



INTERNATIONAL ORGANIZATION OF MOTOR VEHICLE MANUFACTURERS

Headform tests Data

11 January 06

Pedestrian Safety GRSP Informal Group January 06



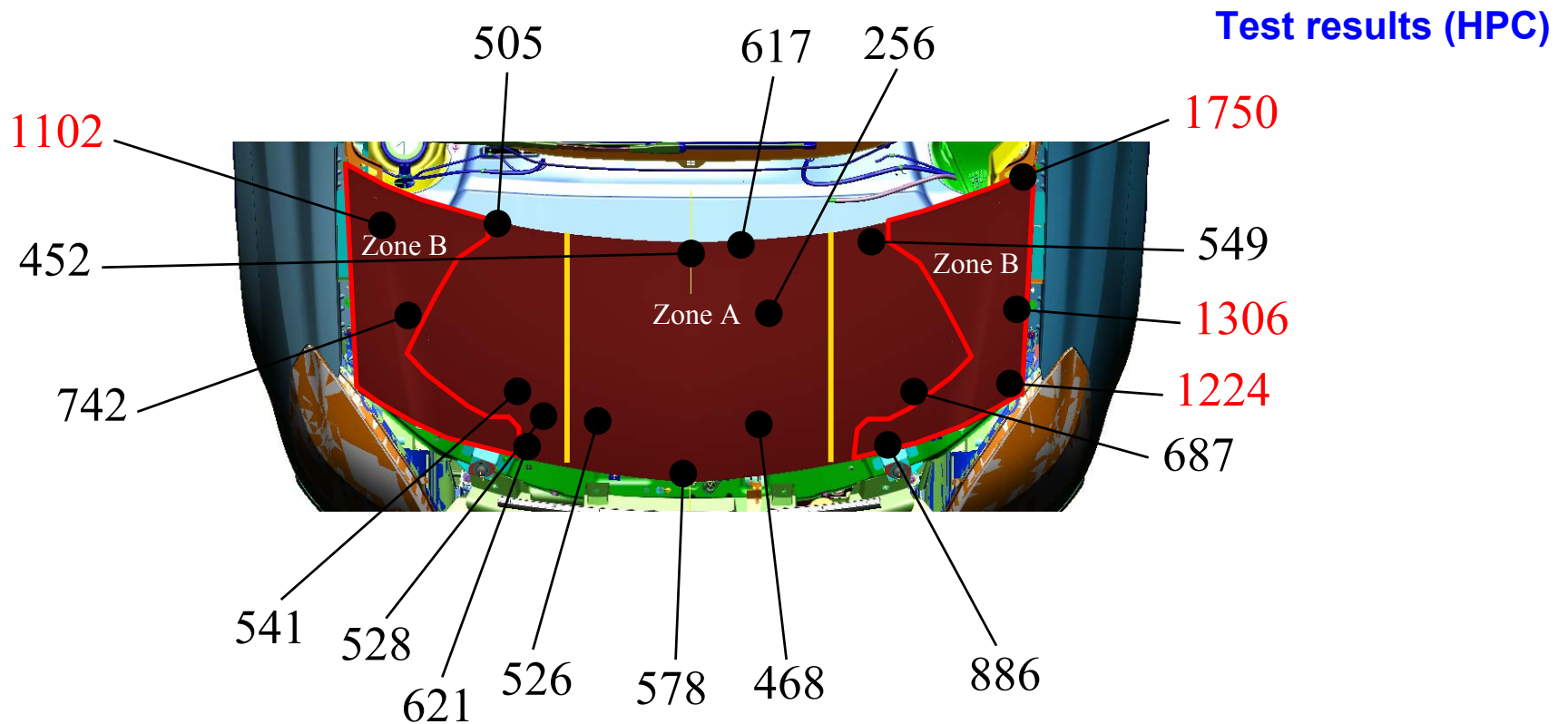
Car 1: Designed and approved to EU Directive 2003/102/EC Phase 1

No adult test area

Impactor child/small adult 3.5 kg

Impact angle 50° to the horizontal

Impact speed 35 km/h.

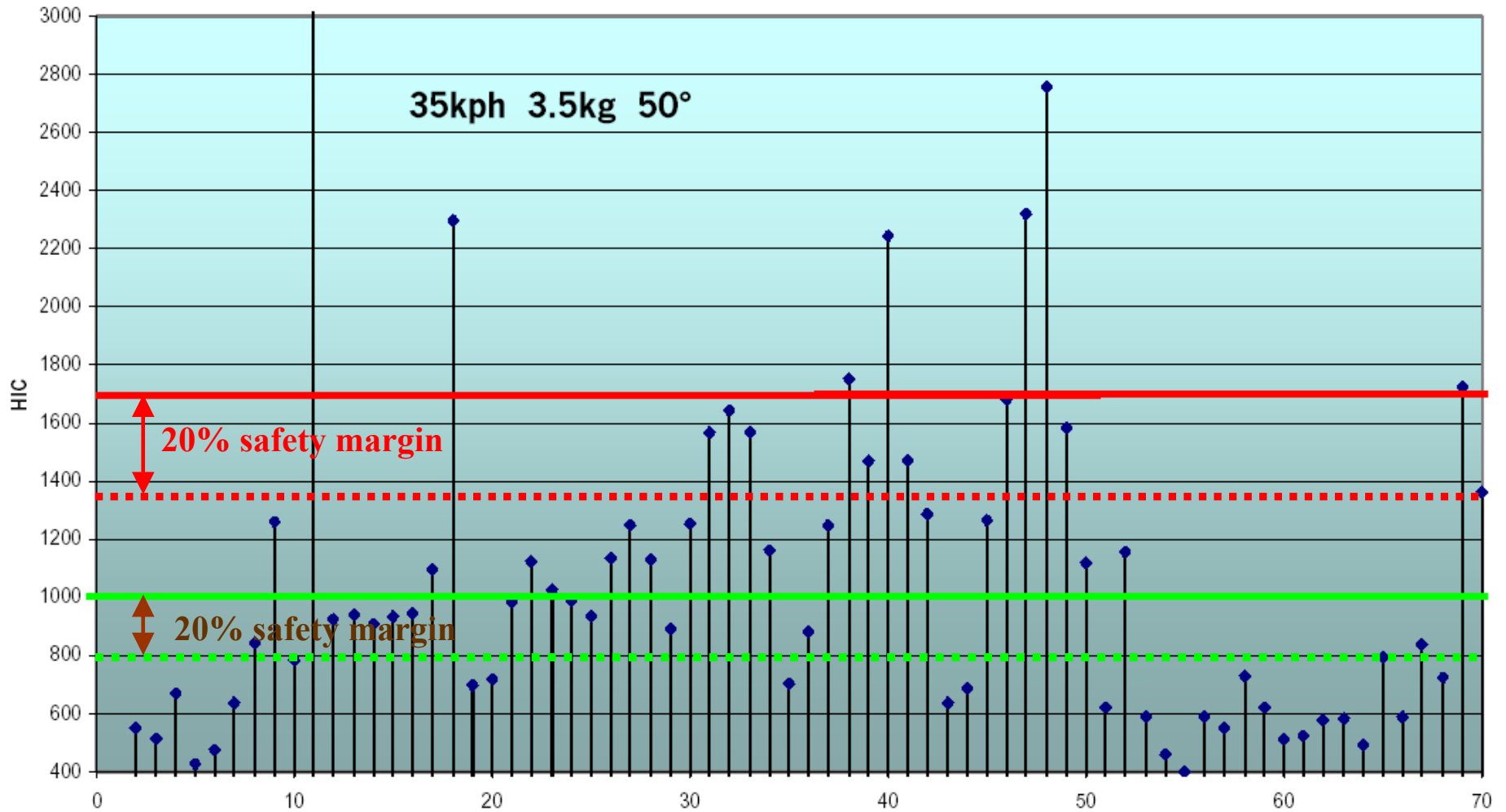




Car 2: Sports car

NOT approved to EU Directive 2003/102/EC Phase 1

70 impact points tested





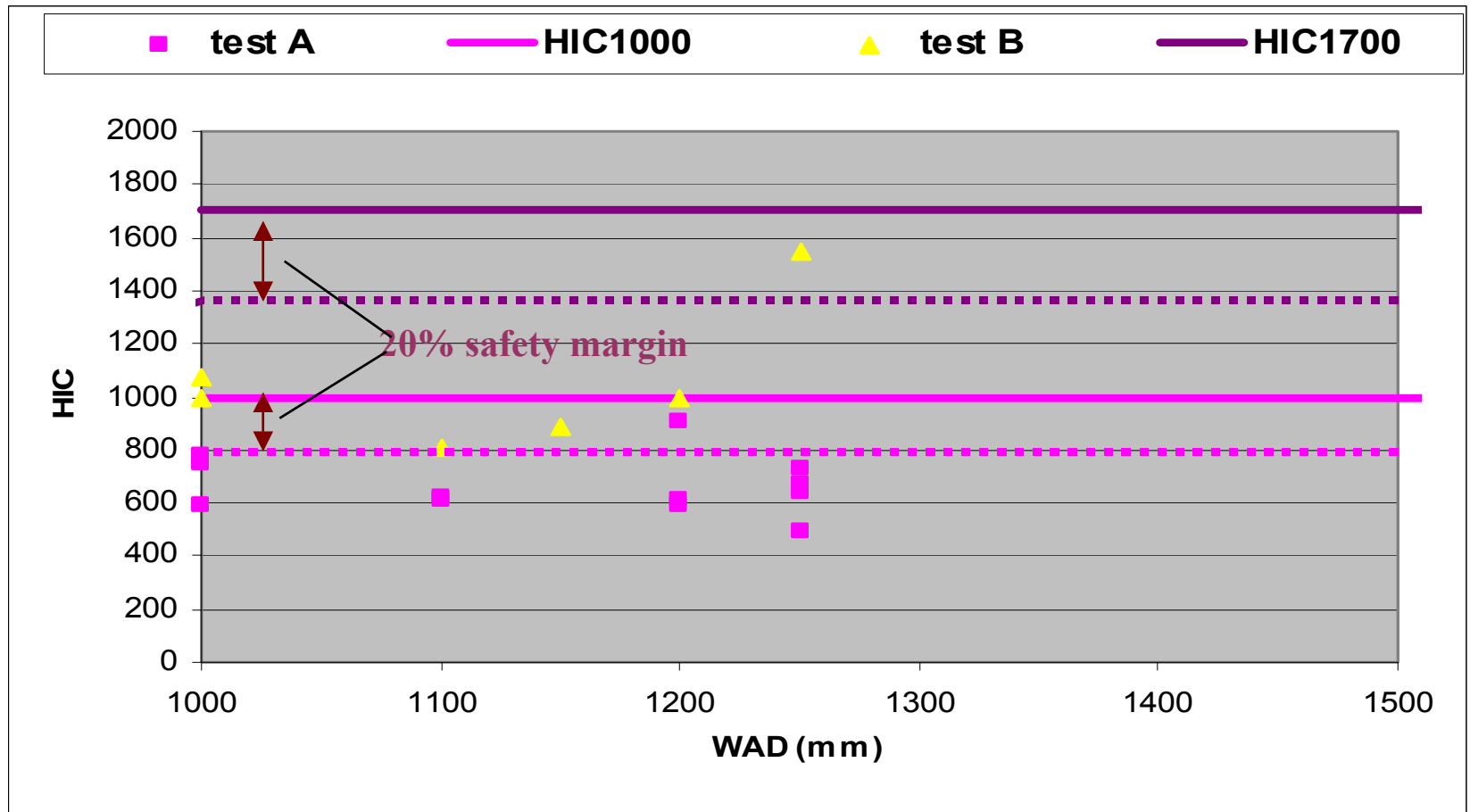
Car 3: Designed and approved to EU Directive 2003/102/EC Phase 1

No adult test area on bonnet

Impactor child/small adult 3.5 kg

Impact angle 50° to the horizontal

Impact speed 35 km/h.





Car 4

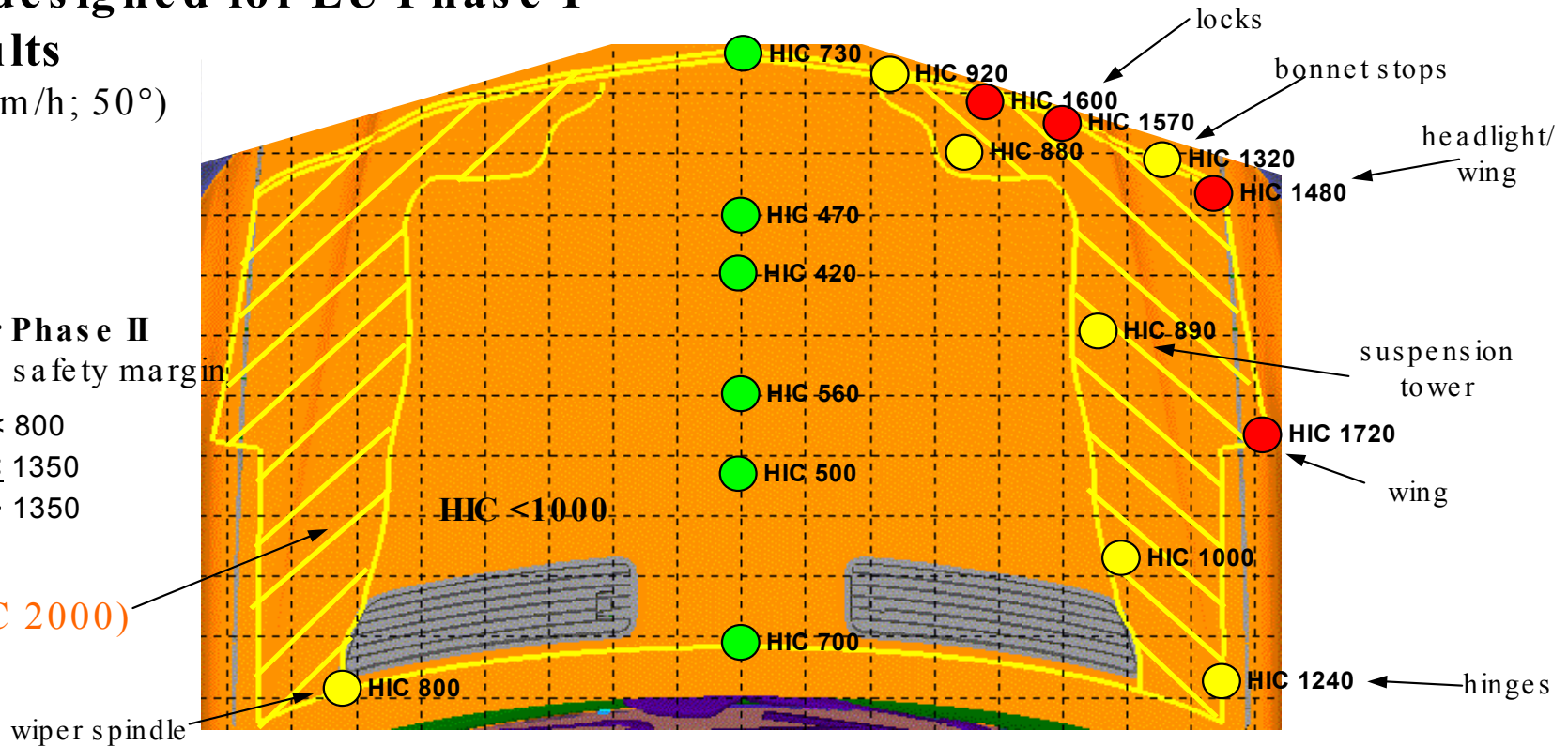
Bonnet designed for EU Phase I test results

(3,5kg; 35km/h; 50°)

HIC limits for Phase II Including 20% safety margin

- HIC < 800
- $800 \leq \text{HIC} \leq 1350$
- HIC > 1350

33% (HIC 2000)



- **The need for 1/3 zone on the complete bonnet area is due to feasibility**
(conflicting requirements for locks, bonnet stops, ...) and will not be changed for Phase II
- **The head impact protection will improve due to more stringent HIC 1700**
(actual values will be much lower due to 20% safety margin and need for transition zone)



EuroNCAP Phases 10 to 11+ (see INF GR/PS/45)

- **39 vehicles tested in total**
- **EuroNCAP test conditions different from EU Phase 1, but interpolation indicates that for child headform:**
 - Vehicle 1: about 67% (2/3) of the area would meet HPC 1000**
about 33% (1/3) of the area: HPC 1000 to 2000
 - Vehicle 2: about 10% of the area would meet HPC 1000**
about 50% of the area: HPC 1000 to 2000
about 40% of the area: HPC above 2000



Remarks and conclusions:

- 1. Only brand new models, specifically designed to meet the requirements can pass**
- 2. Existing models cannot be made compliant**
- 3. Even the best vehicles need the HIC 1700 exemption for compliance**
- 4. Because of high scatter of the test results, manufacturers need safety margin, usually 20% below legal limit**
- 5. Meeting the GTR requirements in the framework of vehicle type approval is clearly a significant challenge**