



2015 Annual Report ITS Standard in Korea



ITS Standard in Korea



MOLIT

Ministry of Land, Infrastructure and Transport

2015
Annual Report



ITS Standard in Korea

2014.8 ~ 2015.8



MOLIT

Ministry of Land, Infrastructure and Transport



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National Standardization Activities

Establishment and update of Technical Regulation

The Ministry of Land, Infrastructure and Transport (MOLIT) established five technology regulations to ensure interoperability and compatibility for the intelligent transport system and user's convenience, and continues to examine revision, abandon, or keep the regulations as part of improvement thereof.

Revision of Technical Regulation (four revisions) (To Be Expected)

Some data formats and declaration methods used in 'Technical Regulation on Basic Traffic Information Exchange I, II, IV' and 'Technical Regulation on Basic Traffic Information Exchange for Public Transportation (bus)' are expected to be revised. This aims to reflect data actually used in the ITS work environment, and consistently improve similar items in the technical regulations to enhance information link compatibility and maintenance efficiency by enhancing data reusability.

Data Improvement for ITS

Because the ITS data dictionary had not been revised since its establishment as a standard in early 2000, it had some issues of inefficient compatibility between systems and maintenance due to a difference between definitions for data actually used or the same data. The MOLIT collected and analyzed the ITS standard of Korea and approximately 18,600 data used in work environment to improve them as standard data for the ITS (March, 2015) in order to address the issues and enhance data reusability, will revise the technical regulations using them, and encourage the private sector to use them for private standards.

Establishment and update of Guidelines and Rules

Standardization of Intelligent Transport System and Criteria for Certification (To Be Expected)

The Ministry of Land, Infrastructure and Transport (MOLIT) is expected to establish and announce 'the Standardization of Intelligent Transport System (ITS) and Criteria of Certification' by specifying the procedure in detail about establishment and revision of the standard of the ITS and criteria for certification provided in the National Integrated Transport System Efficiency Act, and certification including designation and cancellation of certification institutions. This aims to ensure transparency and consistency in the process of work.

Criteria of ITS Performance Assessment in the Field of Vehicle and Road Transport (To Be Expected)

The Ministry of Land, Infrastructure and Transport (MOLIT) is expected to establish and announce 'the Criteria for ITS Performance Assessment in the Field of Vehicle and Road Transport' specifying standards, procedures and methods required for ITS performance assessment carried out for keeping functions and performance of the ITS equipment, systems and services.

Revision of Standard for Building Standard ITS Nodes and Links, and Guide for Efficiently Building Them (To Be Expected)

The Ministry of Land, Infrastructure and Transport (MOLIT) is expected to revise and announce 'Standard for Building Standard ITS Nodes and Links' in order to efficiently build standard intelligent transport system nodes and links, an e-road network used for collecting and proving transport information, and explicitly suggest the work. The MOLIT also announced the revised 'Guide for Building and Managing Standard ITS Nodes and Links' which specifies the subject of building, operation and management thereof, responsibilities and procedures for efficient operation and management .

Application of Standard

Nine projects employ the technical regulation of 'The Public Transport (bus) Information Exchange' which is established to ensure compatibility between ITS systems nationwide and information exchange connectivity between BIS (Bus Information System) centers (During August 2014~August 2015).

Date of Application	Standard Application to	Municipality of Application
SEP 1, 2014	Sejong – Daejeon – Cheongju Bus Information System (BIS) Project (Sejong Bus Information System)	Sejong City Council
SEP 2, 2014	Sejong – Daejeon – Cheongju Bus Information System (BIS) Project (Daejeon Bus Information System)	Daejeon City Council
SEP 3, 2014	Sejong – Daejeon – Cheongju Bus Information System (BIS) Project (Cheongju Bus Information System)	Cheongju City Council
OCT 21, 2014	Goyang – Paju Bus Information System (BIS) Project (Goyang Bus Information System)	Goyang City Council
OCT 22, 2014	Goyang – Paju Bus Information System (BIS) Project (Paju Bus Information System)	Paju City Council
JAN 9, 2015	Bus information connection system between Bucheon and Goyang (Bucheon Bus Information System)	Bucheon City Council
JAN 19, 2015	Bus information connection system between Asan and Cheonan (Asan Bus Information System)	Asan City Council
JAN 27, 2015	Bus information connection system between Asan and Cheonan (Cheonan Bus Information System)	Cheonan City Council
MAY 27, 2015	Jecheon – Chungju Bus Information System (BIS) Project (Jecheon Bus Information Connection System)	Jecheon City Council



Standardization Activities in Private Sector

Establishment of Standards

At the 12th ITS Standard Assembly (in December, 2014), 10 ITS de facto standards were established including the standard for equipment information exchange, such as the integrated ITS controller, AVI, VDS and CCTV etc.

Publication NO.	Title	Date of Enacted
ITSK-00089	Standard of the basic requirements for RRAP (Road Sign Recognition and Analysis Vehicle Platform)	2014.12.11
ITSK-00090	Information Exchange Standard for Parking information collection, provision and integration	2014.12.11
ITSK-00091	Standard of Data Exchange for Integrated ITS Controller	2014.12.11
ITSK-00092	Standard of Data Exchange for Automatic Vehicle Identification (AVI)	2014.12.11
ITSK-00093	Standard of Data Exchange for Vehicle Detection System (VDS)	2014.12.11
ITSK-00094	Standard of Data Exchange for Closed Circuit Television (CCTV)	2014.12.11
ITSK-00095	Standard of Data Exchange for Bus Lane Enforcement System	2014.12.11
ITSK-00096	Standard of Data Exchange for Illegal Parking Enforcement System	2014.12.11
ITSK-00099-1	A specification standard of a smart regulation system for driving restricted vehicles - Part I. System specification	2014.12.11
ITSK-00099-2	A specification standard of a smart regulation system for driving restricted vehicles - Part II. Interface specification for equipments	2014.12.11

Application of Standards

Seven type of tests have been performed by applying the 12 ITS de facto standards established in the ITS Standard Assembly, to approximately 90 systems. (during August 2014 ~ August 2015).

Test	Application Standard	Number of Cases
OBU performance compliance condition test	[ITSK-00042:2009] Standard of ETCS OBU Performance Test	20
	[ITSK-00043:2009] Standard of ETCS OBU Performance Test - Part II : Built in Model	
	[ITSK-00054:2011] Standard of the dedicated OBU and sub-systems for toll-discounted vehicles	
Hi-Pass standard compatibility test	[ITSK-00022:2013] The standard regarding a performance test method of ETCS	37
Fixed load scale standard compatibility test	[ITSK-00099-1] A specification standard of a smart regulation system for driving restricted vehicles - Part I. System specification	3
	[ITSK-00099-2] A specification standard of a smart regulation system for driving restricted vehicles - Part II. Interface specification for equipments	
DSRC transport information system standard compatibility test	[ITSK-00047] Standard of the Transport Information System using the DSRC Part.4 Performance Test	17
Toll evasion prevention system performance test	[ITSK-00088] Performance test method of Toll Violation Enforcement System part 2. Shooting Video	2
Automatic tunnel accident monitoring system performance test	[ITSK-00062] Tunnel Video Incident detection System performance standards for test methods	4
Radio tunnel repeater performance test	[ITSK-00056] Standard for performance test of tunnel integrated wireless repeater at field	5



International Standardization Activities

Development and Establishment of Standard Suggested by Korea

Korea organized an ISO/TC204 team composed of experts from the industry, government and universities who work for WG under TC204, and suggested 11 standards in WG5, WG8, WG9 and WG17 for contributing to establishing international standards.

WG	Stage	Title	Remarks
WG 5	PWI	[] Electronic Fee Collection – Personalization – Part 5 : Interface between personalization Equipment and On Board Units using IC card	Joint suggestion by Korea and Japan
	PWI	[ISO/TS 19639-2] Electronic Fee Collection (EFC) – Framework for common payment scheme for multi-modal transport services – Part 2 : Reloading interface definition for pre-payment EFC	
WG 8	NP	[ISO/TR 19373] Conformance Test of Interoperable Fare Management system	
WG 9	NP	[ISO/TR 20684-2] Intelligent transport systems – Roadside modules data interface – Part 2 : Variable message signs	
WG 17	DIS	[ISO 13184-2] Guidance protocol via personal ITS station for advisory safety systems – Part 2 : Road guidance protocol (RGP) requirements and specification	
	NP	[ISO 13185-3] Vehicle interface for provisioning and support of ITS services – Part 3 : Unified gateway protocol (UGP) sever and client API specification	Joint suggestion by Korea and Germany
	DIS	[ISO 17438-1] ITS – Indoor navigation for personal and vehicle ITS stations – Part 1 : General information and use case definition	
	NP	[ISO 17438-4] ITS – Indoor navigation for personal and vehicle ITS stations – Part 4 : Requirement and specification for interface between P/V and Central ITS stations	
	NP	[ISO/TR 18561-1] ITS – The use of personal ITS station for green transport information and management – Part 1 : General information and use cases definition	
	NP	[ISO/TR 20529] ITS – A framework guideline for Green ITS (G-ITS) standards	
	NP	[ISO/TR 20530] ITS – Information for emergency service support via Personal ITS station – General requirements and technical definition	

Support experts from private sector

The Ministry of Land, Infrastructure and Transport (MOLIT) supports Korean representatives, who are the experts from the industry, government and universities. These Korean representatives participate in three international standardization meetings including the 45th meeting in Hangzhou, the 46th ISO/TC204 meeting in Potsdam and the WG5 Czech Working Group meeting for establishing international standards.

- ◆ The 45th ISO/TC204 Hangzhou meeting
- ◆ The 46th ISO/TC204 Potsdam meeting
- ◆ The 96th ISO/TC204 WG5 & CEN TC278 WG1 Czech meeting



Other Activities

Standards Distribution System

▶ National ITS Data Registry (<http://dr.its.go.kr>)

This website is providing an easy access to Korea's and overseas ITS standards and related information in order to offer reference data and methods required when people carry out ITS related work or projects.

▶ National ITS architecture (<http://architecture.its.go.kr>)

This website is providing the logics for each ITS service, physical architectures and project architectures used in project established for actually providing ITS services in order to help people understand and use the National ITS architecture.

2015 Regular Training for ITS Standardization

The MOLIT performed '2015 Regular Training on ITS Standardization' for 3 days from September 9 to 11. The purposes of training are to raise awareness of ITS standards as well as to improve ITS employees' work performance for standardization. This training was composed of three courses of basic training for applying the ITS standard, training for applying and using the technical standards, and training for facilitating understanding international trends.

Course	Details of Training
Basic training for applying ITS standard	<ul style="list-style-type: none"> Understand national ITS policy trends and the ITS standard. Operation of information connection between centers, national ITS architecture, effect of international standards on the industry
Training for applying and using technical standards	<ul style="list-style-type: none"> Method of applying technical standards, using ASN.1 general tools, method of verifying standard application.
Training for facilitating understanding international standard trends (focus on ISO/TC204)	<ul style="list-style-type: none"> Understand international standards. Current international standardization, and trends of standardization (response in Korea)



Current R&Ds to develop the standards

▶ Development of integrated platform and standard for onboard devices for business vehicles

Standards and integrated platforms have been developed to ensure compatibility and scalability with services required by users and developers by integrating and managing common functions of H/W and S/W of various onboard devices installed in business vehicles, for example, buses, taxis and freight vehicles. To this end, test equipment has also been developed to check whether the H/W test methods and application interface standards are compatible with the standards.

▶ Development of Integrated Control Technology for High-tech Road Transport Facilities

An integrated standard controller was developed to add and remove element equipment to/from a compact housing without additional technical work by integrating overlapping functions of the existing ITS equipment housing individually installed, and modularizing individual functions. To this end, seven standards were developed, for example, the standard hardware specification for integrated control and standard information exchange specification between roadside devices (AVI, VDS, CCTV, BLES, IPES)-integrated controller-center. A method of testing standard compatibility and a test system for individual standards was also developed.



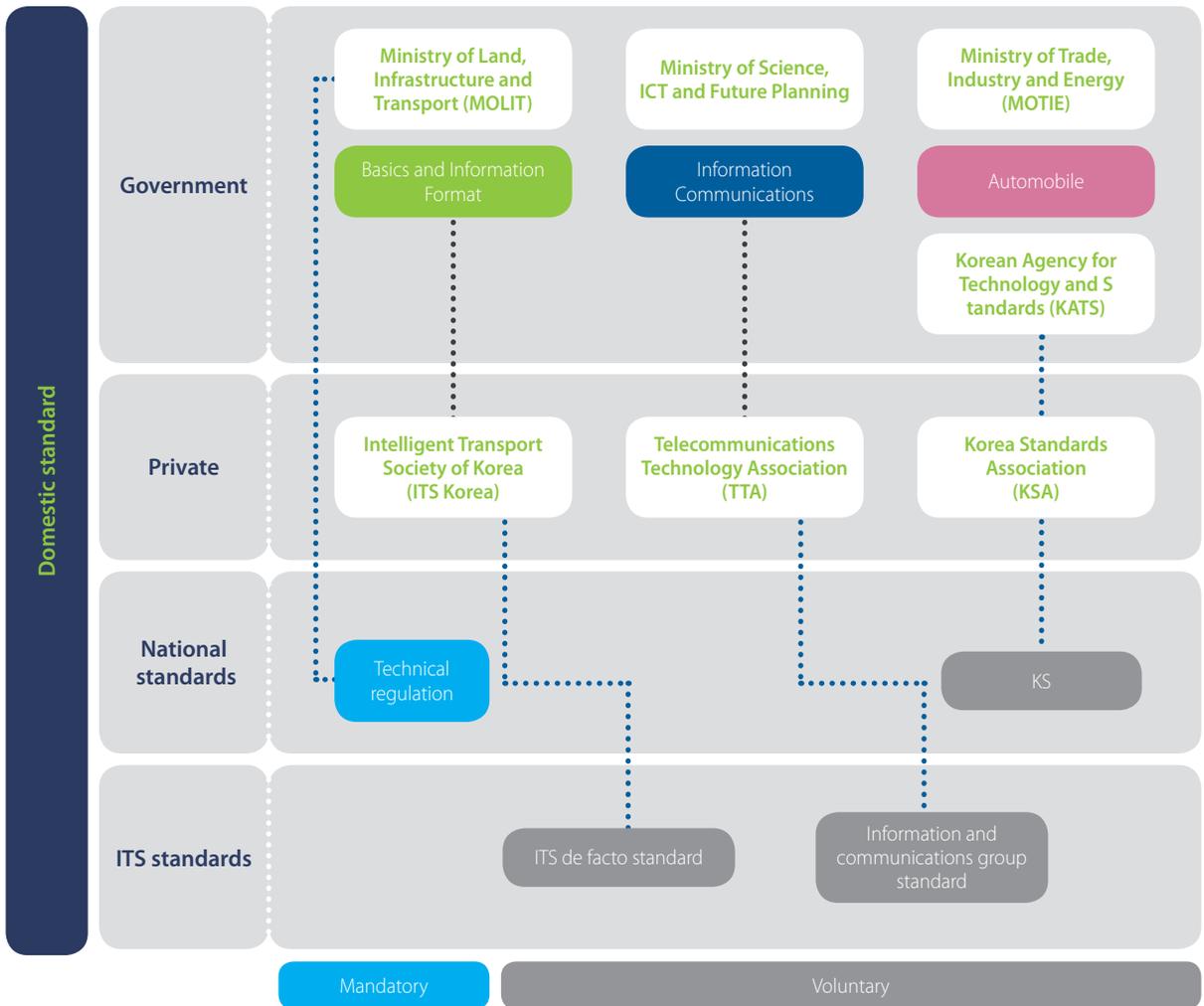
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Standardization area by government ministry

National ITS Standardization Plan, announced in July 2002, defined standardization area by government ministry to avoid redundancy, by which Ministry of Land, Infrastructure and Transport (formerly, Ministry of Construction and Transportation) is committed to Basics and Information Format ¹⁾, Ministry of Science, ICT and Future Planning (formerly, Ministry of Information and Communication) to Information Communications ²⁾, and Ministry of Trade, Industry and Energy (formerly, Ministry of Commerce Industry and Energy) to Automobile ³⁾



- 1) Basics and Information Format : standards other than basic standards and those not included in other organizations, such as system and interface including data dictionary and message set, location reference, language, architecture, etc.
- 2) Information Communications : communications protocol, communications device, information processing and other ITS-related information communications technical standards
- 3) Automobile: vehicle device and products



History of ITS Standardization in Korea

1997~2003	● Studied on National ITS technical standardization
1998	● Established Traffic System Efficiency Act
1999	● Established national ITS architecture (7 service areas and 62 user services)
2003	● Installed and launched National ITS Data Registry
2003~2008	● Developed the national ITS technical regulations plans
2004	● Established the Technical Regulation on Basic Traffic Information Exchange I and Technical Regulation on Basic Traffic Information Exchange for Public Transportation (Bus)
2004	● Designated Korea Research Institute for Human Settlements (KRIHS) as the organization in charge of ITS standardization
2006	● Established the Technical Regulation on Basic Traffic Information Exchange II and Technical Regulation on ETCS Information Exchange via DSRC(roadside-OBU)
2008	● Established the Technical Regulation on Basic Traffic Information Exchange IV
2008	● Designated organizations in charge of road traffic ITS standardization - 4 organizations in each area (ITS Korea, KRIHS, KOTI, KICT)
2008~2015	● ITS Standardization Activities ongoing
2009	● Revised national ITS architecture (7 service areas and 45 detailed user services)
2009	● Established national ITS architecture online web-site and launched its service
2010	● Revised National Integrated Transportation System Efficiency Act
2012	● Revised the technical Regulation on Basic Traffic Information Exchange I, technical Regulation on Basic Traffic Information Exchange II and technical Regulation on Basic Traffic Information Exchange IV
2013	● Revised the Technical Regulation on ETCS Information Exchange via DSRC(roadside-OBU)
2013	● Designated ITS Korea as a national organization in charge of ITS standardization for road traffic
2014	● Revised the Technical Regulation on Basic Traffic Information Exchange for Public Transportation (Bus)



Status of ITS Standardization in Korea

Traffic Management

Publication NO.	Title	Date of Enacted(Revision)
2012-560	Technical regulation on Basic Traffic Information Exchange I	2012.08.24
2012-560	Technical regulation on Basic Traffic Information Exchange II	2012.08.24
2012-560	Technical regulation on Basic Traffic Information Exchange IV	2012.08.24
ITSK-00006	Data Dictionaries of AITS Standard	2003.07.15
ITSK-00007	Data Dictionaries of ATMS Standard	2003.07.15
ITSK-00014	Message sets for Incident Management Standard	2003.07.15
ITSK-00015	Message sets for Traffic Control Standard Part 1	2003.07.15
ITSK-00017	Message sets for Traffic Control Standard Part 2	2003.07.15
ITSK-00019	Message sets for Vehicle-to-Roadside Communication Standard Part 1	2003.07.15
ITSK-00030	ITS roadsides modules Part 1	2005.10.19
ITSK-00031:2009	Test Standard for Conformity in the Application of Technical Standard for Basic Traffic Information Exchange	2009.12.16
ITSK-00028	Interface Standard on Vehicle Probe Data for Wide Area Communications	2006.12.13
ITSK-00036	Standard for Automatic Parking Violation Control Systems Part 1 : Message Set	2006.12.13
ITSK-00035	Service Classification Standard using DSRC	2008.12.20
ITSK-00044:2010	Standard of the Transport Information System using the DSRC Part.1 Hardware	2011.01.13
ITSK-00045	Standard of the Transport Information System using the DSRC – Application Interface Part.2 Collection of the Transport Information System	2008.12.20
ITSK-00046:2012	Standard of the Transport Information System using the DSRC – Application Interface Part.3 Offer of the Transport Information System	2012.12.05
ITSK-00047	Standard of the Transport Information System using the DSRC Part.4 Performance Test	2008.12.20
ITSK-00050	Test Standard for Conformity in the Application of Technical Standard for Basic Traffic Information Exchange II	2009.12.16
ITSK-00056:2013	Standard for performance test of tunnel integrated wireless repeater at field	2013.12.20
ITSK-00062	Tunnel Video Incident detection System performance standards for test methods	2012.01.10
ITSK-00069	Standard of performance test for OBU of traffic information dissemination using DSRC	2013.07.08
ITSK-00070	Standard of Estimate for ATMS Works	2012.12.05
ITSK-00087	VMS System Standard – Part6. Data Interchange standard between VMS and Traffic Information Center	2013.12.20
TTAK.KO-06.0190	Application interface for traffic information collection system, which are based on the DSRC	2008.12.19
TTAK.KO-06.0254	A standard of application layer protocol for traffic information system based on wireless LAN	2011.06.29
TTAS.KO-06.0052/R1	Test Standard for Layer 2 of DSRC at 5.8GHz	2007.12.26
TTAS.KO-06.0053/R1	Test specification for DSRC L7 at 5.8GHz	2007.06.22
KS X 6915:2004	Communication Technology	2004.01.26
KS X 6916:2006	Conformity Assessment in Infrared DSRC Standard for ITS applications	2006.02.28
KS X ISO 14813-6:2005	Transport information and control systems-Reference model architecture(s) for the TICS sector-Part 6 : Data presentation in ASN.1	2005.04.19
KS X ISO 14827-1:2002	Transport Information and Control System – Data interfaces between centers for Transport Information and Control Systems – Part 1 : Message Definition Requirements	2002.07.20
KS X ISO 14827-2:2002	Transport Information and Control System – Data interfaces between centers for Transport Information and Control Systems – Part 2 : DATEX-ASN	2002.07.20

Public Transportation Management

Publication NO.	Title	Date of Enacted(Revision)
2014-176	Technical Regulation on Basic Traffic Information for Public transportation (Bus)	2014.04.02
ITSK-00008	Data Dictionaries of APTS Standard	2003.07.15
ITSK-00020	Message sets for Public Transport Information Standard Part 1	2003.07.15
ITSK-00024	Message sets for Public Transport Information Standard Part 2	2004.09.22
ITSK-00034	Fundamental Software Structure for Public Transport Information based on Mobile Locations	2006.12.13
ITSK-00040:2010	Test Procedure for technical regulation of transit(bus) data exchange	2011.01.13
ITSK-00074	Standard of Estimate for BIS/BMS	2013.07.08
KS X 6911-1:2013	Public bike system – Part 1 : General requirements profile	2013.12.19
KS X 6911-2:2013	Public bike system – Part 2 : Interoperability requirements profile	2013.12.19
KS X 6911-3:2013	Public bike system – Part 3 : Identification scheme	2013.12.19
KS X 6911-4:2013	Public bike system – Part 4 : Bike locking unit	2013.12.19
KS X 6911-5:2013	Public bike system – Part 5 : Communication interface between management systems	2013.12.19

Electronic payment

Publication NO.	Title	Date of Enacted(Revision)
2013-251	Technical regulation for sharing Electronic Toll Collection System(ETCS) information using Dedicated Short – Range Communication(DSRC)	2013.05.16
ITSK-00012	Message sets for Eelectronic Toll Collection Systems Standard	2003.07.15
ITSK-00022:2013	The standard regarding a performance test method of ETCS	2013.07.08
ITSK-00029:2011	ETCS OBU Basic Requirements	2012.01.10
ITSK-00032:2012	ETCS Integrated Lane Controllers Specification Part 1 – H/W	2012.12.05
ITSK-00033:2012	ETCS Integrated Lane Controllers Specification Part 2 – Interface	2012.12.05
ITSK-00041:2008	Performance test method of Toll Violation Enforcement System	2008.04.10
ITSK-00042:2009	Standard of ETCS OBU Performance Test	2009.12.16
ITSK-00043:2009	Standard of ETCS OBU Performance Test - Part II : Built in Model	2009.12.16
ITSK-00048	Electronic payment for driving convenience based on DSRC	2009.12.16
ITSK-00051	Test Standard for Conformity in the Application of ETCS Application Interface with DSRC	2009.12.16
ITSK-00054:2011	Standard of the dedicated OBU and sub-systems for toll – discounted vehicles	2012.01.10
ITSK-00065	The standard regarding a performance test method of ETCS in Field Part II. IR/RF Integrated Control Unit	2012.05.11
ITSK-00071	An integrated(A slim) control section-Lane control system standard of Electronic Toll Collection System(ETCS)	2013.07.08
ITSK-00088	Performance test method of Toll Violation Enforcement System part 2. Shooting Video	2013.10.30
KS X 6922-1:2008	Integrated Circuit Card Specification for Payment Systems – Book 1 : Application Independent ICC to Terminal Interface Requirements	2013.12.27
KS X 6922-2:2008	Integrated Circuit Card Specification for Payment Systems – Book 2 : Security and Key Management	2008.12.19
KS X 6922-3:2008	Integrated Circuit Card Specification for Payment Systems – Book 3 : Application Specification	2008.12.19
KS X 6922-4:2008	Integrated Circuit Card Specification for Payment Systems – Book 4 : Cardholder, Attendant, and Acquirer Interface Requirements	2008.12.19
KS X 6923-1:2009	Contactless Pre-Paid/Post Pay IC Card - Purchase SAM - Part 1 : Physical Characteristics and Basic Structure	2009.12.08
KS X 6923-2:2009	Contactless Pre-Paid/Post Pay IC Card - Purchase SAM - Part 2 : Command and Protocols	2009.12.08
KS X 6923-3:2009	Contactless Pre-Paid/Post Pay IC Card - Purchase SAM - Part 3 : Cryptogram	2009.12.08
KS X 6923-4:2009	Contactless Pre-Paid/Post-Pay IC Card - Purchase SAM - Part 4 : Conformity Test	2009.12.08
KS X 6924-1:2009	Contactless Pre-Paid/Post Pay IC Card - User Card - Part 1 : Physical Characteristics and Basic Structure	2009.12.08

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KS X 6924-2:2009	Contactless Pre-Paid/Post Pay IC Card - User Card - Part 2 : Commands and Protocols	2009.12.08
KS X 6924-3:2009	Contactless Pre-Paid/Post Pay IC Card - User Card - Part 3 : Cryptogram	2009.12.08
KS X 6924-4:2009	Contactless Pre-Paid/Post-Pay IC Card - User Card - Part 4 : Conformity Test	2009.12.08
KS X 6925-1:2009	Contactless Pre-Paid/Post Pay IC Card - Purchase Terminal - Part 1 : Physical Characteristics	2009.12.08
KS X 6925-2:2009	Contactless Pre-Paid/Post Pay IC Card - Purchase Terminal - Part 2 : Logical Structures	2009.12.08
KS X 6925-3:2009	Contactless Pre-Paid/Post Pay IC Card - Purchase Terminal - Part 3 : Safety & Security	2009.12.08
KS X 6926-1:2006	The Specifications of Value Loading Terminal for Pre - Paid IC Card - Part 1 : Physical Specifications	2006.10.31
KS X 6927-1:2006	The Specifications of Load SAM for Pre - Paid IC Card - Part 1 : Physical Specifications	2006.10.31
KS X ISO/IEC 7816-1:2011	Identification cards - Integrated circuit(s) with contacts - Part 1 : Physical characteristics	2011.12.29
KS X ISO/IEC 7816-2:2011	Identification cards - Integrated circuit(s) cards with contacts - Part 2 : Dimensions and location of the contacts	2011.12.29
KS X ISO/IEC 7816-3:2011	Identification card - Integrated circuit(s) card with contact - Part 3 : Electronic signals and transmission protocols	2011.12.29
KS X ISO/IEC 7816-4:2002	Information technology - Identification cards - Integrated circuit(s) cards with contacts - Part 4 : Interindustry commands for interchange	2002.09.19
KS X ISO/IEC 7816-5:2008	Identification cards - Integrated circuit(s) cards with contacts - Part 5 : Numbering system and registration procedure for application identifiers	2008.12.19
KS X ISO/IEC 7816-6:2010	Identification cards - Integrated circuit cards - Part 6 : Interindustry data elements for interchange	2010.12.07
KS X ISO/IEC 7816-7:2002	Identification cards - Integrated circuit(s) cards with contacts - part 7 : Interindustry commands for Structured Card Query Language(SCQL)	2002.09.19
KS X ISO/IEC 7816-8:2007	Identification cards - Integrated circuit(s) cards with contacts - Part 8 : Security related interindustry commands	2007.11.30
KS X ISO/IEC 7816-9:2007	Identification cards - Integrated circuit(s) cards with contacts - Part 9 : Additional interindustry commands and security attributes	2007.11.30
KS X ISO/IEC 7816-10:2007	Identification cards - Integrated circuit(s) cards with contacts - Part 10 : Electronic signals and answer to reset for synchronous cards	2007.11.30
KS X ISO/IEC 7816-11:2004	Identification cards - Integrated circuit cards with contacts - Part 11 : Personal verification through biometric methods	2004.12.30
KS X ISO/IEC 7816-15:2004	Identification cards - Integrated circuit cards with contacts - Part 15 : Cryptographic information application	2004.12.30
KS X ISO/IEC 14443-1:2010	Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 1 : Physical characteristics	2010.12.07
KS X ISO/IEC 14443-2:2008	Identification cards - Contactless integrated circuit(s) cards - Proximity cards : Part 2: Radio frequency power and signal interface	2008.06.30
KS X ISO/IEC 14443-3:2008	Identification cards - Contactless integrated circuit(s) cards - Proximity cards : Part 3 : Initialization and anticollision	2008.06.30
KS X ISO/IEC 14443-4:2008	Identification cards - Contactless integrated circuit(s) cards - Proximity cards : Part 4 : Transmission protocol	2008.06.30
KS X ISO 14904:2005	Road transport and traffic telematics - Electronic fee collection (EFC) - Interface specification for clearing between operators	2005.04.19
KS X ISO 14906:2005	Road transport and traffic telematics - Electronic fee collection - Application interface definition for dedicated short-range communication	2005.11.01
KS X ISO 14907-1:2002	Road transport and traffic telematics - Electronic fee collection (EFC) - Test procedures for user and fixed equipment - Part 1 : Description of test procedures	2002.07.20
KS X ISO/TS 14907-2:2010	Road transport and traffic telematics - Electronic fee collection - Test procedures for user and fixed equipment - Part 2 : Conformance test for the onboard unit application interface	2010.12.31
KS X ISO/IEC 15693-1:2008	Identification cards - Contactless integrated circuit(s) cards - Vicinity cards - Part 1 : Physical characteristics	2008.12.19
KS X ISO/IEC 15693-2:2008	Identification cards - Contactless integrated circuit(s) cards - Vicinity cards - Part 2 : Airinterface and initialization	2008.12.19
KS X ISO/IEC 15693-3:2010	Identification cards - Contactless integrated circuit(s) cards - Vicinity cards - Part 3 : Anticollision and transmission protocol	2010.12.07
KS X ISO 17573:2005	Road Transport and Traffic Telematics - Electronic Fee Collection(EFC)- System architecture for vehicle related transport services	2005.06.24
KS X ISO/IEC 24727-1:2008	Identification cards - Integrated circuit card programming interfaces - Part 1 : Architecture	2008.12.19

Transportation Information Circulation

Publication NO.	Title	Date of Enacted(Revision)
ITSK-00013	Message sets for Exchange of Traffic Information Service Part 1	2003.07.15
ITSK-00016	Message sets for Exchange of Traffic Information Service Standard Part 2	2003.07.15
ITSK-00023	Message sets for Exchange of Traffic Information Service Standard Part 3	2004.09.22

Traveler information

Publication NO.	Title	Date of Enacted(Revision)
ITSK-00010	Message sets for Traveler Information Service Standard Part 1	2003.07.15
ITSK-00018	Message sets for Traveler Information Service Standard Part 2	2003.07.15
ITSK-00025	Message sets for Traveler Information Service Standard Part 3	2004.09.22
TTAK.KO-06.0174	Requirements for Wide-Area Wireless Communication for ITS/Telematics	2008.06.26
TTAK.KO-06.0189	Architecture for Wide-Area Wireless Communication for ITS/Telematics	2008.12.19
TTAS.KO-06.0083	Traffic Information Service For Telematics Stage 1 : Functional Requirements	2005.06.29
TTAS.KO-06.0084	Telematics Terminal Software Platform Stage 1 : Architecture	2005.06.29
TTAS.KO-06.0085	Telematics Standard Reference Model	2005.06.29
TTAS.KO-06.0102	Service Protocol Between Telematics Terminal and TSP Server Stage 1: Functional Requirement	2005.12.21
TTAS.KO-06.0117	Telematics Terminal S/W Platform Stage 2 : Functional Requirement	2006.10.20
TTAS.KO-06.0118/R1	Service Protocol between Telematics Terminal and TSP Server Stage 2-Interface (XTP.m v1.0: eXtensible Telematics Protocol for mobile Version 1.0)	2007.12.26
TTAS.KO-06.0126	Test Framework for Telematics System and Services	2006.12.27
TTAS.KO-06.0127	Telematics Terminal S/W Platform Stage3: Interface	2006.12.27
TTAS.KO-06.0128	Service Protocol between Telematics Terminal and Insurance/Logistics Server Stage 1 : Functional Requirement	2006.12.27
TTAS.KO-06.0129	MCP-MAUS Service Protocols for Map Air Update	2006.12.27
TTAS.KO-06.0130	MAUS-Terminal Service Protocols for Map Air Update	2006.12.27
TTAS.KO-06.0131	Interoperability Test Specification of between Telematics Terminal and TSP Server	2006.12.27
TTAR.KO-06.0134	Reference Platform for Telematics Services (Technical Report)	2013.11.12
TTAS.KO-06.0160	Vehicle Information Data Model for Telematics Service	2007.12.26
TTAS.KO-06.0161	Broadcasting Telematics Contents Request Protocol Version 1.0	2007.12.26
TTAS.KO-06.0162	USN based Telematics system : Architecture and Functional Requirements	2007.12.26
KS X 6917:2006	Transport Protocol Experts Group(TPEG) TPEG specifications -CTT (Congestion and Travel -Time Information)	2006.05.23
KS X 6917-1:2012	Traffic and Travel Information(TTI) -TTI via Transport Protocol Expert Group(TPEG) data-streams -Part 1 : Introduction, numbering and versions	2012.07.25
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Intelligent vehicle and road

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TTAK.KO-06.0216/R1	Vehicle Communication System Stage3 : PHY/MAC	2013.12.18
TTAK.KO-06.0217	Technologies and Service models Definition for Connected Vehicle Black Box	2009.12.22
TTAK.KO-06.0234/R1	Vehicle Communication System Stage 3 : Networking	2013.12.18
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Commercial vehicle Operation

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Fundamental and the others

Publication NO.	Title	Date of Enacted(Revision)
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ITSK-00002	Central DB of Road Digital Map Standard Part 1 - Basic Concept and Scope	2003.07.15
ITSK-TR-00003	Data Concept of Location Referencing Method	2003.07.15
ITSK-00005	Requirement for ITS Data Registry and Data Dictionaries Standard	2003.07.15
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Web site for ITS standard

Ministry of Land, Infrastructure and Transport (<http://www.molit.go.kr>)
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Korean Standards & Certifications (<http://standard.go.kr>)

Intelligent Transport Society of Korea (<http://www.itskorea.kr>)
Korea Research Institute for Human Settlements (<http://www.krihs.re.kr>)
The Korea Transport Institute (<http://www.koti.re.kr>)

Korea Institute of Civil Engineering and Building Technology
(<http://www.kict.re.kr>)
Korea Expressway Corporation (<http://www.ex.co.kr>)

National Transport Information Center (<http://www.its.go.kr>)
National ITS Data Registry (<http://dr.its.go.kr>)
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