

ICS 43.040
CCS T 35



中华人民共和国国家标准
NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 43253.1-2023

**Road Vehicles—Functional Safety Audit and
Assessment Method—Part 1: General Requirements**
道路车辆 功能安全审核及评估方法
第 1 部分：通用要求

(English Translation)

Issued on 2023-11-27

Implemented on 2023-11-27

Jointly Issued by
State Administration for Market Regulation of the People's Republic of China &
Standardization Administration of the People's Republic of China

CONTENTS

Foreword	I
Introduction	II
1 Scope	1
2 Normative References	1
3 Terms and Definitions.....	1
4 General Requirements	1
4.1 General	1
4.2 How to use this document.....	1
5 Management Requirements for Audit and Assessment.....	2
5.1 Organizational Culture Requirements	2
5.2 Audit and assessment personnel qualification requirements	2
5.3 Audit and assessment input requirements	3
5.4 Audit and assessment process requirements	3
6 Technical Requirements for Audit and Assessment.....	8
6.1 Management of functional safety	8
6.2 Concept phase and system level	13
6.3 Software level	13
6.4 Hardware level	13
6.5 Production, operation, service and decommissioning	13
6.6 Supporting processes	16
6.7 Automotive Safety Integrity Level (ASIL)-oriented and safety-oriented analyses.....	25
Annex A (Informative) Example of Audit and Assessment Report.....	29
A.1 Overview of Functional Safety Audit and Assessment	29
A.2 Summary of Audit and Assessment	30
Annex B (Informative) Management of Functional Safety	32
B.1 Audit and Assessment of Overall Safety Management	32
B.2 Audit and Assessment of Project Dependent Safety Management.....	35
B.3 Audit and Assessment of Safety Management Regarding Production, Operation, Service and Decommissioning	43
Annex C (Informative) Production, Operation, Service and Decommissioning.....	44
Annex D (Informative) Supporting Processes.....	49
Annex E (Informative) ASIL-Oriented and Safety-Oriented Analyses.....	69

FOREWORD

This document is drafted in accordance with the rules given in GB/T 1.1-2020 “*Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents*”.

This document is Part 1 of GB/T 43253 “Road vehicles - Functional safety audit and assessment method”. The following parts of GB/T 43253 have been issued:

- Part 1: General requirements;
- Part 2: Concept phase and system level;
- Part 3: Software level;
- Part 4: Hardware level.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The organizations issuing this document shall not be held responsible for identifying any or all such patent rights.

This document was proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This document was prepared by SAC/TC 114 (National Technical Committee on Road Vehicles of Standardization Administration of China).

This document was drafted by China Automotive Technology Research Center Co., Ltd., Neusoft Ruichi Automotive Technology (Shanghai) Co., Ltd., Shanghai Motor Vehicle Testing and Certification Technology Research Center Co., Ltd., Chery Automobile Co., Ltd., BYD Automobile Industry Co., Ltd., Ningbo Geely Automobile Research and Development Co., Ltd., Shanghai Qianggu Automotive Technology Co., Ltd., Chongqing Changan Automobile Co., Ltd., and China First Automobile Group Co., Ltd. China Changan Automobile Group Co., Ltd., Zhixing Automotive Technology (Suzhou) Co., Ltd., Shenzhen DJI Zhuojian Technology Co., Ltd., Nanjing Xinchu Semiconductor Technology Co., Ltd., Beijing Horizon Robot Technology R&D Co., Ltd., Infineon Technology Resource Center (Shanghai) Co., Ltd., Suzhou Bowo Innovation Energy Technology Co., Ltd., Guangzhou Automobile Group Co., Ltd., Shanghai Jidu Automobile Co., Ltd. Schaeffler (China) Co., Ltd., Beijing Baidu Zhixing Technology Co., Ltd., Beijing National New Energy Vehicle Technology Innovation Center Co., Ltd., and Aisin (Suzhou) Automotive Technology Center Co., Ltd. Hangzhou Branch.

Chief drafters of this document are Wen Jiwei, Wang Xiaoyi, Li Bo, Song Xueli, Li Xiaolong, Li Qili, Guiyan, He Wen, Fu Yue, Shang Shiliang, Rong Hui, Wang Yu, Shao Haihe, Song Weijin, Liu Hui, Wei Bin, Wang Shaozhang, Zhou Hongwei, Cai Xiang, Tang Shanan, Li Juncheng, Fu Chunhui, Sun Yuyang, Chen Yong, Guo Xiaodong, Xu Iridium, Wang Yuhan, Lin Guangyi, Wang Zixun, Li Hongpeng, Li Xiaofeng, Hu Guoqiang, Xue Jianbo Cheng Zhou, Wu Qian, and Chu Xiaoqin.

INTRODUCTION

GB/T 43253 “Road vehicles - Functional safety audit and assessment method” is applicable to the audit and assessment activities for the safety-related electrical and/or electronic (E/E) systems within road vehicles during the safety lifecycle, based on GB/T 34590 “Road Vehicles - Functional Safety”.

Safety is one of the key issues in the development of road vehicles, and the increasing number of electrical, electronic and software related functions contained in vehicles strengthens the need for functional safety and the need to provide evidence that functional safety objectives are satisfied.

In order to confirm the compliance of E/E systems with the functional safety process and functional safety requirements, GB/T 43253:

- a) Provides the general processes, implementation methods and requirements for conducting functional safety audit and assessment at the organization level;
- b) Provides the processes, methods and requirements for the functional safety audit and assessment of safety-related E/E systems at the concept phase, system level, software level and hardware level;
- c) Provides the checklists and reference examples for functional safety audit and assessment.

GB/T 43253 consists of the following four parts:

- Part 1: General requirements, which aims to specify the general requirements for functional safety audit and assessment activities in different phases.
- Part 2: Concept phase and system level, which aims to specify the requirements for functional safety audit and assessment activities during the concept phase and at the system level.
- Part 3: Software level, which aims to specify the requirements for functional safety audit and assessment activities at the software level.
- Part 4: Hardware level, which aims to specify the requirements for functional safety audit and assessment activities at the hardware level.

The functional safety audit and assessment activities accompany the iterative functional safety development process. Figure 1 shows the overall structure of GB/T 43253, and is based upon a V-model as a reference process model of audit and assessment for the different phases, objects and scopes of product development.

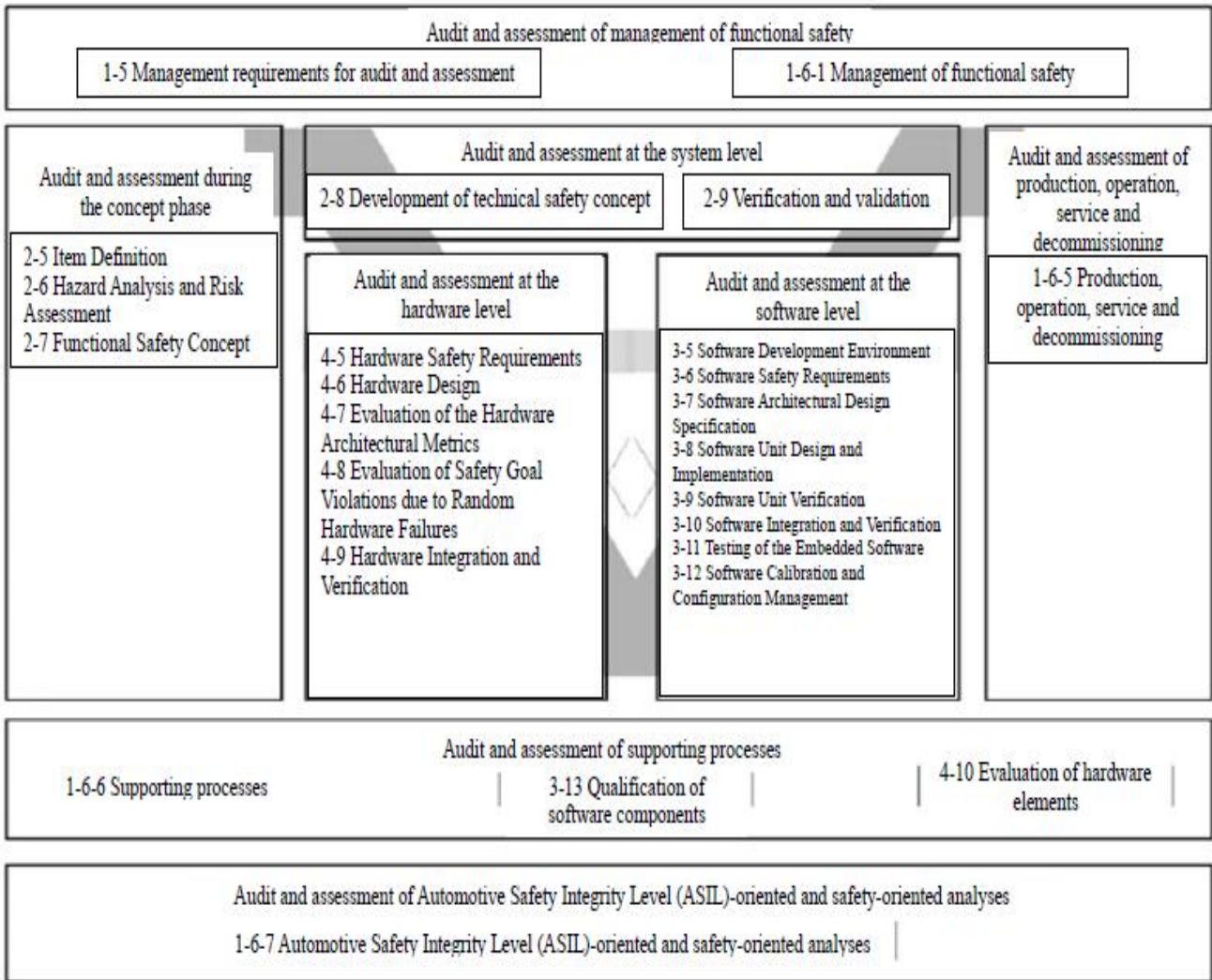


Figure 1 Overview of functional safety audit and assessment

Road Vehicles—Functional Safety Audit and Assessment Method

—Part 1: General Requirements

1 SCOPE

This document specifies the general process, implementation methods and requirements for functional safety audit and assessment.

This document is applicable to the safety-related systems that are developed in accordance with GB/T 34590.1-2022 to GB/T 34590.12-2022, that include one or more E/E systems, and that are installed in series production road vehicles, excluding mopeds.

This document is not applicable to the specific E/E systems in special purpose vehicles such as E/E system designed for drivers with disabilities.

2 NORMATIVE REFERENCES

The following normative documents contain provisions which, through normative reference in this text, constitute essential provision of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendment) applies.

GB/T 34590.1~ GB/T 34590.12-2022 Road vehicles - Functional safety

GB/T 43253.2-2023 Road vehicles—Functional safety audit and assessment method—Part 2: Concept phase and system level

GB/T 43253.3-2023 Road vehicles—Functional safety audit and assessment method—Part 3: Software level

GB/T 43253.4-2023 Road vehicles—Functional safety audit and assessment method—Part 4: Hardware level

3 TERMS AND DEFINITIONS

For the purpose of this document, the terms and definitions given in GB/T 34590.1-2022 apply.

4 GENERAL REQUIREMENTS

4.1 General

This document is used to determine whether an organization's functional safety process has been established and implemented correctly and whether the goals assessed (e.g., items or elements, etc.) have achieved the functional safety, based on the methodology given in GB/T 34590.1 ~ 34590.12-2022, in accordance with the prescribed functional safety audit and assessment process, implementation methods and requirements, and the checklists for audit and assessment of functional safety.

Note: This document provides the checklists and examples of audit and assessment of functional safety.

4.2 How to use this document

The organization can establish the organization-level audit and assessment process, develop the audit and assessment plans, methods and specifications, implement the audit and assessment processes, and manage the audit and assessment issues, in accordance with this document.

When using this document, the organization shall:

- a) Define the scope of audit and assessment by reference to the applicable requirements in this document based on the audited and assessed object;
- b) Tailor the requirements of this document and the checklists corresponding to the functional safety activities tailored according to GB/T 34590.1 ~ 34590.12-2022;
- c) Add or adjust the check items according to the characteristics of the audited and assessed object;

The following pages are left blank intentionally.

You may contact email
standardtrans@foxmail.com
to buy the complete PDF version.