.2.2.1 Basic operation
A.2.2.2 Indication of the self-position
A.2.2.3 Positioning quality Indication
A.2.2.4 Indication of distance to road edges or features
A.2.2.5 Indication of work availability
A.2.2.6 Collision avoidance by using proximity sensors
A.2.3 Example of human machine interface
A.3 Bulldozer
A.3.1 System configuration
A.3.1.1 General
A.3.1.2 Points of this system configuration example
A.3.2 Operation overview
A.3.2.1 Basic operation
A.3.2.2 Indication of the self-position
A.3.2.3 Positioning quality indication
A.3.2.4 Indication of distance to road edges or features
A.3.2.5 Indication of work availability
A.3.2.6 Collision avoidance by using proximity sensors
A.3.3 Example of human machine interface

Annex B (Informative) Mobile mapping system

Annex C (Informative) Augmented GNSS positioning

Annex D (Informative) Space-based precise augmentation with fast convergence

Page count: 21