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Technical Report No.:	018-15
Test method:	Rules of FSAE
Manufacturer / Order party:	TU Brno Racing
Product under test:	Impact Attenuator Dragon 5

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## **TECHNICAL REPORT**

**No. 018- 15**

### **Test according to**

Rules of FSAE: para. T3.22 Impact Attenuator Data Requirement

Test Methods: Rules of FSAE: para. T3.22 of 2015

Objectives: Base for safety check

### **I. Technical data**

- 0.1.1. Test ordered by: TU Brno Racing,  
Faculty of Mechanical Engineering  
Brno University of Technology  
Technická 2896/2  
616 69 Brno  
Czech Republic
- 0.1.2. Manufacturer: TU Brno Racing,  
Faculty of Mechanical Engineering  
Brno University of Technology  
Technická 2896/2  
616 69 Brno  
Czech Republic
- 0.2. Product under test: Impact Attenuator of Formula Student Dragon 5
- 0.3. Test required: On demand

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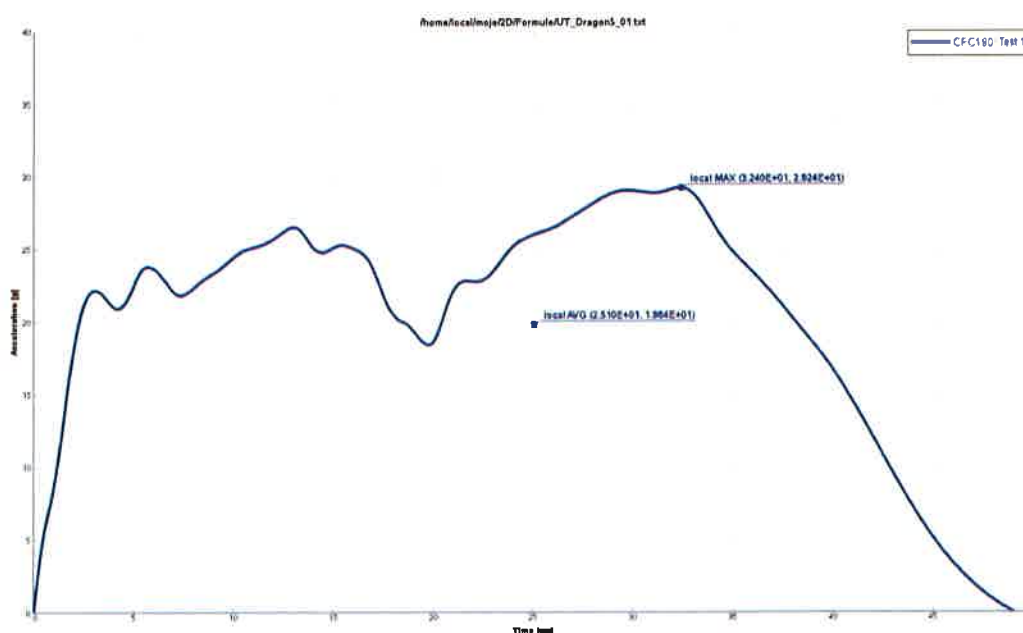
2/3

## II. Test Report

### 1. Test conditions

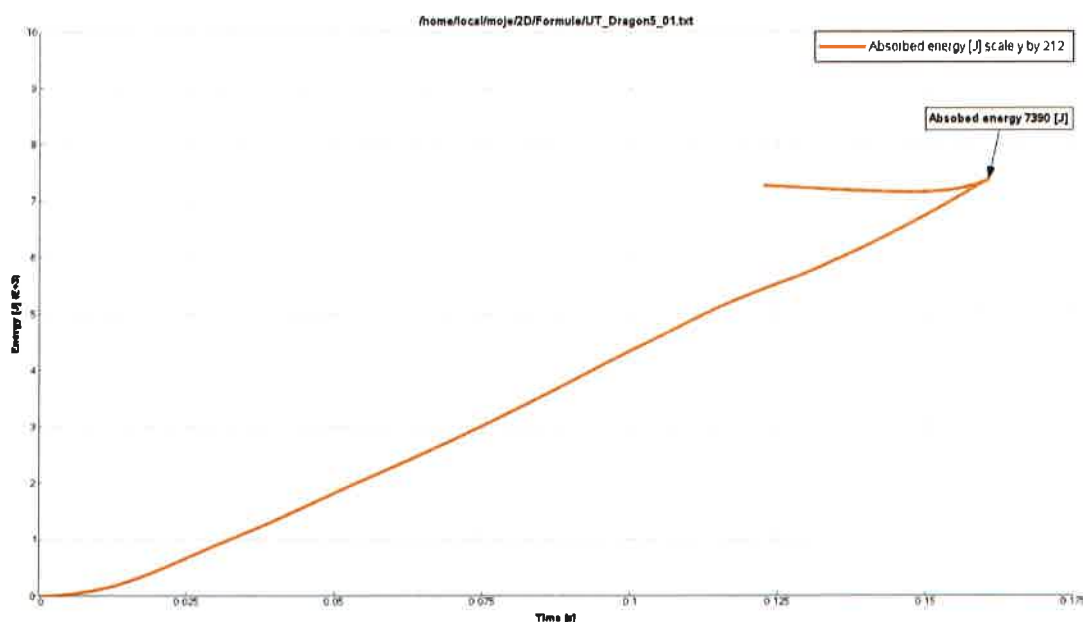
- 1.1. Test object: Impact Attenuator of Formula Student Dragon 5, dimensions: 200 mm long, 100 mm high and 200 mm wide its length oriented along the fore axis of the frame. It consists of four layers of aramid honeycombs C1-4,8-48 with 14 holes in each layer of the honeycomb. Impact attenuator is attached to the 4 mm solid aluminium plate.  
 Anti-intrusion plate is attached with four 8mm metric grade bolts to a structurally representative section of the intended chassis that extends of 120 mm away from the front bulkhead.
- 1.2. Test method: Steel cylindrical body of 212 kg was dropped into impact attenuator with a velocity of body of 8,34 meters/second, deceleration was recorded frequency 10000 samples/second.
- 1.3. Measuring and testing instruments: Steel cylindrical body of 212 kg, length measures Drop device KTG of high of 16 meters  
 Triaxial IEPE accelerometer Bruel Kjaer Type 4504A 750g  
 Conditioning amplifier Bruel Kjaer Nexus Type 2693  
 14 bit A/D converter National Instruments NI USB6009
- 1.4. Test site: Laboratory of glasses and climatotechnology KTG

### 2. Test results



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3/3



Permanently deflect of anti-intrusion plate: 11 mm

3. Samples submitted to test on: 20 February 2015  
4. Date of test: 20 February 2015

### III. Attachments

No Attachments

Results presented above have been measured/found in the laboratory of KTG, s.r.o. and relate only to items tested.

Measuring and test equipment and test site meet the requirements of the applicable legislation. This report must never be reproduced incomplete without a written permission of the testing laboratory.

### IV. Final assessment

Peak of maximal deceleration: 29,24 g in the time 32,4 ms  
Average deceleration: 19,84 g  
Total absorbed energy: 7 390 J  
Permanently deflect of anti-intrusion plate: 11 mm

This technical report consists of page No 1 to 3.

Prague 5 March 2015



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