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**LTE-based vehicular communication - Technical requirements
of the security certificate management system**

基于LTE的车联网无线通信技术 安全证书管理系统技术要求

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Abbreviations	2
5 Overview	4
5.1 Composition of V2X communication safety system	4
5.2 V2X Communication Security Service Architecture 5 6 LTE-V2X Certificate Management Security Requirements	8
6.1 Overview	8
6.2 Confidentiality Requirements	8
6.3 Integrity Requirements	8
6.4 Authenticity Requirements	8
6.5 Privacy Protection Requirements	9
6.6 CA system security requirements	9
7 Overall technical requirements for LTE-V2X communication security authentication mechanism	9
7.1 LTE-V2X Certificate Management System Architecture	9
7.2 LTE-V2X Security Certificate	17
7.3 Basic elements description	24
7.4 Security Protocol Data Unit	24
7.5 Digital Certificate and Certificate Management Data Format 36 8 LTE-V2X communication security authentication interaction process and interface technical requirements	48
8.1 Registration Certificate Management Process	48
8.2 Pseudonym Certificate Application Process	54
8.3 Application Certificate and Identity Certificate Management Process	59
8.4 Certificate Revocation List Management Process	64
8.5 Organization Certificate Management Process	72
8.6 Abnormal Behavior Management	73
8.7 LA Management Structure and Process 73 9 LTE-V2X communication security authentication PKI mutual trust technical requirements	77
9.1 Overview	77
9.2 PKI mutual trust architecture	77
9.3 PKI mutual trust management process	79

9.4 PKI mutual trust authentication process	81
9.5 Trusted Root Certificate List Management Policy	81
9.6 Trusted Domain Certificate List Management Strategy	81
86 Appendix D (Normative) Input and Output of Cryptographic Algorithms 107	
Appendix E (Normative) Data format for the interface between V2X devices and security certificate management system 111	
Appendix F (Normative) GB A mechanism application layer session key generation and use method 147	
Appendix G (Informative) Certificate Lifecycle and Update Scenarios 148	
Appendix H (Informative) Proposed algorithm for key derivation process 150	
Appendix I (Normative) Link Value Related Definitions 155	
Appendix J (Normative) Trusted Certificate List and Mutual Trust Certification Process 157	
Appendix K (Informative) Algorithm Coding Examples 161	
References	169

Foreword

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Technical requirements for security certificate management system

1 Scope

GB/T 45112 specifies the security certificate management system for LTE-V2X, the vehicle-to-everything technology China has standardised on. Every message a vehicle broadcasts to another vehicle or to the roadside has to be signed, or the channel becomes an attack surface; but the signature also has to be anonymous, or the system becomes a national vehicle tracking network. Resolving that tension is what a V2X PKI does, and this document specifies it: the architecture of the certificate management system and the roles within it, the enrolment of a device, the issue and use of the short-lived pseudonym certificates a vehicle rotates through, the linkage authorities that make misbehaviour traceable without making ordinary traffic identifiable, the certificate revocation list and its distribution, the trust relationships between certificate authorities, and the interfaces and the security requirements at each of them. At 90,000 words it is one of the largest documents in the Chinese connected vehicle system. For a carmaker, a Tier 1 or a roadside unit supplier entering the Chinese V2X market, this is the text a security design has to satisfy.

This document specifies the architecture of the LTE-based Internet of Vehicles security certificate management system, certificate management requirements, security authentication mechanism requirements and related The explicit certificate format and interaction process related to it. This document applies to LTE-V2X devices and security certificate management systems.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 16262 (all parts) Information technology Abstract syntax notation

GB/T 25056 Information security technology certificate authentication system password and related security technical specifications

GB/T 25069 Information security technical terms

GB/T 32905 Information security technology SM3 cryptographic hash algorithm

GB/T 32907 Information security technology SM4 group key algorithm

GB/T 32918.1-2016 Information security technology SM

3 Terms and definitions

The terms and definitions defined in GB/T 25069 and the following apply to this document.

3.1 V2X equipment Safety equipment for vehicle-mounted units, roadside equipment and connected vehicle service providers.

3.2 A digital certificate related to V2X communication issued by a certificate authority to a connected vehicle device.

4 Public key encryption algorithm

GB/T 32918.5 Information Security Technology SM

5 Parameter Definition

GB/T 36624 Information technology security technology identifiable encryption mechanism
ISO / IEC 8825-