ADAS TEST GUIDELINE in ISO11451 for R10 Annex.6

Akihiko Nojima

JAMA EMC sub committee

30,10, 2017

ISO TR of ADAS test guideline

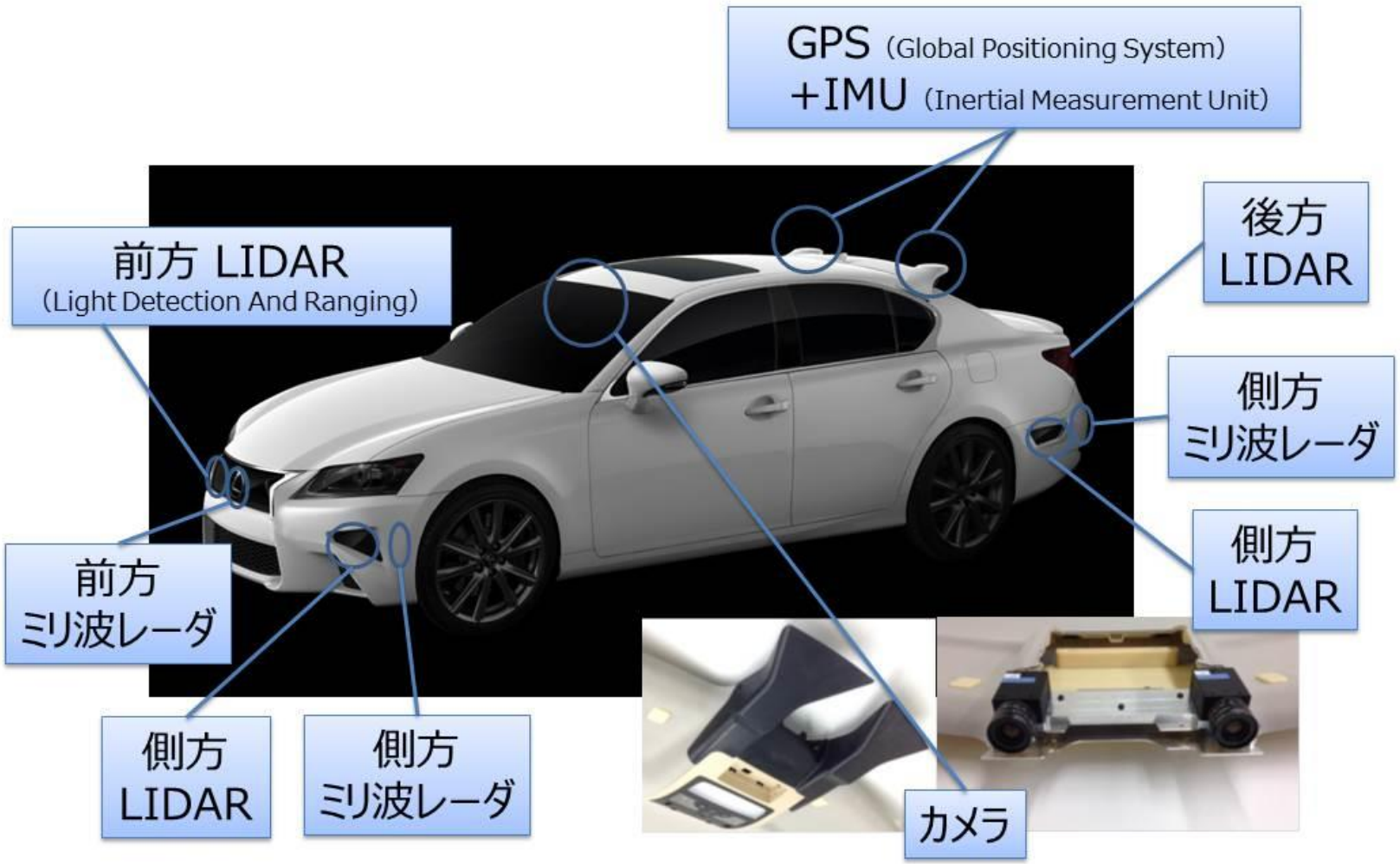
- For ADAS vehicle immunity test , a standard guideline document will be need for all test laboratory and vehicle and part manufacture

- ADAS will be some variations of system configuration according to manufactures. Principle policy will be need and some examples will be helpful for test planning.

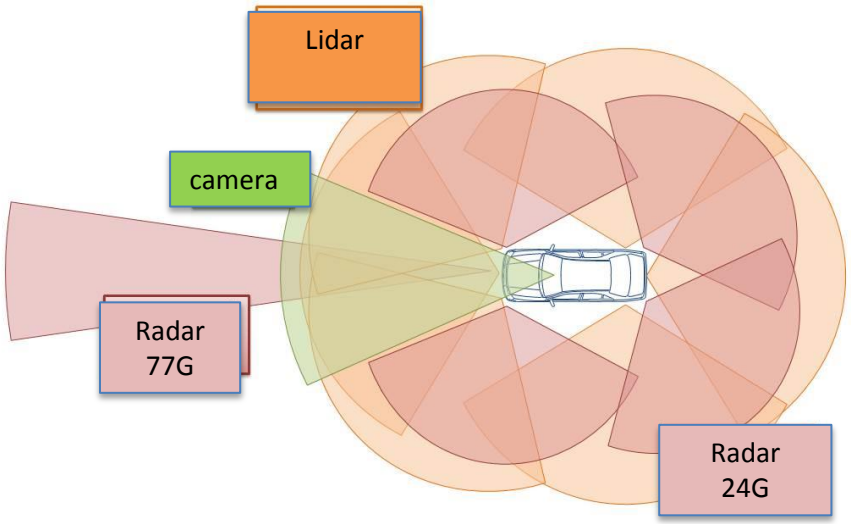
Proposal

- ISO TC22 SC32 WG2 EMC should contribute to TR ADAS test guide line which applicable to vehicle immunity test for ISO11451 and Annex.6 in R10.
- Establish the standard guide line for fair and stable vehicle type approval test in every testing authority and laboratory and manufactures.

Example of ADAS testing Vehicle



ADAS systems



unit	function
LIDAR	Detect distance and shape of surrounding obstacle
Camera	Detect and Recognize line and color of obstacle
Forward radar·77G	Detect Long distance a
Sideward radar 24G	Detect distance and shape of surrounding obstacle

	LIDAR	Front camera	Forward Radar	Sider Radar
A	yes	yes	yes	yes
B	no	yes	yes	yes
C	yes	yes	no	no

Example of Operating condition

	Driving scenario Nominal Cruising in straight road	Simulation for ADAS sensor
Vehicle speed	50km/h	50km/h on CDM
Heading vehicle	No or Yes (constant heading distance)	Absorbing material between Radiate antenna and radar for masking Software masking for antenna
Heading vehicle in next lane	Yes (constant heading distance) or No	Corner reflector for radar
Lane line	Straight parallel	Video screen or photo on camera Dummy video stream signal and/or Dummy 3D map matching
Surrounding obstacle	No obstacle or parallel driving vehicle	Masking by software or Scattering laser signal and/or Dummy 3D map matching

Primitive draft ADAS test guideline

・All types of sensors those related to driving control should be activated during test.

・Simple driving scenario such as a constant driving condition on straight road will be adequate to activate all control function and sensors on CDM and EMC chamber facilities.

・Some modification of control and diagnosis software and/or parameter will be need to activate the control function to avoid fail safe behavior.
Those modification shall be reported in test plan.

・Even if those modification applied, some failsafe function still might be activated and it might be difficult to continue to drive on the CDM.
In these cases some sensor output could be exchanged to dummy signal.
Some subsystem which could not activate in vehicle test and exchanged dummy data, should be tested separately as bench tests such as R10 ESA test annexes.

ISO TR of ADAS test guideline

- For ADAS vehicle immunity test , a standard guideline document will be need for all test laboratory and vehicle and part manufacture

- ADAS will be some variations of system configuration according to manufactures. Principle policy will be need and some examples will be helpful for test planning.

Conclusion and Proposal

- ISO TC22 SC32 WG2 EMC and GRE EMC T/F should contribute to TR ADAS test guide line which applicable to vehicle immunity test for ISO11451 and Annex.6 in R10.
- Establish the standard guide line for fair and stable vehicle type approval test in every testing authority and laboratory and manufactures.