

Outline of LKAS requirements

Items	Purpose	References				
		Japanese technical guideline	ISO	LDWS regulation	ITS guideline High-priority Warning Signals	ITS guideline Design Principles for Control Systems of ADAS
1. Definition	Clarification of LKAS function	1.	Introduction			
2. Scope	Clarification of the vehicle categories	1.	1.	1.		
3. Operational requirements						
A. Requirements for activation						
Operating speed	In order to operate LKAS primarily on an highway where the environments such as lane marking are maintained.	3.(1)	5.1	5.2.3.		
Acceleration etc. caused by the operation of the system	In order to prevent a rollover or unstable vehicle behavior caused by rapid steering control. In case of the system preventing lane departure by operating braking, it is necessary to prescribe the requirement concerning speed reduction and deceleration to avoid negative effect to the following vehicles.	3.(3) 4.(2)	5.4			
Road shape	It is assumed that LKAS operates primarily on expressways.		Annex A	5.2.1.		
Lane marking	In order to guarantee proper operation of LKAS to lane marking in each country.		Annex B	Annex 3		
LKAS performance requirement	The minimum requirement for prevention of lane departure accidents		6.5.2.			
B. Requirements for deactivation						
Functional limitation of the system	In order to notify the driver that LKAS becomes not operational, and in order to let the driver operate steering appropriately.	6.(1)			3.8	4.3
Requirement for the end of the system operation	If the control of LKAS is finished suddenly, the driver might be confused. Therefore it is necessary that the control level of LKAS is lowered gradually at the end of the control.	3.(6)	5.4			

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C. Requirements relevant to driver						
Holding a steering wheel by the driver	In order to make the driver understand that LKAS is not the autonomous steering. And in order to prevent overreliance to LKAS.	3.(2)	1.			4.4
Override	It is necessary for the driver to fulfill his/her responsibility of safety driving. Due to following Vienna Convention.	4.(1)	5.2.1			4.1
Condition of non-operational being allowed	In order to clarify that LKAS operation may be suppressed if it detects driver's intention of a lane change.		5.2.1	5.2.1.2.		
D. Information for driver						
ON/OFF switch	In order to clarify that the ON/OFF status of LKAS is decided by driver's intention.	3.(5)	5.2.1	5.3.		4.2
Malfunction warning /Status display	In order to indicate the system status to the driver correctly. However, it is allowed to indicate it to the driver by optical means only because it is not an emergency situation.	5	5.2.2	5.3.2. 5.4.2. 5.4.3. 5.4.4		4.3
Information to be known to users (P)	In order to make the driver understand the function and usage of LKAS correctly. It is one of the measures for prevention of over reliance.	8				
E. The other requirements						
Failsafe	In order to indicate malfunctions to the driver, and to stop the device safely same as the other electronic devices.	7	5.5			
Conformity with the safety aspects of complex electronic control systems (P)	In order to satisfy the requirement of the conformity with the safety aspects of complex electronic control systems related to LKAS.			5.1.3. Annex 4 (AEBS)		
EMC(P)	In order to prevent wrong operation caused by external electromagnetic wave etc.. And in order to prevent to affect adversely to the peripheral electronic devises.			5.1.2.		