Commission Decision of 20 March 2006 on the detailed technical requirements for carrying out the tests specified in Directive 2005/66/EC of the European Parliament and of the Council relating to the use of frontal protection systems on motor vehicles (notified under document number C(2006) 776) (Text with EEA relevance) (2006/368/EC)

ANNEX

PART I

1. DEFINITIONS
   - 1.1. ‘Ground reference level’ means the horizontal plane parallel to the...
   - 1.2. ‘Corner of frontal protection system’ means the frontal protection system’s...
   - 1.3. ‘Third of the frontal protection system’ means the geometric trace...
   - 1.4. ‘Frontal protection system leading edge’ means the uppermost outer structure...
   - 1.5. ‘Frontal protection system leading edge height’ for any section of...
   - 1.6. ‘Frontal protection system lead’ for any point on a frontal protection...
   - 1.7. ‘Corner of frontal protection system leading edge’ means the frontal...
   - 1.8. ‘Third of the frontal protection system leading edge’ means the...
   - 1.9. ‘Frontal protection system wrap around distance’ of any point on...
   - 1.10. ‘Essential outer front end dimensions’ means solid points in space...
   - 1.11. The ‘centre of the knee’ of the legform impactor means...
   - 1.12. The ‘femur’ of the legform impactor is defined as all...
   - 1.13. The ‘tibia’ of the legform impactor is defined as all...

PART II

CHAPTER I

Test set-up

1. Testing the frontal protection system as original equipment fitted to...
   - 1.1. The frontal protection system mounted on the vehicle must comply...
   - 1.2. The vehicle must be in its normal ride attitude and...
   - 1.3. All devices designed to protect pedestrians and other vulnerable road...
   - 1.4. Any vehicle component that could change shape or position, such...

CHAPTER IV

Upper legform to frontal protection system

1. Test purpose
   1.1. To test compliance with the requirements laid down in paragraph 3.1.2...

2. Test points
   2.1. Upper legform to frontal protection system tests must be carried...

3. Test apparatus
   3.1. The impactor must comply with the requirements laid down in...
   3.2. Two load transducers must be fitted to measure individually the...
   3.3. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
   3.4. The impactor must meet the performance requirements specified in Section 3 of...
   3.5. The impactor must be mounted and propelled as specified in...

4. Test procedure
   4.1. The stabilised temperature of the test apparatus and the vehicle...
   4.2. Tests must be made to the frontal protection system between...
   4.3. The direction of impact must be parallel to the longitudinal...
   4.4. The impact velocity of the impactor when striking the frontal...

5. Upper legform impactor
   5.1. The total mass of the upper legform impactor including those...
   5.2. The total mass of the front member and other components...
   5.3. The foam must be two sheets of 25 mm thick Confor™...
   5.4. The front member must be strain gauged to measure bending...
   5.5. The torque limiting joint must be set so that the...
   5.6. The centre of gravity of those parts of the impactor...
   5.7. The length between the load transducer centrelines must be 310 ±...

CHAPTER V

Upper legform to frontal protection system leading edge

1. Test purpose
   1.1. To test compliance with the requirements laid down in paragraph 3.1.3...

2. Test points
   2.1. A minimum of three tests must be carried out to...

3. Test apparatus
   3.1. The impactor must comply with the requirements laid down in...
   3.2. When impacting the upper leading edge reference line the impactor...
   3.3. Two load transducers must be fitted to individually measure the...
   3.4. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
   3.5. The impactor must meet the performance requirements specified in Section 3 of...

3.6. The impactor must be mounted and propelled as specified in...

4. Test procedure
   4.1. The stabilised temperature of the test apparatus and the vehicle...
   4.2. The tests must be made to the frontal protection system...
   4.3. The impactor must be aligned in such a way that the...
   4.4. The required impact velocity, the angle of impact and the...
   4.5. The required impact velocity and the angle of impact are...
   4.6. The required impact energy must be derived from Figure 13 with...
   4.7. The total mass of the impactor includes those propulsion and...
      4.7.1. The required value of the impactor mass must be calculated...
      4.7.2. The impactor mass may be adjusted from the calculated value...
      4.7.3. The required extra weights must be fitted accordingly in order...

CHAPTER VI

Child/small adult headform to frontal protection system

1. Test purpose
   1.1. To test compliance with the requirements laid down in paragraph 3.1.4...

2. Test points
   2.1. Test points for the child/small adult headform impactor must be...
   2.2. Three headform impact tests must be carried out at positions...

3. Test apparatus
   3.1. The impactor must be as described in Section 5 and as shown...
   3.2. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
   3.3. The impactor must meet the performance requirements specified in Section 4 of...
   3.4. The impactor must be mounted, propelled and released as specified...

4. Test procedure
   4.1. The stabilised temperature of the test apparatus and the vehicle...
   4.2. Tests must be made to the frontal protection system at...
   4.3. A child/small adult headform impactor, as described in Section 5, must...
   4.4. The direction of impact must be downward and rearward and...
   4.5. At the time of first contact, the point of first...
   4.6. The impact velocity of the impactor when striking the impact...

5. Headform impactor
   5.1. The child/small adult headform impactor is a sphere made of aluminium...
   5.2. The sphere must be covered with a 14 ± 0,5 mm thick synthetic...
   5.3. The centre of gravity of the impactor, including instrumentation, must...
   5.4. A recess in the sphere must allow for mounting one...
      5.4.1. One of the accelerometers must have its sensitive axis perpendicular...
      5.4.2. The remaining accelerometers must have their sensitive axes perpendicular to...

Appendix 1

Impactor certification

1. CERTIFICATION REQUIREMENTS
   1.1. The impactors used in the tests specified in Part II must...

2. LOWER LEGFORM IMPACTOR
   2.1. Static tests
      2.1.1. The lower legform impactor must meet the requirements specified in...
      2.1.2. For both tests the impactor must have the intended orientation...
      2.1.3. The stabilised temperature of the impactor during certification must be...
      2.1.4. The CAC response values, as defined in ISO 6487:2000, must be...
      2.1.5. When the impactor is loaded in bending in accordance with...
      2.1.6. When the impactor is loaded in shearing in accordance with...
      2.1.7. The impactor, without foam covering and skin, shall be mounted...
         2.1.7.1. A horizontal normal force must be applied to the metal...
         2.1.7.2. The energy is calculated by integrating the force with respect...
      2.1.8. The impactor, without foam covering and skin, must be mounted...
         2.1.8.1. A horizontal normal force must be applied to the femur...
   2.2. Dynamic tests
      2.2.1. The impactor must meet the requirements specified in paragraph 2.2.3 when...
      2.2.2. The stabilised temperature of the impactor during certification must be...
      2.2.3. When the impactor is impacted by a linearly guided certification impactor,...
      2.2.4. For all these values the readings used must be from...
      2.2.5. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
   2.3. Test procedure
      2.3.1. The impactor, including foam covering and skin, must be suspended...
      2.3.2. The certification impactor must have a mass of 9,0 ± 0,05 kg,...
      2.3.3. The guidance system must be fitted with low friction guides,...
      2.3.4. The impactor must be certified with previously unused foam.
      2.3.5. The impactor foam must not be excessively handled or deformed...
      2.3.6. The certification impactor must be propelled horizontally at a velocity of...

3. UPPER LEGFORM IMPACTOR
   3.1. The upper legform impactor must meet the requirements specified in...
   3.2. The stabilised temperature of the impactor during certification must be...
   3.3. Requirements
      3.3.1. When the impactor is propelled into a stationary cylindrical pendulum the...
      3.3.2. For all these values the readings used must be from...
      3.3.3. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
   3.4. Test procedure
      3.4.1. The impactor must be mounted to the propulsion and guidance...
      3.4.2. The impactor mass must be adjusted to give a mass of...
      3.4.3. The centre of gravity of those parts of the impactor...

(**1**) OJ L 309, 25.11.2005, p. 37.