

Submitted by the experts from
ATP and Idiada



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IDIADA

Informal document GRRF-75-42
(75th GRRF, 17-19 February 2013,
agenda item 13(d))



Economic and Social Council

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**Proposal to Modify Homologation
Brake Test Procedure to Improve
Safety on Proving Ground**

18/09/2013

ATP Automotive Testing Papenburg



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European Proving Grounds Safety Association

➤ EPGSA (www.EPGSA.eu)

- The European Proving Ground Safety Association EPGSA is a forum for the discussion of safety related items regarding vehicle testing.
- EPGSA was founded in 2002.
- **It is not the intention of the organization to develop standards, but to collectively share possible solutions to safety related issues.**
- It is a non-profit organization.
- The membership is limited to vehicle testing organizations with proving grounds.

➤ Members:

- Arctic Falls (Sweden), ATP (Germany), Bosch (Germany), Bridgestone (Italy), Bruntingthorpe (UK), UTAC -CERAM (France), Continental (Germany), DEKRA (Germany), Ford (Belgium), GoodyearDunlop (France), Icemakers (Sweden), IDIADA (Spain), Jaguar/Land Rover (UK), Opel (Germany), Millbrook (UK), MIRA (UK), Nardo (Italy), Renault (France), Volvo (Sweden),



Economic and Social Council

- **ECE R13 (Heavy Vehicles)**
- **ECE R13H (Passenger cars)**
- **ECE R90 (Replacement brake linings)**

Straight Line Braking Surfaces











High Speed Circuit (HSC):

- Test usually performed on track
 - Braking Test
 - Engine Performance Test
 - Coast Down
 - Dynamic Test
 - Durability Test
 - ...









Standard Safety Regulations on High Speed Circuit

Preventive Measures:





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	Slow lanes		Fast lanes	
	Lane 1	Lane 2	Lane 3	Lane 4
Maximum speed				
Minimum speed				

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	Schnelle Bahnen		Langsame Bahnen		Sicherheitsstreifen
Bahn	1	2	3	4	5
Max Speed					
Min Speed					

Preventive Measures:

- Identify the test vehicle with the appropriate **identifying plate**,  for high speed braking and  for changing lanes, on the rear side of your vehicle.
- Identify the test vehicle with a **flashing light** placed on the roof, permanently switched on when performing Braking Test  or Lane Changes 
- Switch on the hazard (emergency) lights in the moment you are performing the braking manoeuvre and switch off when you finish.
- Keep a **safety distance** between vehicles when performing special tests:
 - **10 seconds** between vehicles in ATP
 - **500 meters** between vehicles in IDIADA
- Only in ATP, no stopping for more than **30 seconds**

Date: April 2006

Vehicle 1:

- Type of test: **Brake Test**
- Test Speed: from **120km/h to 0km/h**

Vehicle 2:

- Type of test: **Durability**
- Test Speed: **Acceleration Test**

Causes of the accident:

- **The driver of the first car stopped at the second lane**
- The driver of the second car was distracted.

Consequences of the accident:

- Hard crash between both cars.
- Fatal injuries.

Date: July 2012

Vehicle 1:

- Type of test: **Durability Test**
- Test Speed: **various**
- **170 km/h** at the moment of the accident

Vehicle 2:

- Type of test: **Durability Test**
- Test Speed: **various**
- **0 km/h** at the moment of the accident

Causes of the accident:

- **The driver of the first car was probably distracted.**
- The driver of the second car was stopping without permission

Consequences of the accident:

- Hard crash between both cars
- Fatal injuries

Date: February 2013

Vehicle 1:

- Type of test: **Brake Test**
- Test Speed: from **100km/h** to **0km/h**

Vehicle 2:

- Type of test: **Confidential**
- Test Speed: **constant speed 90km/h**

Causes of the accident:

- **The driver of the first car probably don't respect safety distance.**
- The driver of the second car was distracted.

Consequences of the accident:

- Hard crash between both cars.
- Slight human injuries.

Date: July 2013

Vehicle 1:

- Type of test: **Brake Test**
- Test Speed: from **100km/h to 0km/h**

Vehicle 2:

- Type of test: **Confidential**
- Test Speed: **constant speed 90km/h**

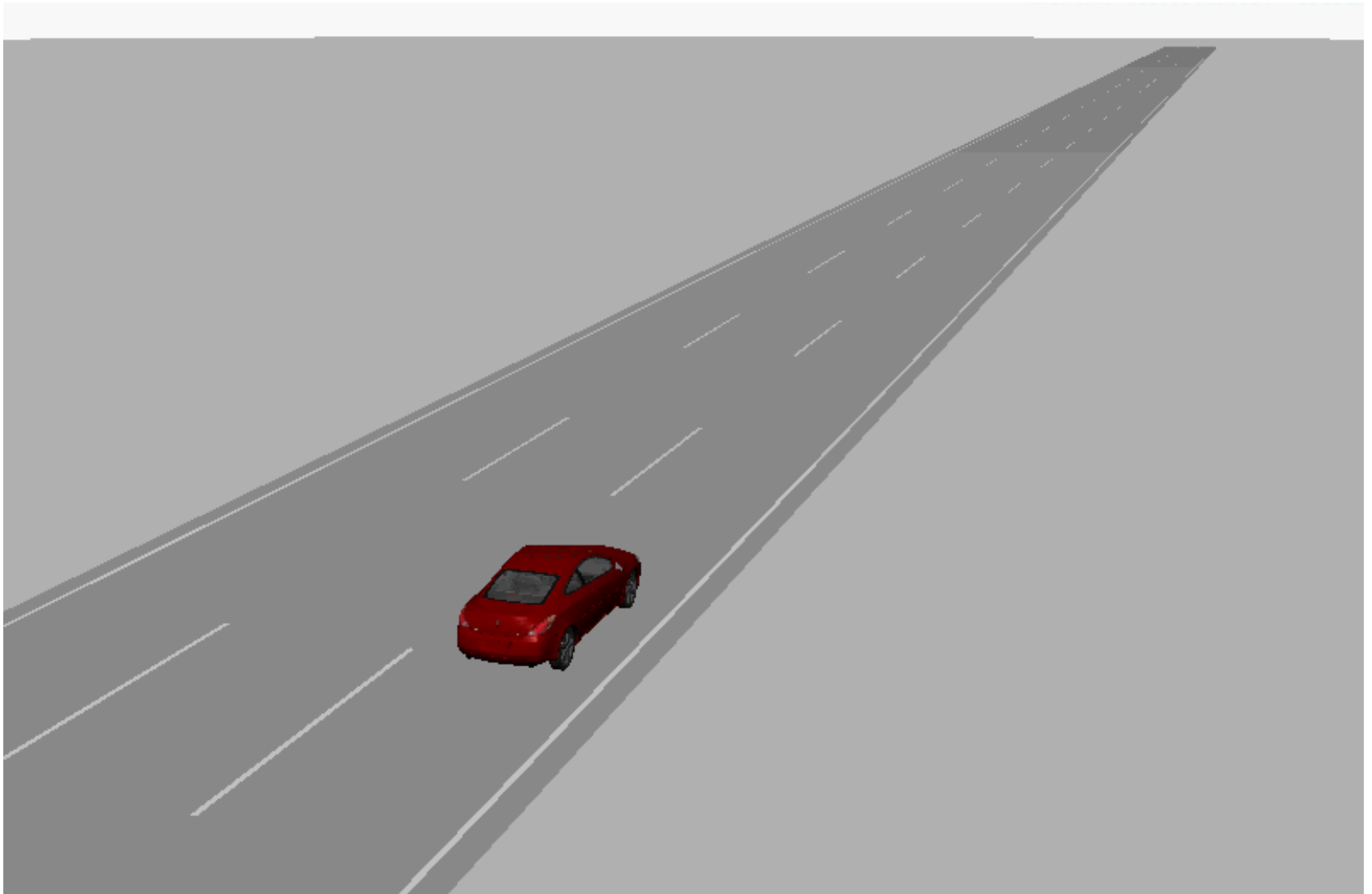
Causes of the accident:

- **The driver of the first car probably don't respect safety distance.**
- The driver of the second car was distracted.

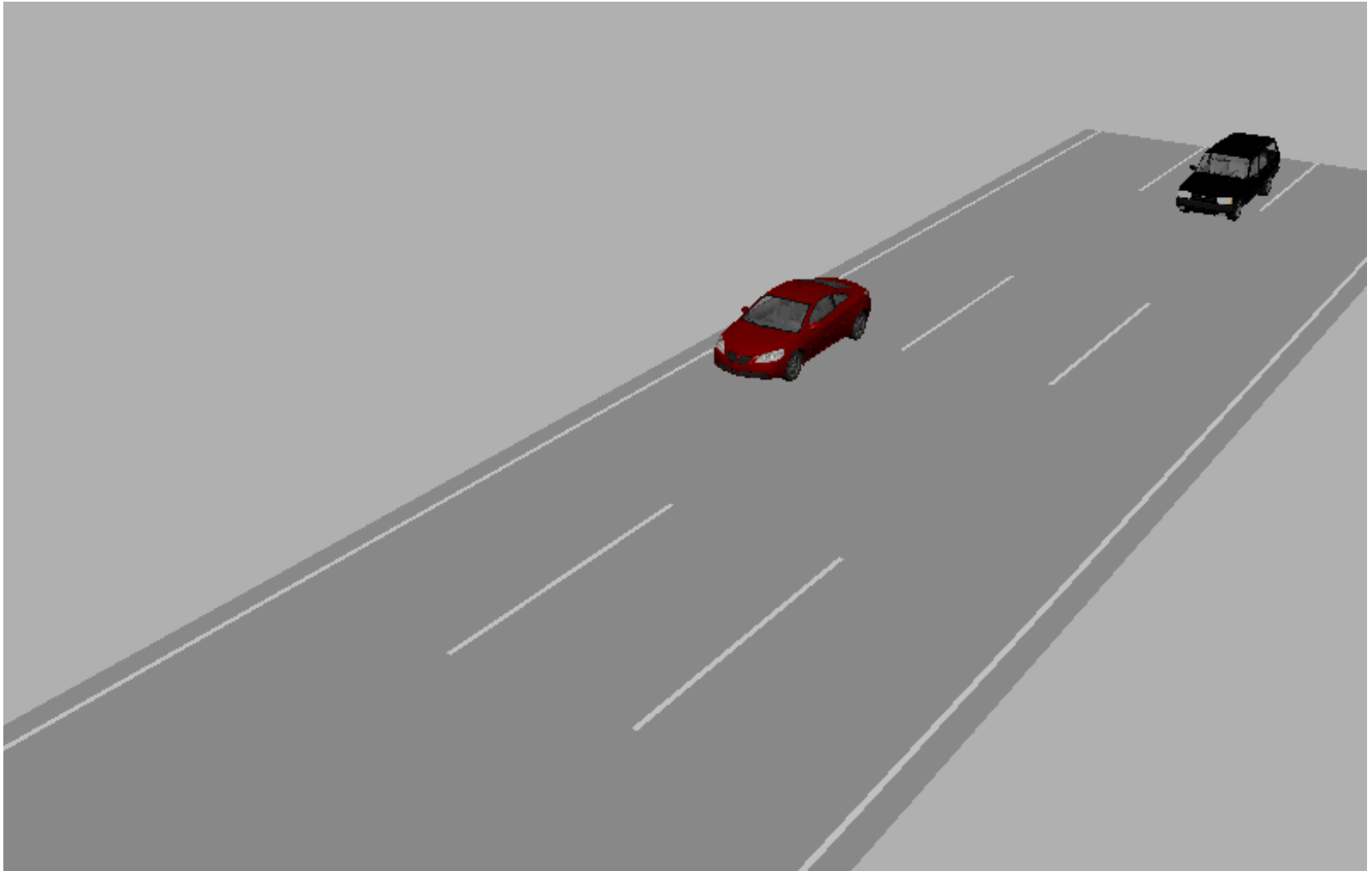
Consequences of the accident:

- Hard crash between both cars.
- Serious human injuries (3 People involved)

Accident Reconstruction



Accident Reconstruction



Accident Reconstruction



Description of the problem

1. Performance tests at high decelerations (eg 1g) from high speeds to ZERO
 - Stopped vehicles at the High Speed Track with vehicles driving at high speed.

2. Fade tests that have to be performed at rigid periods of time (eg every 45 seconds), and if one stop fails or is aborted, the whole test including all the preparation and bedding of the samples is not valid and need to be repeated.
 - It makes the driver do not fulfil the safety regulations mainly the safety distance.

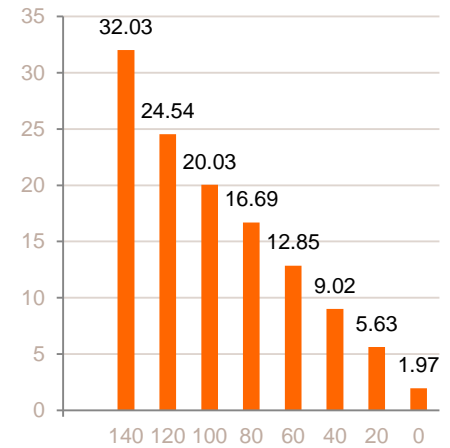
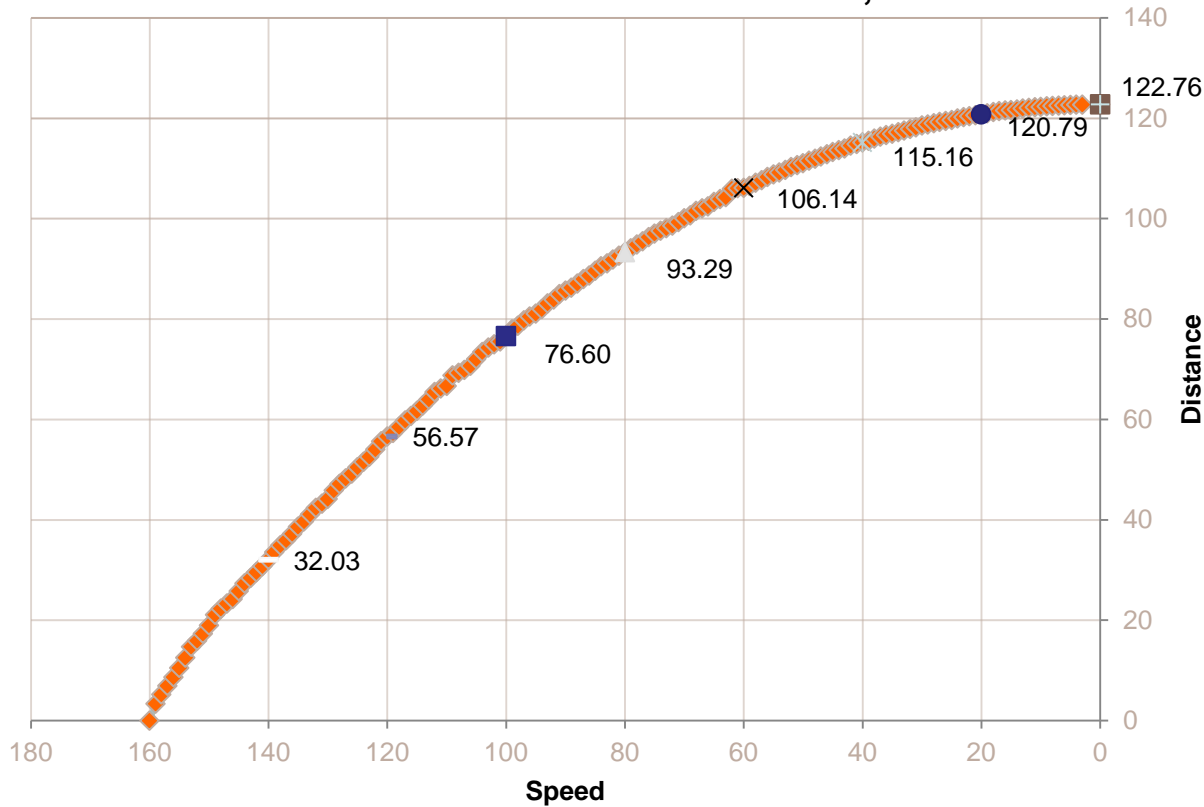
Proposal for slight modifications on Brake Test Procedures on High Speed Track:

- Final test Speed ≥ 20 Km/h.
- More flexibility on Fading Tests

Proposed modifications on Test Procedures

Final test Speed ≥ 20 Km/h as for ECE R117 :

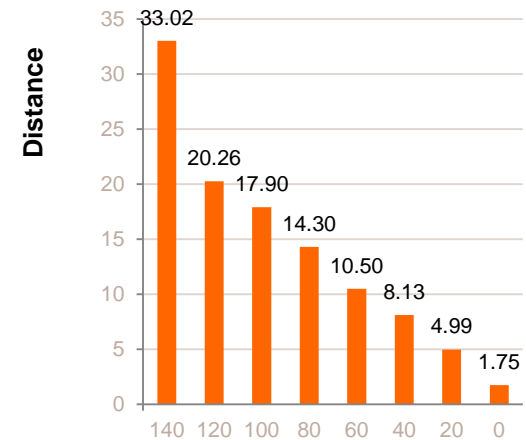
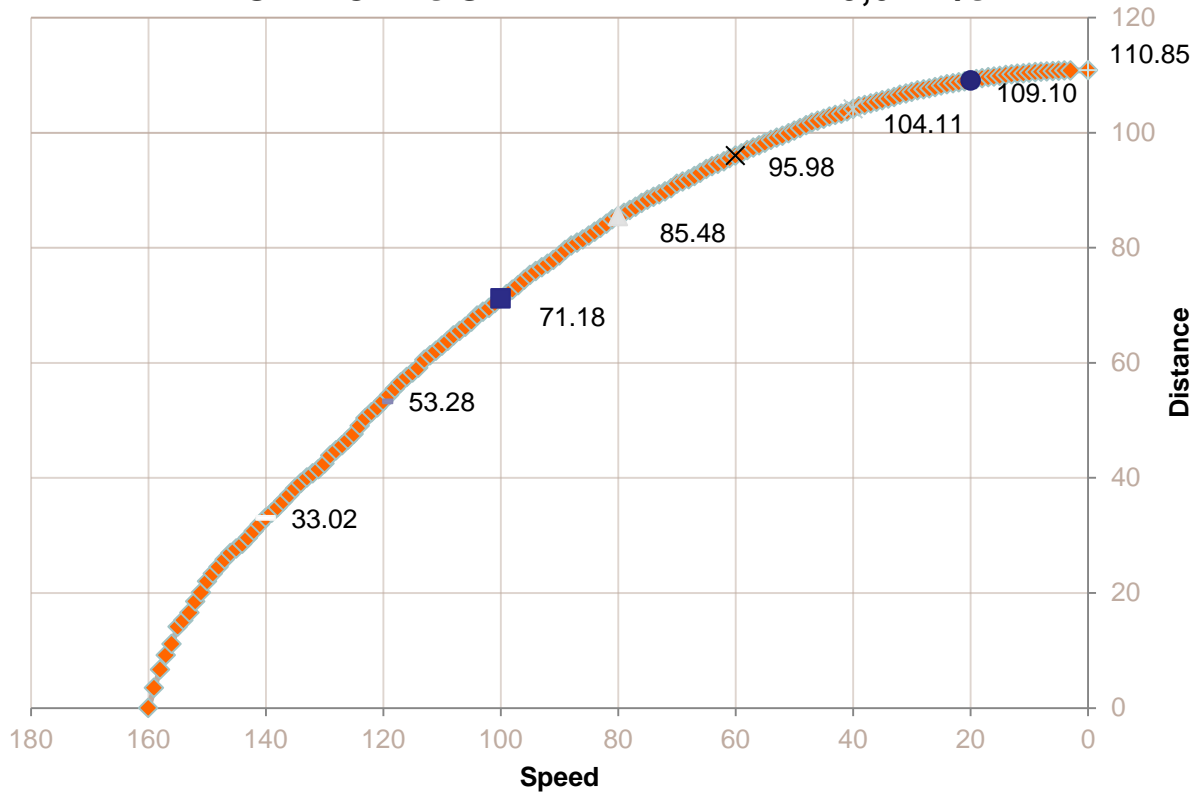
DISTANCE vs SPEED. M1 - MFDD = 8,71 m/s²



Proposed modifications on Test Procedures

Final test Speed ≥ 20 Km/h as for ECE R117 :

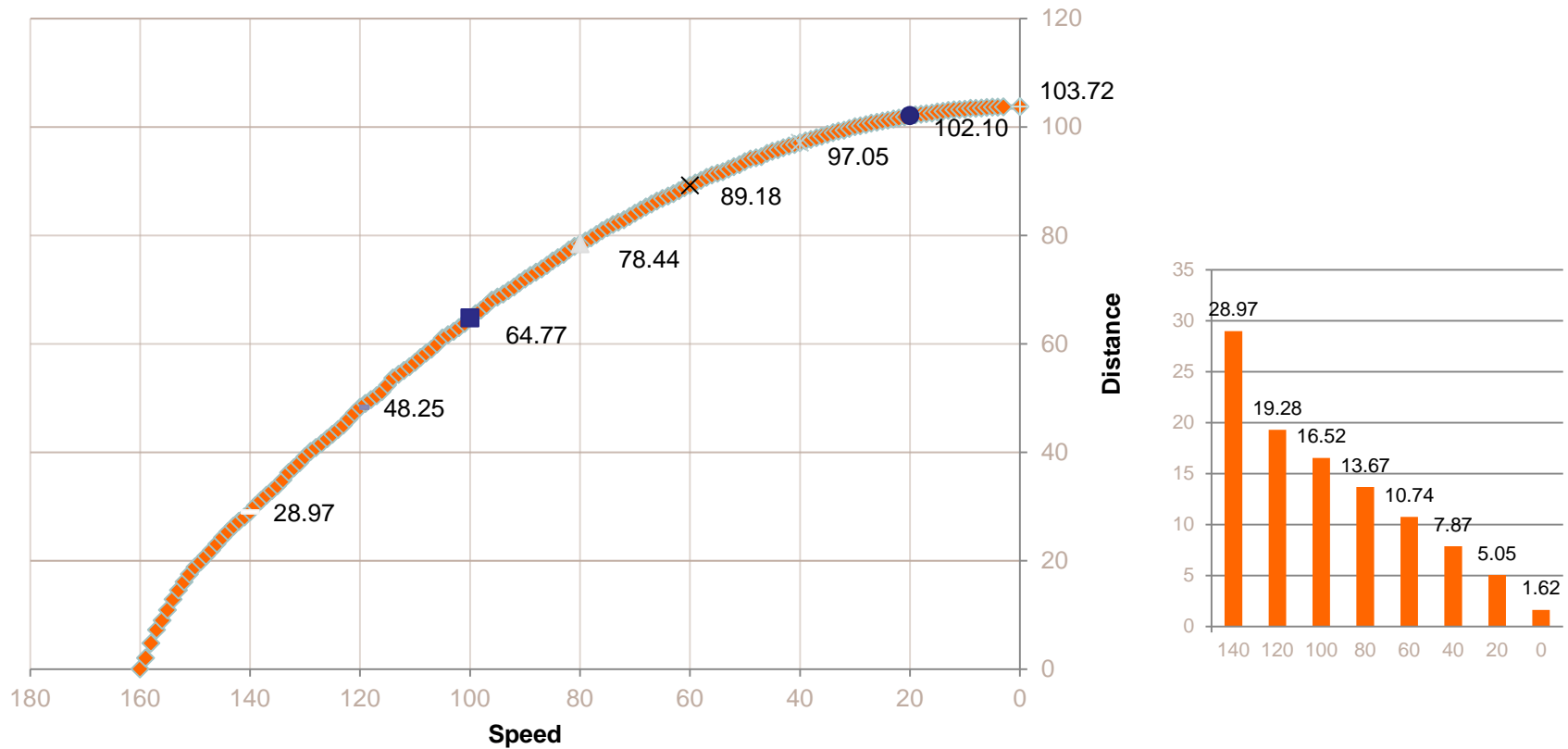
DISTANCE vs SPEED. M1 - MFDD = 9,01 m/s²



Proposed modifications on Test Procedures

Final test Speed ≥ 20 Km/h as for ECE R117 :

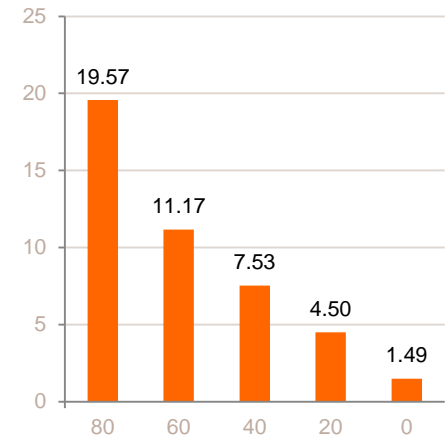
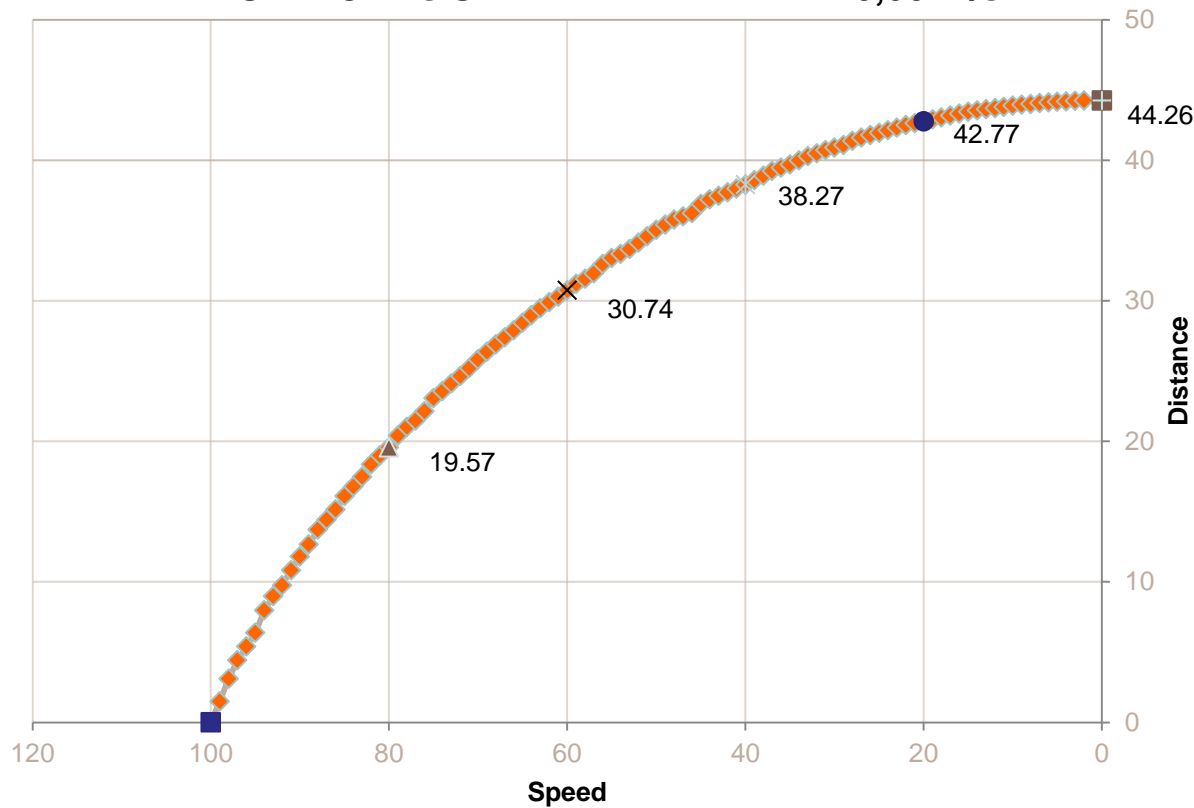
DISTANCE vs SPEED. M1 - MFDD = 10,15 m/s²



Proposed modifications on Test Procedures

Final test Speed ≥ 20 Km/h as for ECE R117 :

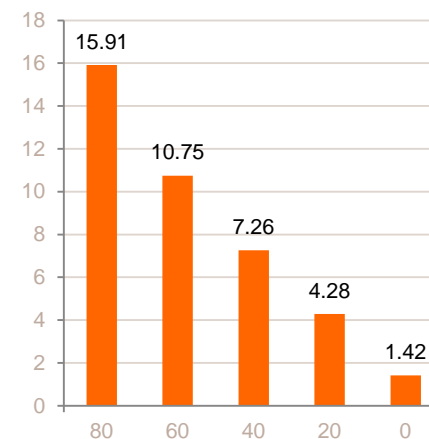
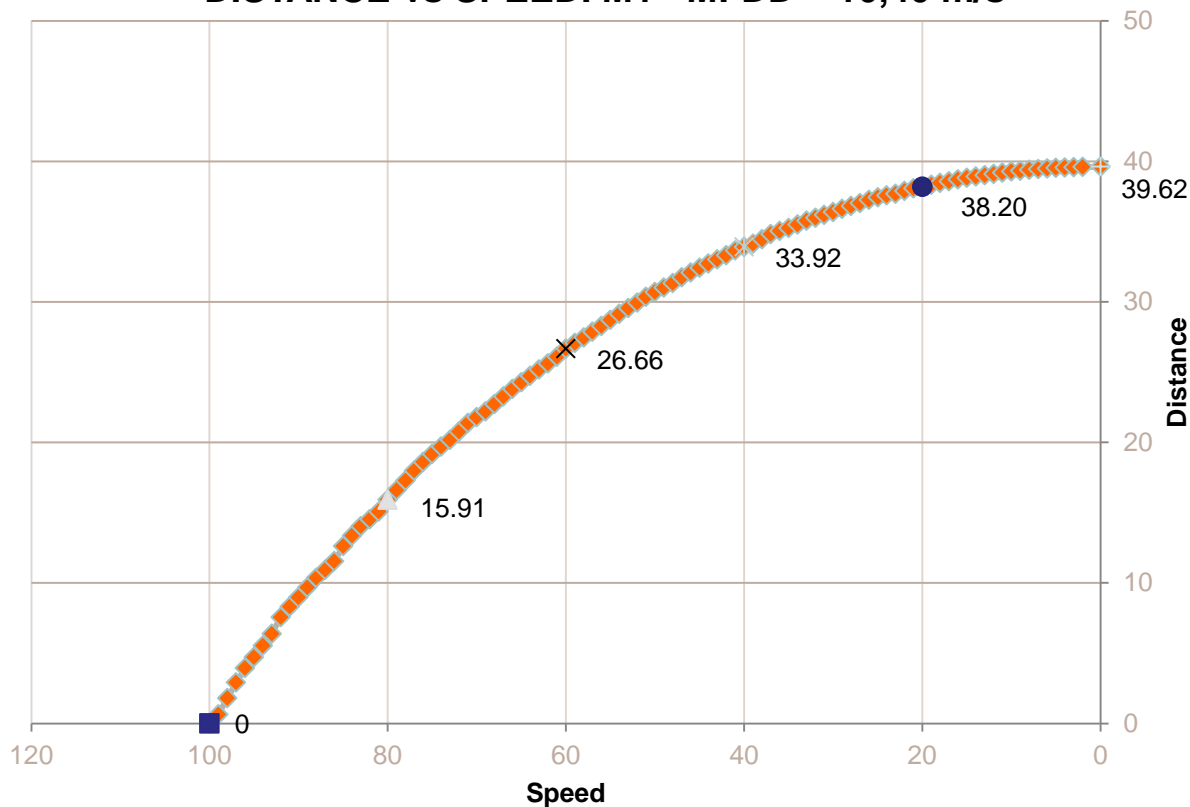
DISTANCE vs SPEED. M1 - MFDD = 10,00 m/s²



Proposed modifications on Test Procedures

Final test Speed ≥ 20 Km/h as for ECE R117 :

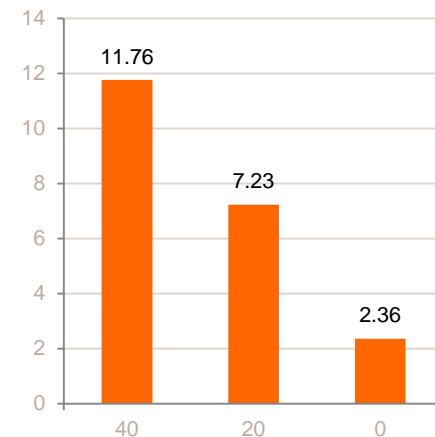
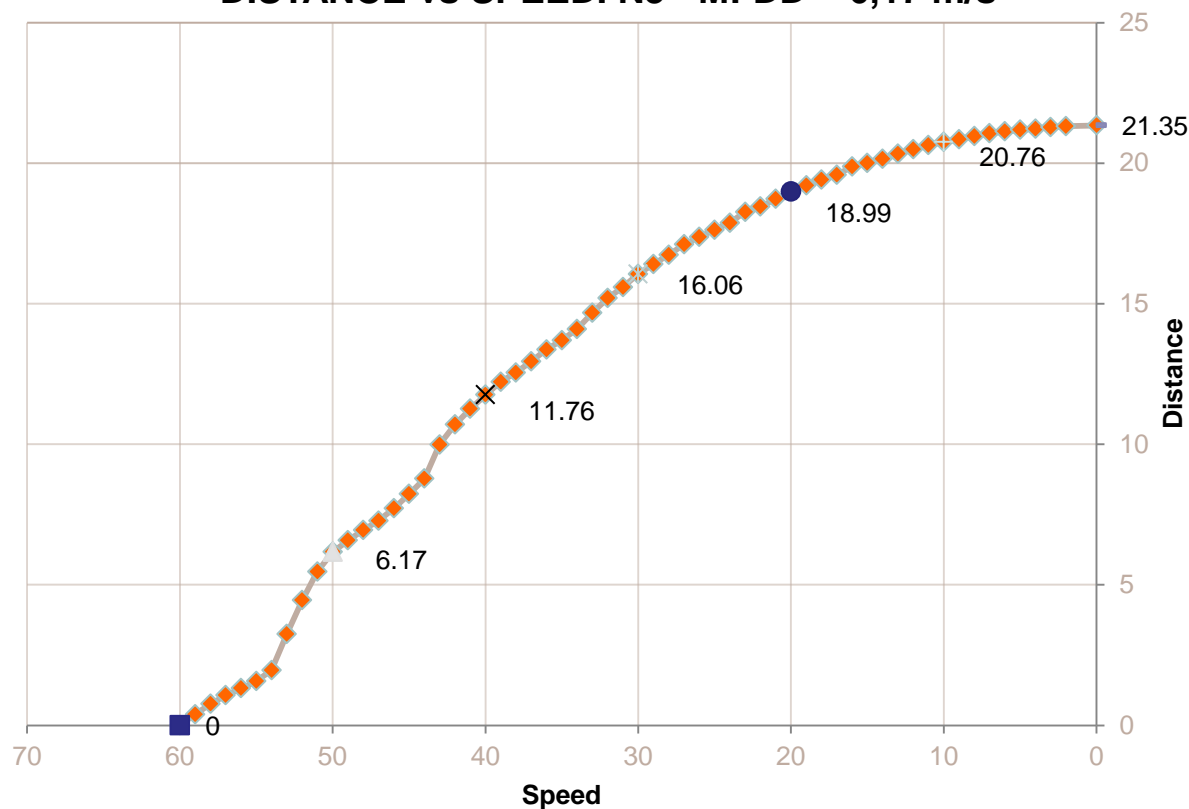
DISTANCE vs SPEED. M1 - MFDD = 10,40 m/s²



Proposed modifications on Test Procedures

Final test Speed ≥ 20 Km/h as for ECE R117 :

DISTANCE vs SPEED. N3 - MFDD = 6,17 m/s²



More flexibility on Fading Tests :

- We would like to propose a certain tolerance in the frequency and even more, a scape possibility, if during the 15 snubs, there is a need of extend some of the periods due to safety aspects, at discretion of the technical service, this might be compensated by one additional snub to ensure that the brakes have been sufficiently heated.

Thank you very much for your kind attention



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