

# The Implement of ECE R51 03series in China



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# General situation

- **Test efficiency**

- One hour to three hours.

- (Depends on test equipments, test track conditions and experience of engineers)

- **Test tracks**

- More than ten new ISO tracks were paved in the past three years.

- (Four test tracks in West China and more than six in the East, site to site difference 0.1-1.8dB(A))

- **Test equipments**

- Test systems and sound meters are all used.

- (Equipment to equipment difference 0.1-0.6dB(A) )

Conclusion:

China will keep research the test track differences and changes of test tracks.

# Passenger car test

- Acceleration tolerance

Run	Gear 3		Gear 3			$a_{wot\ test}$	Tolerance (%)
	左	右	AA'	PP'	BB'		
1	70	71	47.66	50.17	55.5	1.27	-1.2
2	69.9	69.9	47.55	49.93	55.37	1.26	-2.0
3	70.8	70.3	47.54	50.79	56.6	1.48	15.1
4	70.6	70.3	47.87	49.58	54.22	1.02	-20.8
5	70.9	70.9	47.84	50.99	56.4	1.40	8.9
Ave.	70.4	70.5	47.69	50.29	55.62	1.29	----

Noise nearly the same between different runs with quite different accelerations.

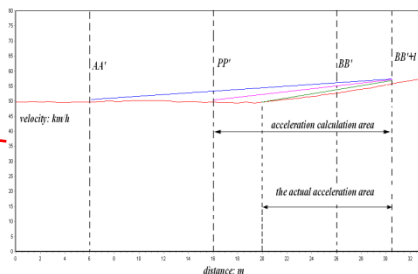
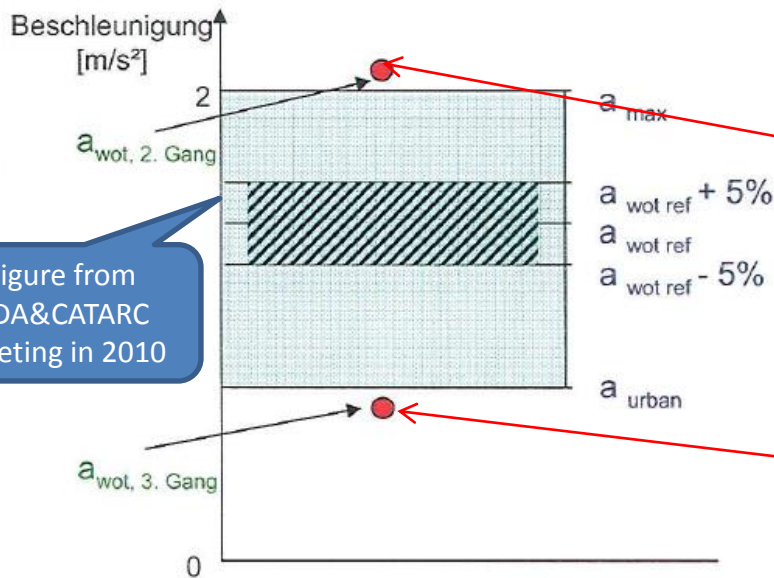
Turbo charger and pre-acceleration distance variation will lead to a different acceleration.

## Conclusion:

1. CVT and Turbo charger are popular in China which influence the accelerating process.
2. Pre-acceleration distance should be fixed between different runs.
3. A acceleration tolerance is still suggested for a stable result between different runs.

# Passenger car test

## -Special condition for gear selection



### Annex 3

3.1.2.1.4.2.

.....

If possible, the manufacturer shall take measures to avoid an acceleration value  $a_{wot\ test}$  greater than  $2.0\ m/s^2$ .

3.1.2.1.4.2.

.....

The achieved acceleration  $a_{wot\ test}$  shall be greater or equal to  $a_{urban}$ .

3.1.2.1.2.2.

.....

Pre-acceleration shall not be used.

### Conclusion:

1.  $a_{wot\ test}$  higher than  $2\ m/s^2$  should be agreed as a special condition, if the manufacturers insist.
2. Pre-acceleration can be used for AT with unlocked gears if the manufacturers agree.

# Commercial vehicle test






## -Test mass and target condition

### 2.2. Vehicle

#### 2.2.1.

.....

The test mass for vehicles with more than two axles shall be the same as for a two-axle vehicle.

Vehicle speed (km/h)	<25	25-30	30-35	35	35-40	40-45	>45
Engine speed r/min	85-89% (70-74%)						
Test gear	×						×

### Conclusion:

1. The test mass definition has simplified the vehicle type caused by axle numbers, and is highly welcome by manufacturers and technical services.
2. The test target conditions has simplified the vehicle type caused by gear ratio changes, and is highly welcome by manufacturers and technical services, but how to choose **the worse case**?

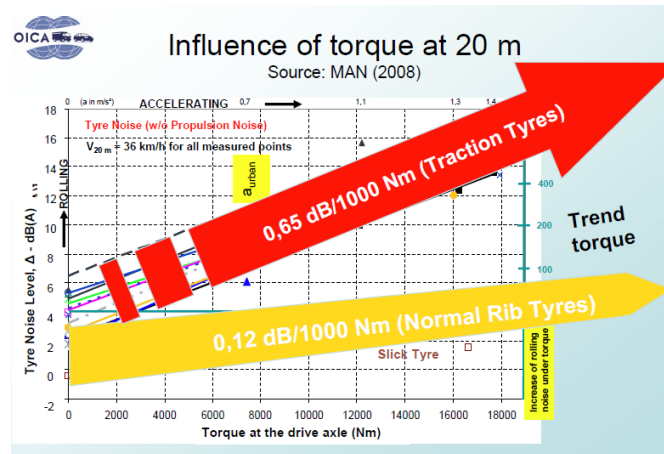
# Commercial vehicle test

## - Rolling tyre & traction tyre

Category	Subcategory		Equivalent limit values in dB(A)	
			On Road	Off Road <sup>1)</sup>
M1	M1-1	pmr < 125 kW/t	72	74
	M1-2	125 kW/t < pmr <= 150 kW/t	73	74
	M1-3	pmr > 150 kW/t	75	75
N1/M2-A	N1/M2-A1	GVM <= 2500 kg	72	74
	N1/M2-A2	GVM > 2500 kg	74	75
N2/M2-B	N2/M2-B1	rated speed > 3000 min <sup>-1</sup>	76	77
	N2/M2-B2	rated speed <= 3000 min <sup>-1</sup>	78	79
	N3-1	2 axles, Pn <= 180 kW	79	80
	N3-2	2 axles, 180 kW < Pn <= 250 kW	81	82
N3	N3-3	2 axles, Pn > 250 kW	82	83
	N3-4	> 2 axles	84	85
M3	M3-1	Pn <= 180 kW	76	77
	M3-2	180 kW < Pn <= 250 kW	78	79
	M3-3	Pn > 250 kW	80	81

<sup>1)</sup> off road as defined in R.E.3 and in addition have a wading depth exceeding 500 mm and a hill climbing ability exceeding 35°

Table 5-2: Proposal for new subcategories and equivalent limit values for method B



### Conclusion:

1. The vehicle type and limit value system are all built up on the rolling tyre used.
2. There is no tyre mark in China to say it is a rolling tyre or a traction tyre, and only a GB/T 6326 standard in China describes the tyre pattern.
3. Both auto manufacturers and technical services in China do not know what is rolling or traction tyre, and the tyre industry must engage into the harmonization between GB and UNECE systems.

# Commercial vehicle test

## - Difficulties of buses and coaches

Vehicle category	Vehicles used for the carriage of passengers	Limit Values (dB(A))		
		Phase 1	Phase 2	Phase 3
M <sub>1</sub>	PMR ≤ 120	72	70	68
	120 < PMR ≤ 160	73	71	69
	PMR > 160	75	73	71
	PMR > 200, no. of seats ≤ 4, R-point height < 450mm from the ground	75	74	72
M <sub>2</sub>	M ≤ 2.5 t	72	70	69
	2.5 t < M ≤ 3.5 t	74	72	71
	M > 3.5 t; P <sub>n</sub> ≤ 135 kW	75	73	72
	M > 3.5 t; P <sub>n</sub> > 135 kW	75	74	72
M <sub>3</sub>	P <sub>n</sub> ≤ 150 kW	76	74	73
	150 kW < P <sub>n</sub> ≤ 250 kW	78	77	76
	P <sub>n</sub> > 250 kW	80	78	77

Length	P <sub>n</sub>	GVM
6-7m	85-105kW	5200-7800kg
7-8m	88-147kW	5500-11500kg
8-9m	118-191kW	11000-14000kg
9-10m	147-191kW	12500-14000kg



Products parameters of China M3

### Conclusion:

1. Lots of China M3 category buses and coaches will have big problem in the ECE R51-03 systems.
2. A harmonization for commercial vehicles between China and Europe is badly needed before 2020.





National Automotive Standardization Technical Committee



***Thanks for your attention***



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