

## Mechanical tests proposal

**Proposal from France  
4<sup>th</sup> RESS meeting (Mainz-Germany)**

### **Proposal after the acceptance of the Frontal Impact informal group during their 13<sup>th</sup> meeting**

#### Mechanical tests

##### Rationale :

RESS regulation will allow to realize mechanical tests (mechanical shock and mechanical integrity) applied on RESS itself as a component or on a vehicle via R12, R94 and R95 impact tests.

The scope of this regulation applies to RESS with a voltage over 60VDC, whatever is the vehicle category on which the RESS will be fitted.  
However R12, R94 and R95 regulations are not applicable to all vehicle categories:

Regulation number	Categories
R12	M1, N1 < 1,5t
R94	M1 < 2,5t and others (decided by the manufacturer)
R95	M1, N1 (with exemption depending of R point position)

Whatever is the RESS destination, the opportunities to realize these tests with R12, R94 or R95 specifications are offered.

# Mechanical shock

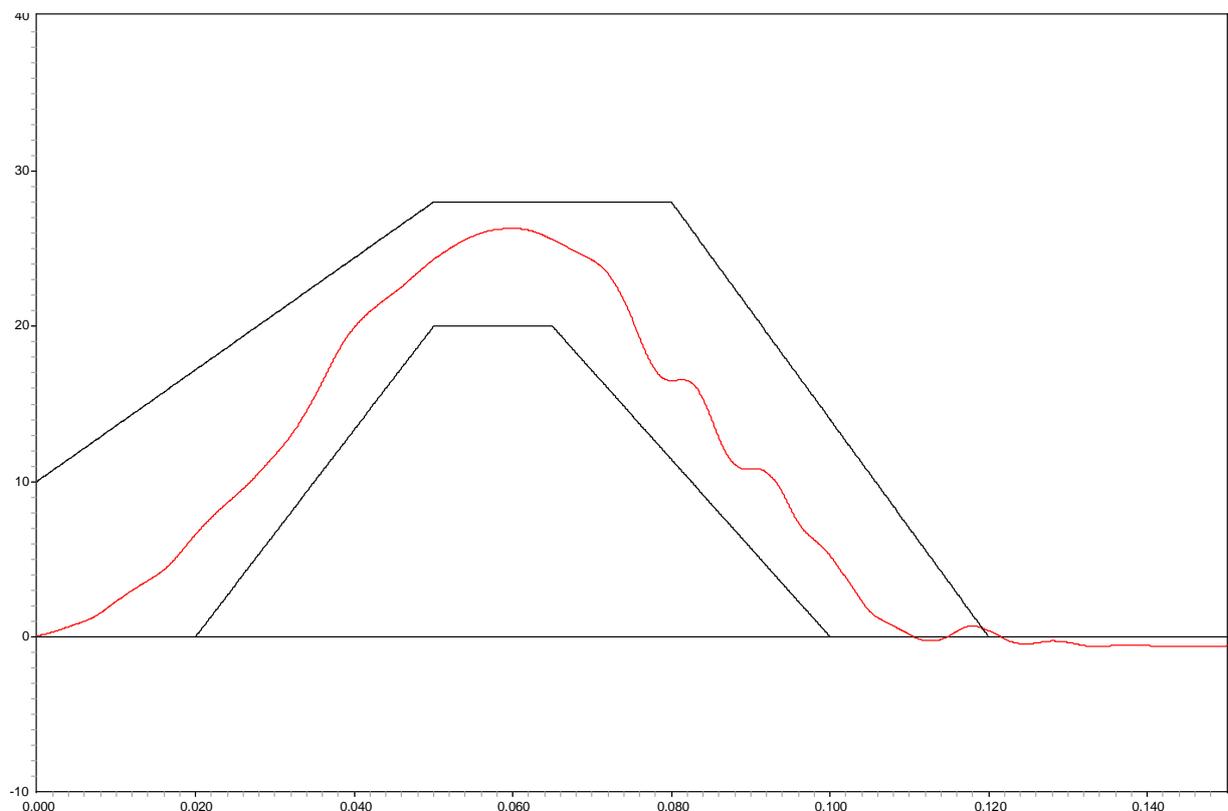
If the RESS is not intended for a specific vehicle, tests are realized on component for the vehicle category requested by the component manufacturer. M1/N1 levels could be applied on this entity (for side and frontal impact test) at the request of the component manufacturer to cover all categories of vehicles.

## 1. Frontal impact test for M1, N1

The Proposal validated by the Frontal Impact informal group (GRSP) is to apply the R17 dynamic corridor.

**Justification:** the batteries anchorages shall undergo the same deceleration than the seats fixation points, Therefore they have to undergo the same test level.

The pulse into the corridor is a simulated pulse, H axis: seconds, V axis: acceleration in g.



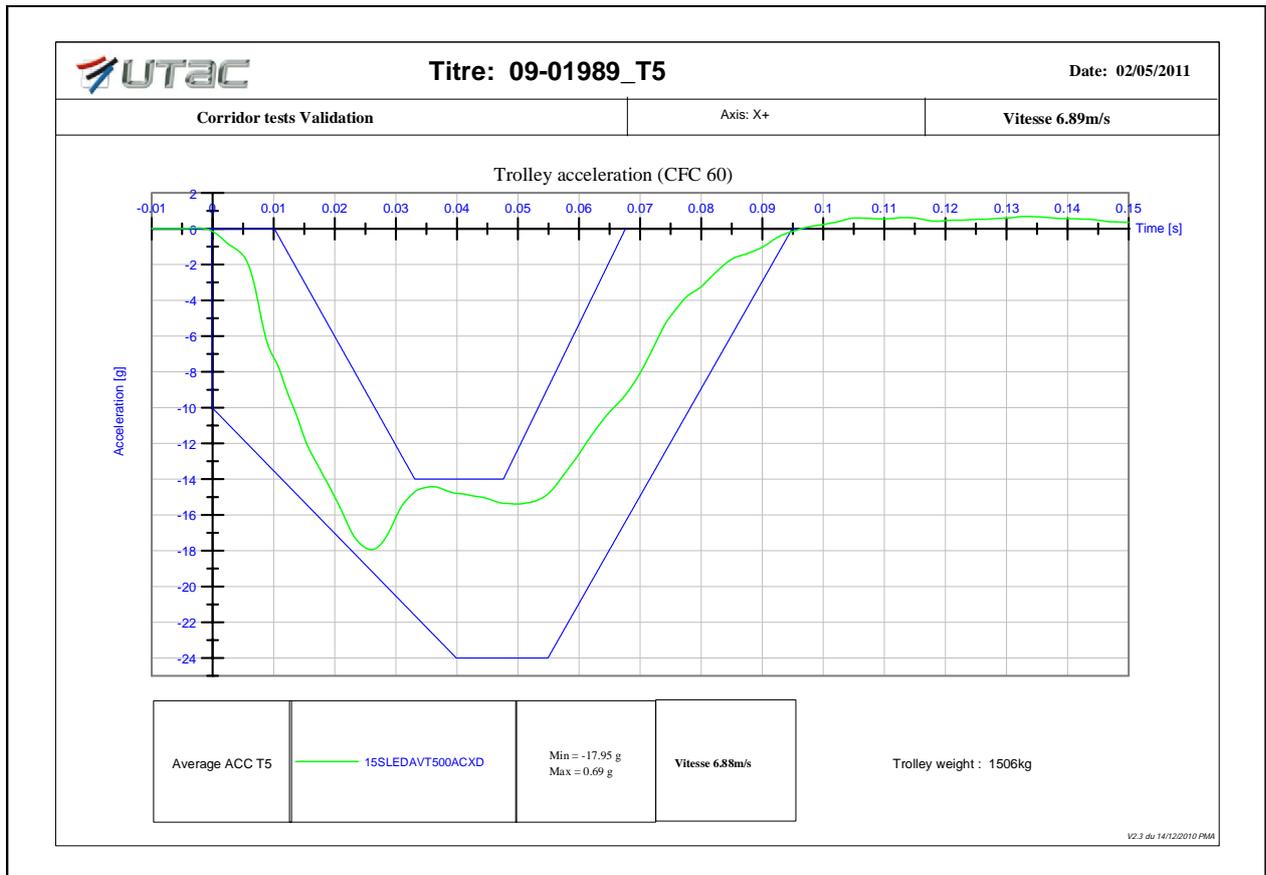
## 2. Side impact test for M1, N1

No existence of corridor corresponding to a R95 for component test.

We studied a corridor based on our experience of R95 impact tests (average of several tests).

### Pulse proposal

The pulse into the corridor is a simulated pulse.



### **3. Corridor for M2, N2 and M3, N3 frontal and side impact tests**

**We agree with values from RESS 3-3 rev 1 (which are the same values introduced in R110 and R67). Furthermore, we have to define a hold time, and we propose to apply the hold time from R80, which is 50ms, for the M2, N2, M3 and N3 categories.**

#### **Extract of R67:**

« ... The fuel container(s) must be mounted and fixed so that the following accelerations can be absorbed (without damage occurring) when the containers are full:

Vehicles of categories M1 and N1:

- (a) 20 g in the direction of travel
- (b) 8 g horizontally perpendicular to the direction of travel

Vehicles of categories M2 and N2:

- (a) 10 g in the direction of travel
- (b) 5 g horizontally perpendicular to the direction of travel

Vehicles of categories M3 and N3:

- (a) 6.6 g in the direction of travel
- (b) 5 g horizontally perpendicular to the direction of travel