

ACSF CAT C1

Sensor performance requirements and testing

Facts:

- The technology to promptly detect that the specified range of a single (e.g. radar) sensor can be met is not available
- Motorbikes have an extreme variation in the reflection behavior of a radar beam

Proposal:

- Test the sensor range at Type Approval under „good“ conditions (no ageing- and environmental impact)
- Release the CAT C1 system only if the system has positively tested the sensor range at ignition/system on

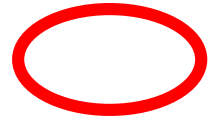
Sensor range

Discussion in Amsterdam (proposal for L3 test vehicles)

Value (best) incl simple bumper		70 m
-10% for test		63 m
ageing	3dB (acc. Developm. 4,5 dB)	
Environment	4dB (acc. Developm. 5 dB)	
Bumper	- dB	
Sum	7dB	-34%
Not concluded!		41,58 m

Sensor range

Proposal: System activation



Basis: 41m

Assumption: Difference in detection range

Value (best) incl. simple bumper 70 m
-10% for test 63 m

ageing 3dB (acc. Developm. 4,5 dB)

Environment 4dB (acc. Developm. 5 dB)

Sensor range for system „release“:

Sum 41m + 7dB = 48m -34%

C1-system can be activated if an object (e.g. M1 vehicle) is detected in a sensor range of > 48m

41,58 m



Sensor range

Proposal: Type Approval

Basis: 63m, but for M1 vehicles!

Assumption: Difference in detection range L3 vs. M1 is 15%
Value (best) incl. simple bumper 70 m
-10% for test 63 m

ageing 3dB (acc. Developm. 4,5 dB)

Environment 4dB (acc. Developm. 5 dB)

Calculated Sensor range for L3 vehicle:

Bumper -0,5 dB

Sum 63m - 15% = 54m -34%

C1-system can be approved, if an object (e.g. M1 vehicle) is detected in a sensor range of > 63m
41,58 m

Conclusion:

Due to big differences in the radar reflection of motorbikes, industry proposes:

- To approve the C1 system if, at the time of Type Approval, an object (e.g. M1 vehicle) is detected in a distance $> 63\text{m}$
- To release the system function of C1, once per ignition cycle, if an object (e.g. M1 vehicle) is detected in a distance $> 48\text{m}$