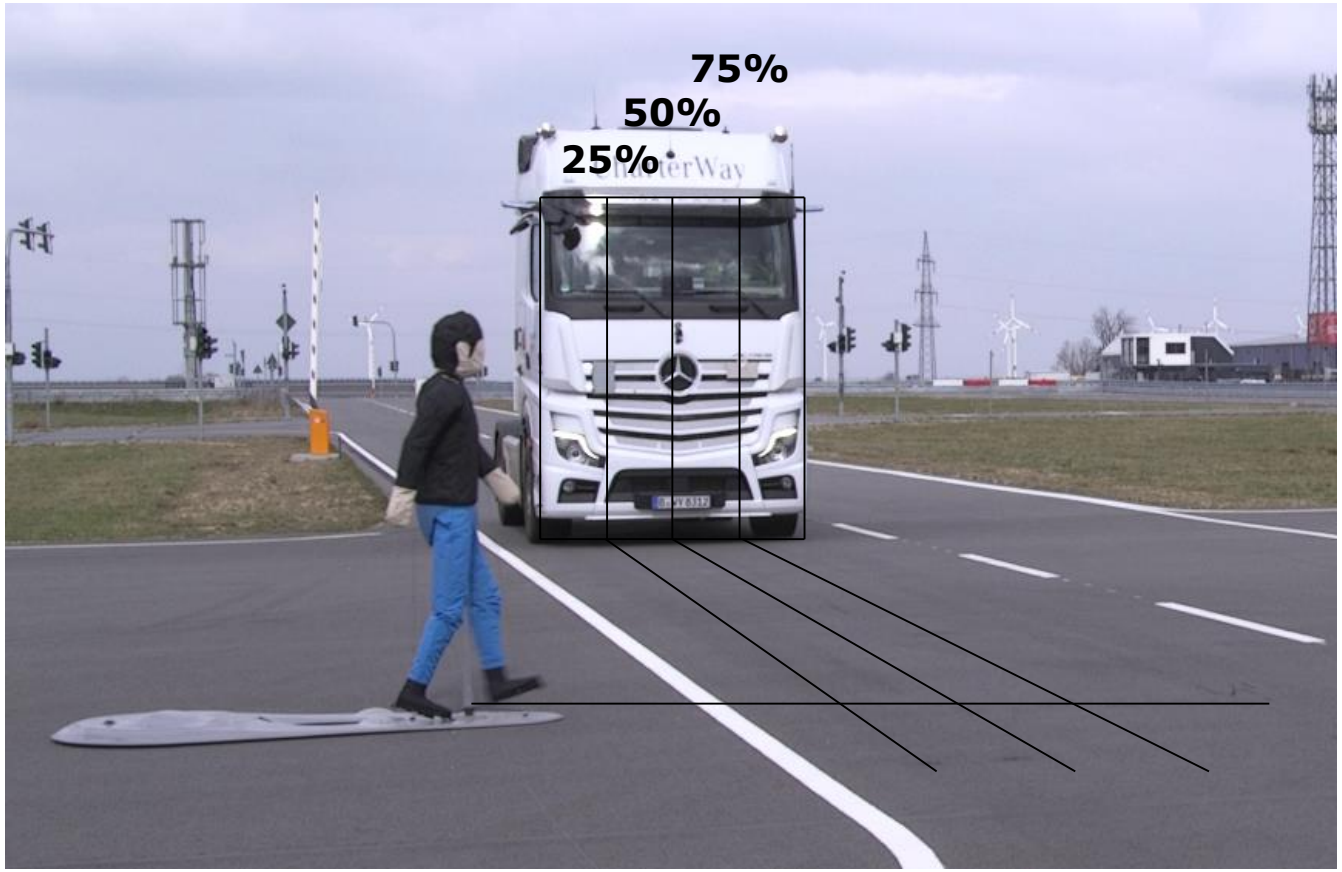
BASt Tests:
AEB VRU for HDV

Test Results of a Series Production Vehicle

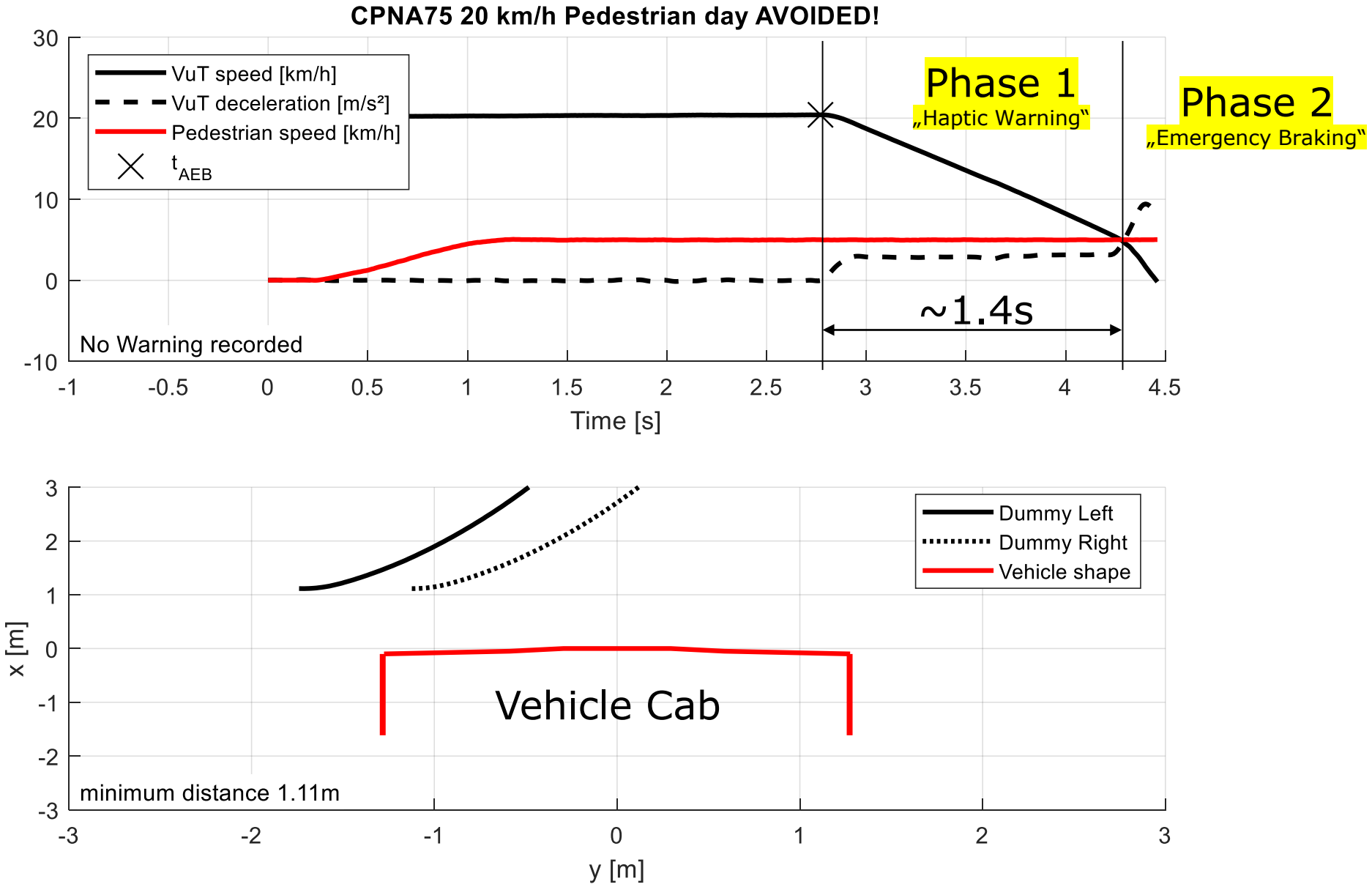
Basics – Cross Traffic AEB

- Tests are carried out with different <u>impact positions</u>
- Impact position is controlled by the timing the dummy starts
- The lower the number:
  - the later the dummy starts,
  - the less time the dummy travels in front of the vehicle,
  - **the more demanding is the situation.**




CPNA75, 20 km/h

Test Data


CPNA75 20 km/h Pedestrian day AVOIDED!
VuT speed [km/h]
VuT deceleration [m/s²]
Pedestrian speed [km/h]
t AEB
Phase 1
„Haptic Warning“
Phase 2
„Emergency Braking“
~1.4s
No Warning recorded
Time [s]
Dummy Left
Dummy Right
Vehicle shape
Vehicle Cab
minimum distance 1.11m
x [m]
y [m]

Overview of Scenarios - Crossing

CPNC: Hidden Child (5 km/h)

CPFA50: Running (8 km/h)

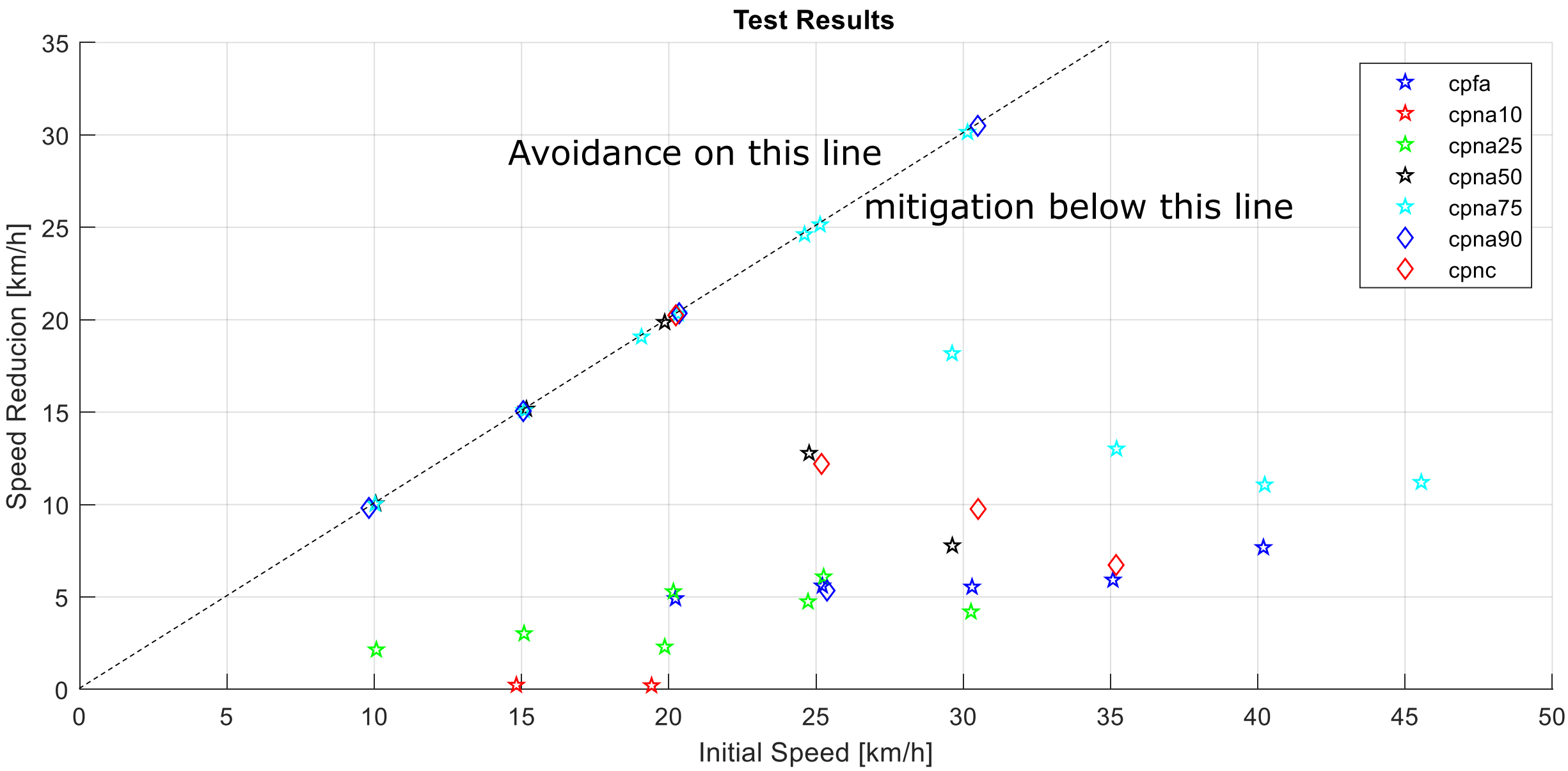
CPNA25 Walking (5 km/h)

CPNA75 Walking (5 km/h)

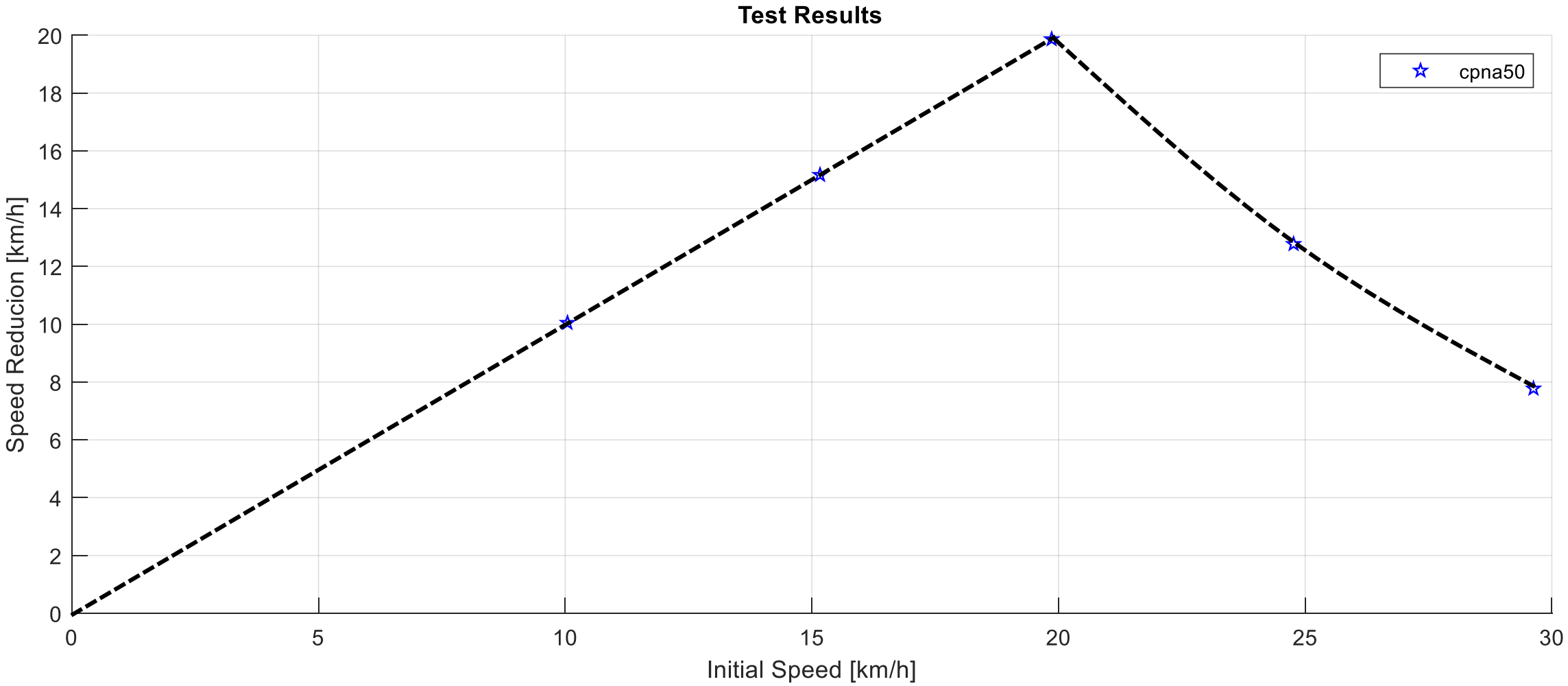
Expected Performance

- VRU in cross traffic become critical very late before the impact
- Good strategy: brake as hard as fast as possible
- Current R131 prevents AEBS from braking hard and late by mandating a warning phase of 1.4 seconds

- Impact Position has a tremendous influence on performance:
  - „The more to the left* the pedestrian impacts, the more time the pedestrian travels as a relevant target in the vehicle path“.


Test Results
Avoidance on this line
mitigation below this line
cpfa
cpna10
cpna25
cpna50
cpna75
cpna90
cpnc
Speed Reducion [km/h]
Initial Speed [km/h]
0
5
10
15
20
25
30
35
40
45
50

Results when tested according to R152



Conclusion

- There is only one vehicle on the market with AEB Pedestrian
- The vehicle avoids up to approximately 20 km/h when testing according to R152

- **We should be very careful with setting performance targets, even for the future, unless vehicles on the market show that they are achievable.**