



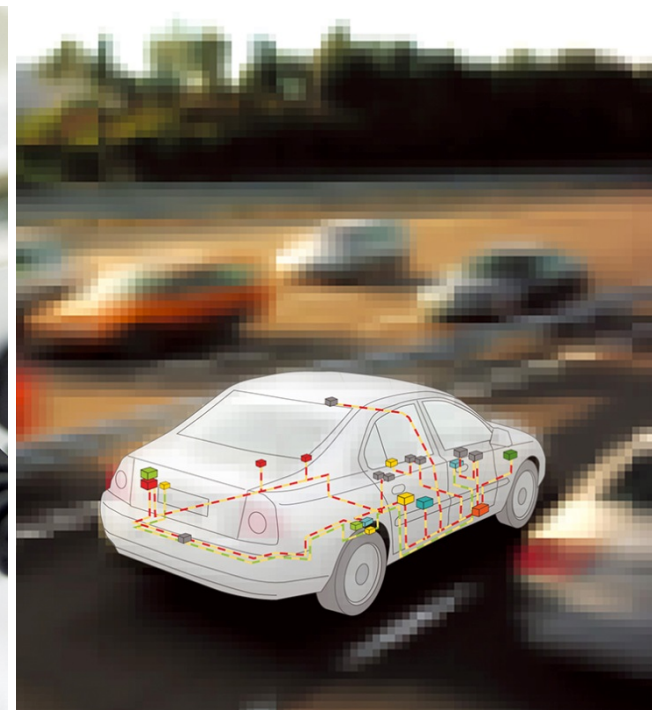
STANDARD NEWS

Krister Kilbrandt

05 Dec 2018

Research Institutes of Sweden

**SÄKERHET OCH TRANSPORT
ELEKTRONIK**



Agenda - IEEE-focus area EMC in vehicles – standard update

- Standards for Vehicles- update
- CISPR 12, 25 and 36
- ISO
- UN ECE R10.06 - >07
- Q+A



CISPR 12, 25 och 36 – The main standards regarding emission in vehicles – Worldwide !

Cispr 12 ed 7 – bakgrund – 30 – 1000 MHz – Protection of off-board receivers:

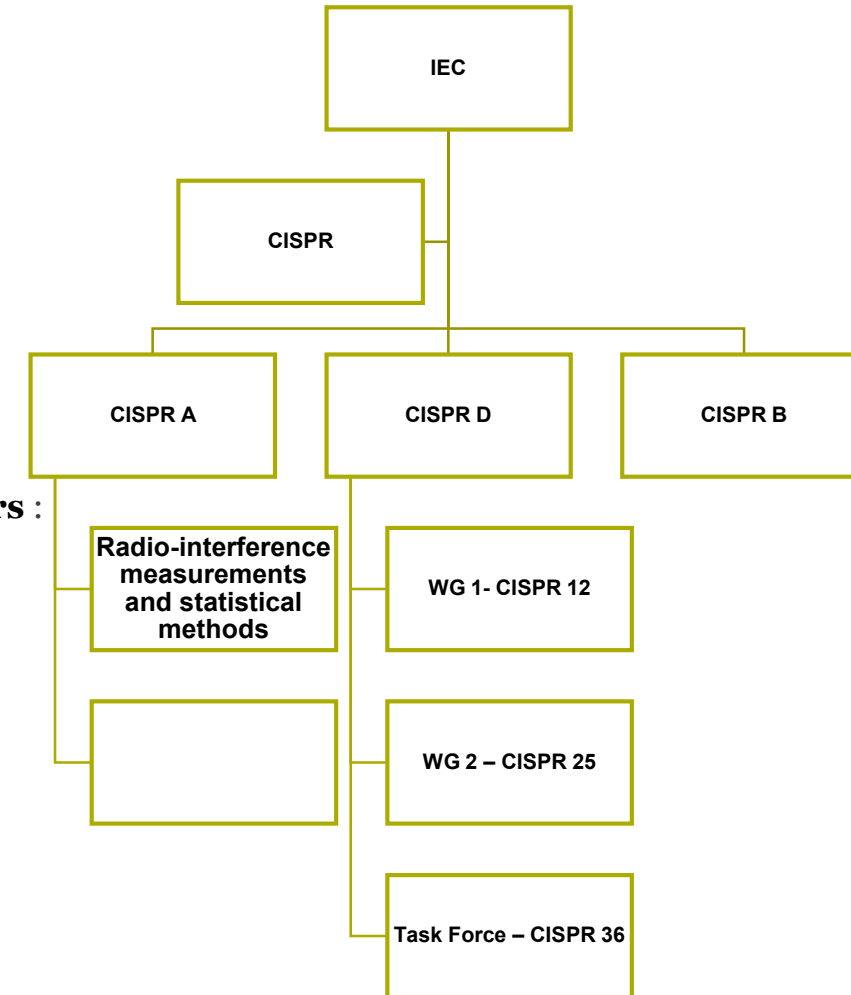
- Ed 6 – 2007 – amendment 2009
- Chair Mike Beetlestone former JLR – also Chair CISPR D

Cispr 25 ed 4 – 150 kHz – 5.925 Ghz- Protection of ON-board receivers

- Chair Craig Fanning – USA
- Ed 4 - 2016

Cispr 36 ed 1- Bakgrund – 150 kHz – 30 MHz – Protection of off-board receivers :

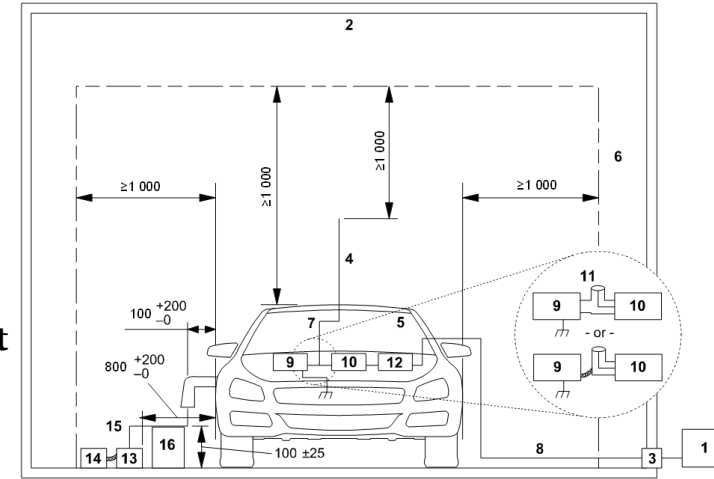
- Chair- Peniamin Mattosion Renault -> Ariel Lecca PSA
- China- GBT18387- US SAE J551-5- deal
- Not released yet !



CISPR 25 - update

Cispr 25 ed 4:2016 – 150 kHz – 5.925 Ghz- Protection of ON-board receivers

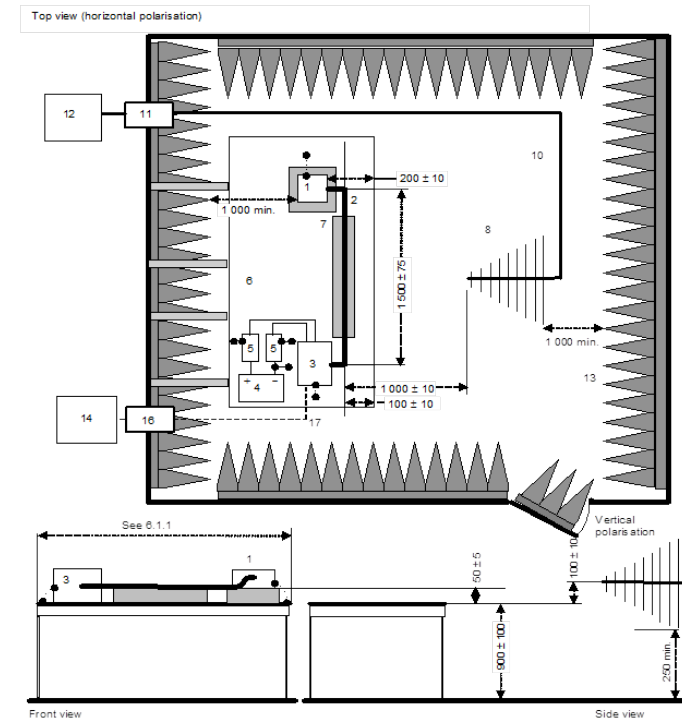
- **New amendment is under working process- FR-UK-SE – proposal-EMCCOM - input**
- New-services- New frequency bands – new limits – average detector
- Both for Vehicle and component measurements
- Target-date new amendment 2020



EXECUTIVE SUMMARY

We support the following proposals in CISPR/D/WG2 N296:

- Use of a measurement bandwidth of 1 MHz
- Use of average detector for the measurements
- Addition of frequency bands in CISPR 25 (4G, ITS, WiFi)



CISPR 12 o 36 – update after Busan meeting 2018-10

SEK responses- previously yes – turns into TWO NO votes from Sweden - SEK due to:

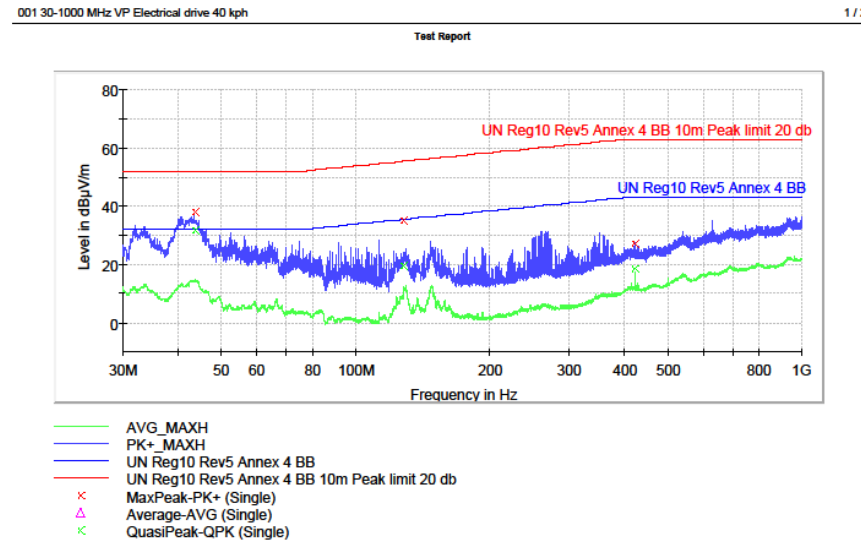
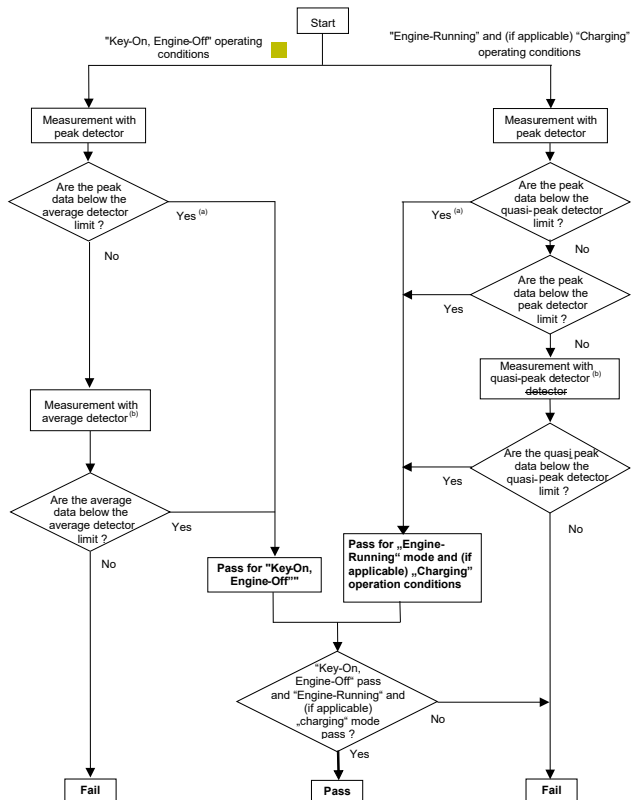
- Cispr 36: ed 1– SEK response - to relaxed limits and charging mode is missing
- Cispr 12: ed 7 – SEK response – to relaxed limits under charging and 20 dB relaxation

SE-CH-NO-DK-CA-AU-UK-xx- Negative votes – leads to Worldwide No - Leads – to responses are required from Sweden



CISPR 12

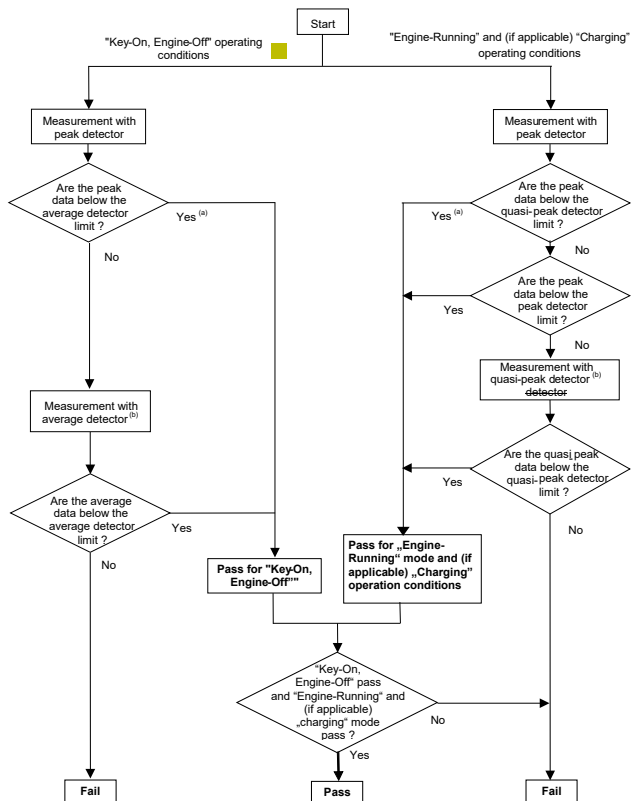
CISPR D- request Swedish input- limits and 20 dB issue- flow chart – charging limits



Awitar – pure electric drive measurement – Peak-QP-4-6 dB

CISPR 12 – Swedish – SEK- feedback so far / answer

CISPR D- request Swedish input- limits and 20 dB issue- flow chart – charging limits



CISPR 12 – the charging mode limits is of greatest concern – not acceptable with a medium compromise limit – go for two separate limits preferably- or handle the charging mode separately 20 Db – ISSUE- The data from RISE- 4-6 db diff between peak-qp for pure electric drive can be passed through the official way also- ok if we go for two different limits – one for ICE and one for EV.s/Hybrids- 4-6 dB diff for EV:s are also the same numbers as Germany states.

CISPR 36 – 3m limits – drive mode only e-vehicles

CISPR D- request for Swedish input- limits (and charging limits-mode is missing) – ETSI- Radio amateurs -20-30 dB

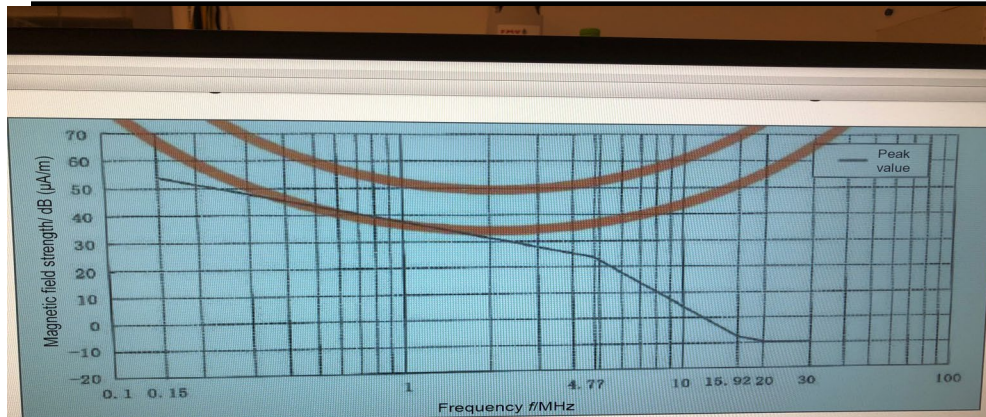
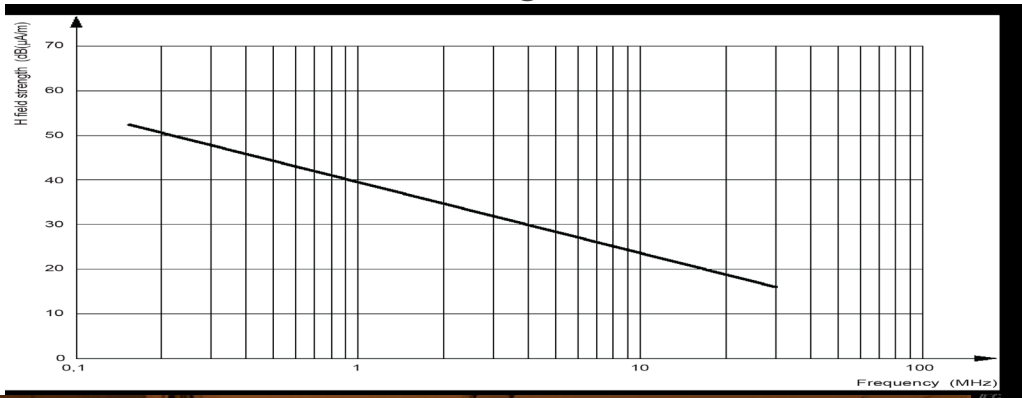


Figure 2 Emission limits of magnetic field strength

CISPR 36 Swedish – SEK feedback so far / answer

CISPR D- request Swedish input- limits and charging limits – ETSI- Radio amateurs -20-30 dB



CISPR 36 – SEK response - Absolutely way to high limits – ETSI and Radio communication- especially in the low freq range 1-4 MHz – 30-40 dB - etc – the input- here we are also missing the charging mode- and tough limits for that.

Two limits possible here also- for charging – similar to ETSI etc- for drive mode- relaxed- no limit suggestion yet.

CISPR 12- 36 Short Conclusion

- New lower limits for the upcoming CISPR 12 ed 7 – and CISPR 36 ed 1 – will eventually effect all vehicle manufacturers and the legal requirements - > with increased cost/focus for EMC !

ISO 11451-x, 11452-x news for Vehicles

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ISO news – feedback from Busan meeting

ISO news – feedback from Busan meeting

- ISO 11451- 4 BCI complete vehicles:
- ISO 11451-4- Japanerna vill uppdatera 1-4 ifrån komponentsidan – dvs att kunna köra hela frekvensområdet även med TWC – upp till 3 GHz – för att exempelvis kunna köra BCI enbart på extremt stora pantograf bussar i laddningsläge utomhus osv.
- Japanerna tar lead för uppdateringen.

ISO news – feedback from Busan meeting

- ISO 11451- 5 – New working proposal from DE- kommer att läggas fram under 2019
- Application of the reverberation chamber test methodology for full vehicle immunity testing.
- 36 months – working process – new IS target date under 2022.

ISO news – feedback from Busan meeting

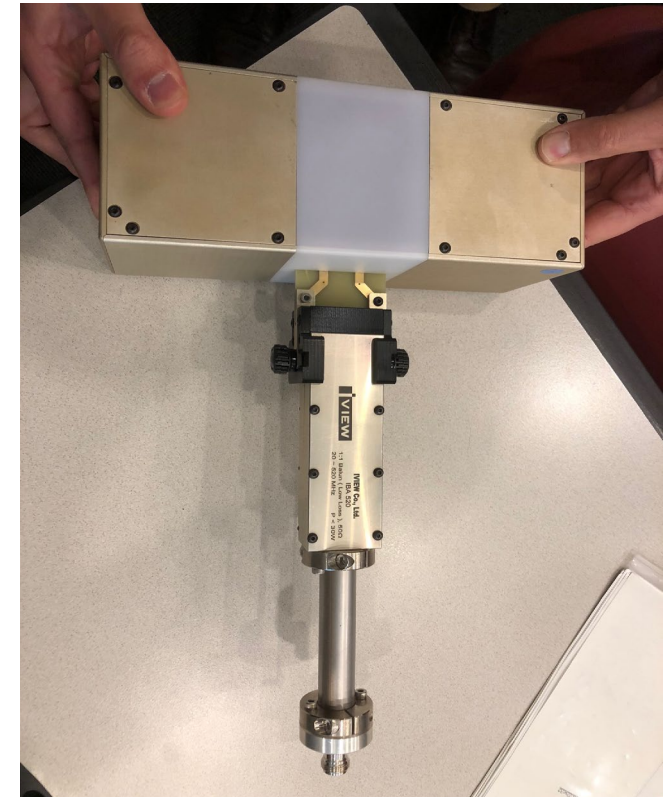
- ISO 11452- 2:
- Ny version på gång ut
- Uppdateringar med HV system på bänk osv.

ISO news – feedback from Busan meeting

- ISO 11452- 4 BCI ny version under arbete:
- ISO 11452-4- Synka Setupen angående DUT – inom CISPR 25 – ISO 11452-2 och ISO 11452-4 -default håll DUT isolated om inget annat specat i test specifikationen

ISO news – feedback from Busan meeting

- ISO 11452- 9 ny version under arbete:
- ISO 11452-9- -Ny uppdaterad version på g - Förslag ifrån US-KR-JP- Att börja använda AWG generator för att testa med bredbandigt brus för att efterlikna modern modulation ifrån mobiltelefoner - för att efterlikna moderna telemodulationer – OBS – NY Koreansk antenn ETS – LINDGREN – USA- I Europa – R&S – Folded dipole – 20 – 520 MHz – 30 Watt
- Nya versionen inkluderar HV kablage också
- Nytt annex F – som tillför AWG- OBS-alla labb måste investera i en hyfsad AWG- nytt för de flesta
- Nytt dokument kommer ut för omröstning i slutet av Februari
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ISO news – feedback from Busan meeting

- ISO 7637-2 – ny version under arbete: stor diskussion om nya pulser nedan
- US vs JP-CH- DE-SE-KR- -- GB- FR opartiska.
- ISO 7637-2
- Diskussioner om nya pulser in i 7637-2- ifrån USA – Pulse A1, A2, C – för besvärliga att kalibrera – Schweiz säger absolut nej – Schweiziska transientgeneratorföretag kan inte kalibrera reläklapper år 2018 - nej - Japanerna har ett ersättningsförslag med pulser med liknande karakteristik som dock går att kalibrera – benämnda alfa och Beta- skapas med transistor steg- generatorer byggda av Noiseken mfl.
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UN ECE R10.06

- R10.06 uppdateringarna- Emission- smalbandigt- kravkurvorna ändrades enligt CISPR 12 senaste- **nya förtydligande och tillagda immunitetskriterier osv- - Ny regulation som den träder i kraft ev 1 september 2019-**
- **DC current – charging mode - ok even if not 80%**
- OBS- Upphävanden av old reg 5 godkännanden – sätts inget end date för dom- dvs godkännanden – fortsätter att gälla- enligt önskemål ifrån OICA (fordonsföretagen)
- The changes/corrections of the informal document GRE.80-13 (OTS, failure criteria charging, ISO11452-2 figures for HV-ESA-tests) were accepted.
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UN ECE R10.07 – future work- ADAS-some input

- For ADAS vehicle immunity test , a standard guideline document will be needed 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
- ADAS immunity test guideline in ISO11451

UN ECE R10.07 – future work- ADAS-some input

	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 of antenna and/or Corner reflector for heading vehicle or software masking
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

UN ECE R10.07 – future work- ADAS-some input

- 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 fail-safe 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.



TACK!

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