



Informal Document GRB-68-14
Agenda item 19

**ETRTO proposal for UN R30 & 64 amendments
Extended Mobility Tyres**

Sept 2018 GRBP Supporting material

WHY TO REGULATE EMT ?

REGULATORY PICTURE

“RF” TYRES regulated focusing essentially on flat running mode performance (zero inflation pressure)

“NOISE/WET GRIP/RR” have been regulated afterwards together with other tyre characteristics.



REAL WORLD APPLICATION

“RF” TYRES rarely adopted, not constituting a representative use case.

Millions of tyres providing flat running mode capability (at least 80 km @ 80 km/h) are on the market and not regulated regarding their flat running mode performance.

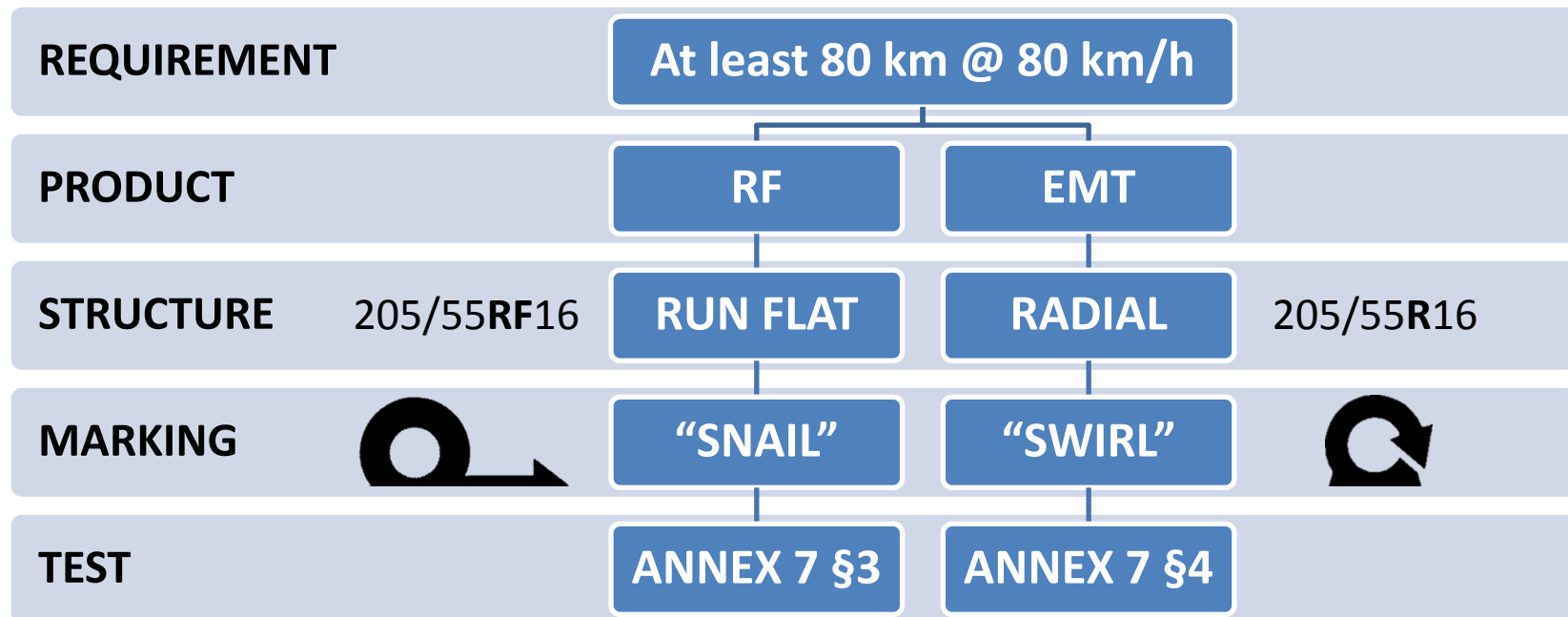
WHY TO REGULATE EMT?

- To specify a minimum deflated performance requirement that tyres declared as EMT have to meet
- to consider EMT as a safety asset for current vehicles and forthcoming autonomous ones.

WHY NOT JUST TO AMEND RF?

RATIONALE TO INTRODUCE A NEW DEFINITION:

1. Because RF and EMT have two different structure identification: RF vs. R;
2. To prevent market confusion, while ensuring a clear regulatory framework.



RF vs. EMT: REAL WORLD TARGETS & PERFORMANCES EVOLUTION

2005-2006

2006 →

TODAY

- ISO 16992:2005 & UN R30 requirement set on limited real world experience
- Initial target on vehicle above 200 km
- RF tyres focusing more on flat performance than e.g. comfort and rolling resistance

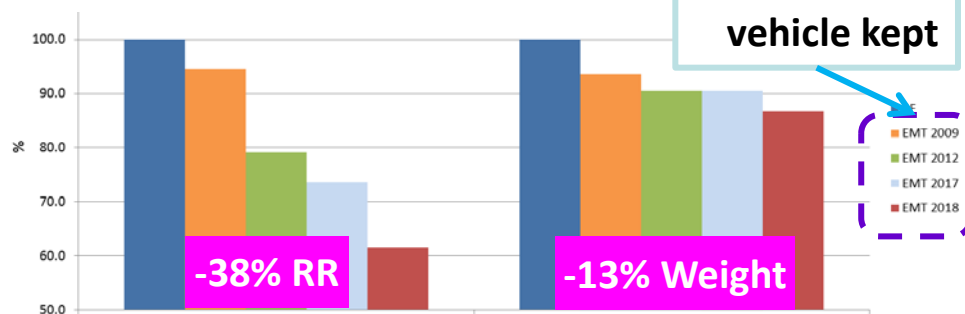
VS.

- Actual target on vehicle in line with 80 km @ 80 km/h
- ISO 16992:2018 with the addition of a more realistic test (reduced load and temperature) following real world experience and better understanding of indoor failure mode compared to the road test.

EMT additional capabilities

- **Rolling resistance improvement**
Fuel consumption / CO₂ reduction.
- **Weight and stiffness improvement**
better NVH (comfort, acoustics).
- **Chassis loads reduction**
safety enabler (reduced inertia for impact & braking)

Performance evolution RF vs. EMT

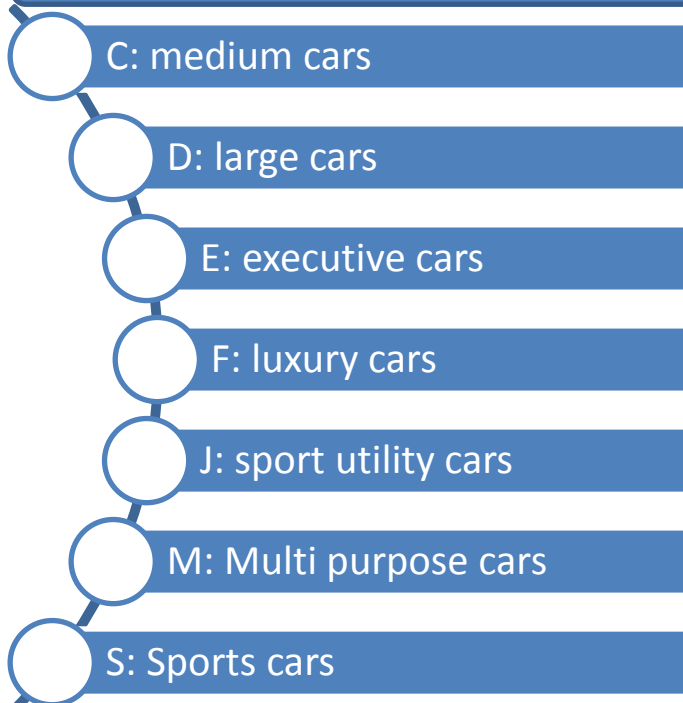


Customers Feedback: Since 2009 more than 7 million vehicles had been sold worldwide fitting EMT, without reported issue on flat running mode performance.

EMT PERFORMANCE EVIDENCE ON VEHICLE

SW	AR	STRUCTURE	RIM CODE	LI	SS
225	45	R	17	91	W
225	60	R	17	99	V
255	40	R	18	95	Y
195	55	R	16	87	V
225	50	R	17	94	W
245	50	R	18	100	W
255	55	R	18	109	V
255	50	R	19	103	Y
315	35	R	20	110	Y
285	40	ZR	19	103	Y
225	50	R	18	95	W
225	55	R	17	97	W
255	40	R	18	95	Y
205	60	R	16	96	H
225	50	R	17	98	H
265	50	R	19	110	H
185	65	R	15	92	V
205	55	R	16	94	W
215	65	R	16	102	V
225	45	R	17	94	Y
245	45	R	18	100	Y
255	35	R	19	96	Y

ACTUAL EMT ON M1 SEGMENTS = 80 x 80 ON VEHICLE



WIDE RANGE OF TYRE SIZES AND VEHICLE TYPES COVERED TO DEVELOP THE NEW EMT TEST METHOD

HOW TO REGULATE EMT?

UN R30

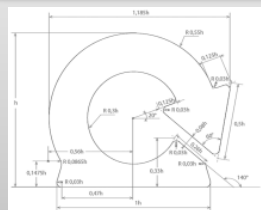
3-PILLARS FOR CONSISTENCY IN THE REGULATION & CLEAR REQUIREMENTS SETTING

DEFINITION

2.9. "*Extended Mobility Tyre (EMT)*" describes a tyre with a radial structure allowing the tyre, [...] to provide the vehicle with the basic tyre functions at a speed of 80 km/h and a distance of 80 km when operating in flat tyre running mode.

MARKING

3.1.15 The symbol below for EMT



ANNEX 7 - TEST

4. Procedure to assess the "flat tyre running mode" of "extended mobility tyres"

High quality procedure, including test at zero pressure with clear and detailed requirements

UN R64

Amendments to implement EMT beside RF

BIG PICTURE OVERVIEW: EMT BESIDE RF

Solution

SOLUTION

Spare Tyre

Search the spare tyre

Temporary spare

Search the emergency wheel

Tyre repair Kit

Search the tyre repair kit

„RF“ tyre

EMT

(non regulated)



Lift the vehicle

Lift the vehicle

Connect the repair kit

Dismount the damaged/deflated tyre

Dismount the damaged/deflated tyre

Able to use the tyre repair kit???

Mount the spare tyre

Mount the emergency wheel

Remove the tyre repair kit

Put the damaged tyre back in the car

Put the damaged tyre back in the car

Put the tyre repair kit back in the car

SIDE ROAD RISK

DOES IT WORK?

restart driving
If spare not underinflated

restart driving @ limited speed
If not underinflated

Restart driving with limited speed if able to use the kit

Keep driving with max 80 km/h speed for at least 80 km

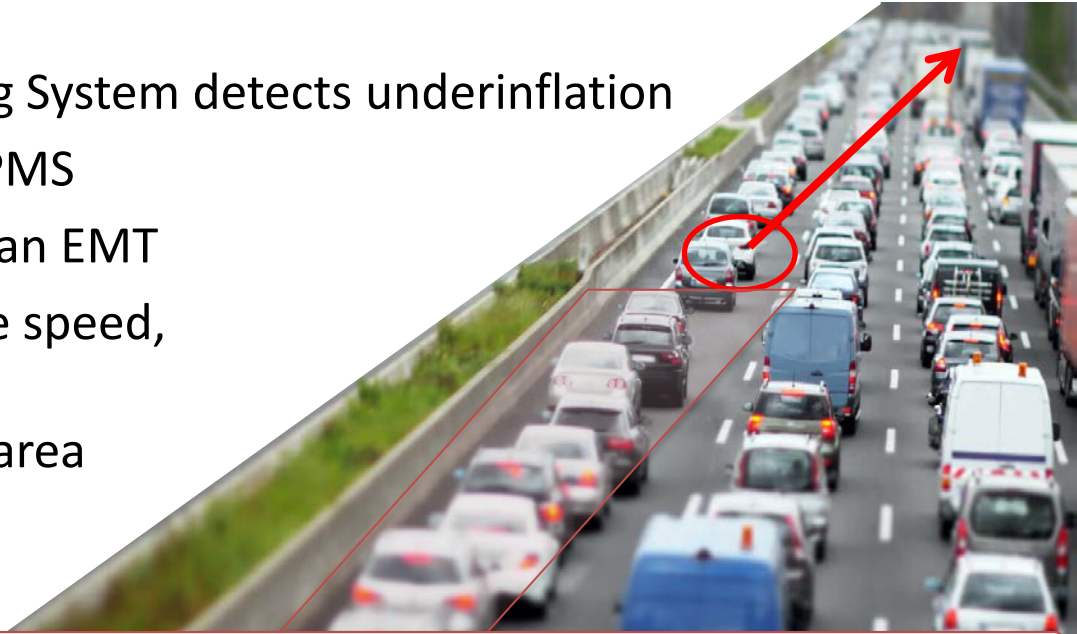
Keep driving with max 80 km/h speed for at least 80 km



RF TO BE KEPT BESIDE EMT

VISION

- It is raining and an L5 full automated vehicle is on the highway fast lane
- One tyre has got a puncture,
 - the Tyre Pressure Monitoring System detects underinflation
 - The ECU is notified by the TPMS
 - The ECU is aware the tyre is an EMT
 - The vehicle safely reduce the speed, safely moves to the exit line and reaches a maintenance area where the tyre is checked and/or repaired



EMT will be an additional asset for Automated Vehicles

CONCLUSION and RECOMMENDATIONS

- **EMT is a safety asset and needs to be regulated to ensure a minimum flat running mode performance.**
- **The proposal while addressing this need is aligned with harmonized regulations regarding road safety and environmental protection (RR, Weight)**
- **The millions of tyres meeting the proposed EMT requirements perform satisfactorily on the market**

ETRTO recommends the GRBP to consider for adoption the working documents ECE/TRANS/WP.29/GRVA/2018/6 and ECE/TRANS/WP.29/GRVA/2018/7



Thank you!