

Schou Company A/S
Nordager 31
6000 Kolding
Denmark

Part test of bicycle helmet Y-03 and Y-25 according to EN 1078:2012+A1:2012

(2 appendices)

Conclusion

The tested models of bicycle helmet Y-03 and Y-25 in different sizes fulfil the requirements in clause 4.4 shock absorption in EN 1078:2012+A1:2012.

1 Introduction

At the request of Schou Company A/S a test of bicycle helmets in accordance with parts of EN 1078:2012+A1:2012 *Helmets for pedal cyclists and for users of skateboards and roller skates*, has been performed. Only clause 4.4 are performed.

2 Test object

Designation:

Order number	Size	Item number	Manufactured date	Helmet mass
44690	M	Y-25	Missing	419 gram
44695	L	Y-25	Missing	468 gram
44698	M	Y-03	Missing	238 gram
44699	M	Y-03	Missing	222 gram
44702	XS	Y-03	Missing	204 gram
44704	XS	Y-03	Missing	203 gram

Sizes: XS (46-52), S (48-54) M (54-58) and L (58-62).

Mass: See above in designation.

Description: Bicycle helmet consisting of a hard thin plastic shell with a shock absorbing polystyrene liner inside. See photo 1 to 6 below and pictures in appendix 1.

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Accred. No. 1002
Testing
ISO/IEC 17025

Selection of test objects: The test objects were delivered at RISE by Schou Company A/S. The test objects have been selected by the client without RISE's assistance.

Arrival date RISE: August 5, 2022.



Photo 1-3. Tested sample 44690, 44695 and 44698.



Photo 4-6. Tested sample 44699, 44702 and 44704.

3 Test method and accomplishment

Test method: SS-EN 1078:2012+A1:2012, Helmets for pedal cyclists and for users of skateboards and roller skates.

Test date: 2022-09-05 – 2022-09-07.

Test site: All tests were performed at RISE test plant in Borås by the division, Chemistry and Applied Mechanics - Transport and Product Safety

4 Test results

The test results shown in this report refer only to the tested objects.

4.1 Shock absorbing capacity (4.4 EN 1078:2012+ A1:2012)

The test was performed in accordance with clause 5.4 *Determination of shock absorbing capacity*. The helmets were conditioned in accordance with clause 5.4.2 *Conditioning*.

The impact points can be seen in appendix 1.

Tested helmets fulfilled the requirement in the performed tests with shock absorption.

The test results can be seen in table 1 to 6 below and the test graphs can be seen in appendix 2.

Table 1. 5.4 Determination of shock absorbing capacity, order no 44690 (Y-25)

Helmet size	Sample no.	Head form size	Conditioning	Point of impact	Type of anvil	Impact speed [m/s]	Peak acceleration [g]
M	1	575	High temp 50° C	Side	Kerbstone	4.63	109
				Front	Flat	5.52	167
	2		Low temp -20° C	Top	Flat	5.57	181
				Back	Kerbstone	4.73	89
	3		Aged, UV + Water 20° C	Front	Kerbstone	4.70	104
				Front Side Left	Flat	5.52	165

The peak acceleration shall not exceed 250 g.
Requirements fulfilled.

Table 2. 5.4 Determination of shock absorbing capacity, order no 44695 (Y-25)

Helmet size	Sample no.	Head form size	Conditioning	Point of impact	Type of anvil	Impact speed [m/s]	Peak acceleration [g]
L	1	605	High temp 50° C	Front	Kerbstone	4.71	82
				Side	Flat	5.57	143
	2		Low temp -20° C	Crown	Flat	5.58	184
				Rear	Kerbstone	4.67	82
	3		Aged, UV + Water 20° C	Front	Kerbstone	4.65	95
				Side	Flat	5.59	133

The peak acceleration shall not exceed 250 g.
Requirements fulfilled.

Table 3. 5.4 Determination of shock absorbing capacity, order no 44698 (Y-03)

Helmet size	Sample no.	Head form size	Conditioning	Point of impact	Type of anvil	Impact speed [m/s]	Peak acceleration [g]
M	1	535	High temp 50° C	Crown	Kerbstone	4.64	128
				Back	Flat	5.60	129
	2		Low temp -20° C	Side	Flat	5.53	179
				Front	Kerbstone	4.67	97

The peak acceleration shall not exceed 250 g.
Requirements fulfilled.

Table 4. 5.4 Determination of shock absorbing capacity, order no 44699 (Y-03)

Helmet size	Sample no.	Head form size	Conditioning	Point of impact	Type of anvil	Impact speed [m/s]	Peak acceleration [g]
M	1	535	High temp 50° C	Front	Kerbstone	4,71	80
				Side	Flat	5,50	167
	2		Aged, UV + Water 20° C	Crown	Kerbstone	4,70	101
				Side	Flat	5,50	163

The peak acceleration shall not exceed 250 g.
Requirements fulfilled.

Table 5. 5.4 Determination of shock absorbing capacity, order no 44702 (Y-03)

Helmet size	Sample no.	Head form size	Conditioning	Point of impact	Type of anvil	Impact speed [m/s]	Peak acceleration [g]
XS	1	495	Low temp -20° C	Crown Side	Kerbstone	4.68	98
				Back	Flat	5.56	185

The peak acceleration shall not exceed 250 g.
Requirements fulfilled.

Table 6. 5.4 Determination of shock absorbing capacity, order no 44704 (Y-03)

Helmet size	Sample no.	Head form size	Conditioning	Point of impact	Type of anvil	Impact speed [m/s]	Peak acceleration [g]
XS	1	495	High temp 50° C	Front	Kerbstone	4.69	156
				Side	Flat	5.59	170

The peak acceleration shall not exceed 250 g.
Requirements fulfilled.

5 Measurement uncertainty

The total calculated measurement uncertainty for the acceleration $< 3 \%$.

Reported uncertainty corresponds to an approximate 95 % confidence interval around the measured value. The interval has been calculated in accordance with EA-4/16 (EA guidelines on the expression of uncertainty in quantitative testing), which is normally accomplished by quadratic addition of the actual standard uncertainties and multiplication of the resulting combined standard uncertainty by the coverage factor $k=2$.

RISE Research Institutes of Sweden AB **Chemistry and Applied Mechanics - Transport and Product Safety**

Performed by



Patrik Spånglund

Examined by



Anna Ehn

Appendices

1. Product picture
2. Shock absorption graphs

Appendix 1



Picture 1. Front side view 44690.



Picture 2. Side view 44690.



Picture 3. Rear side view 44690.

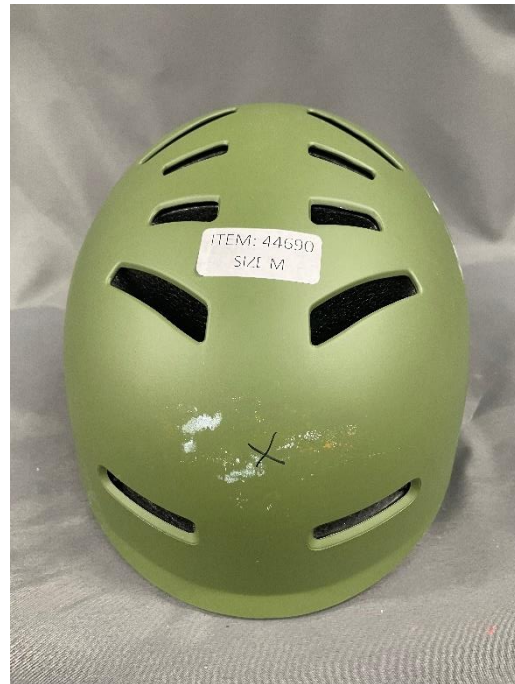


Picture 4. Top view 44690.

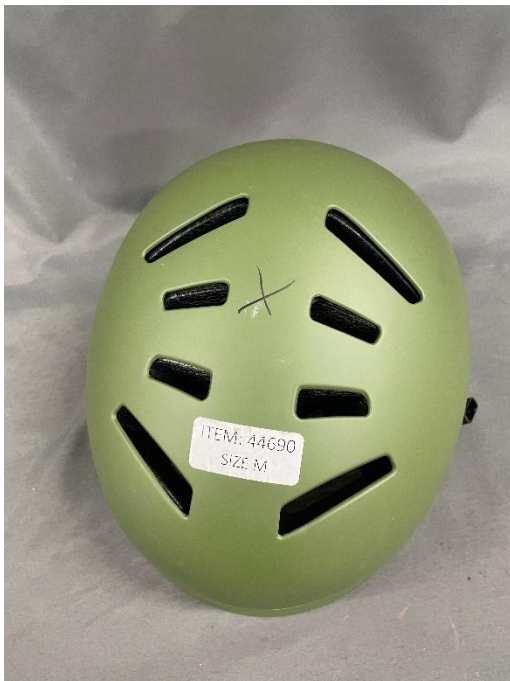
Appendix 1



Picture 5. Impact point Helmet 1 44690.
Side Kerbstone.



Picture 6. Impact point Helmet 1 44690.
Front Flat.



Picture 7. Impact point Helmet 2 44690.
Top Flat.



Picture 8. Impact point Helmet 2 44690.
Back Kerb.

Appendix 1



Picture 9. Impact point Helmet 3 44690.
Front Kerbstone.



Picture 10. Impact point Helmet 3 44690.
Front Side Left Flat.

Appendix 1



Picture 11. Front side view 44695.



Picture 12. Side view 44695.



Picture 13. Rear side view 44695.



Picture 14. Top view 44695.

Appendix 1



Picture 15. Impact point Helmet 1 44695.
Front Kerbstone.



Picture 16. Impact point Helmet 1 44695.
Side Flat.



Picture 17. Impact point Helmet 2 44695.
Crown Flat.



Picture 18. Impact point Helmet 2 44695.
Rear Kerbstone.

Appendix 1



Picture 19. Impact point Helmet 3 44695.
Side Kerbstone.



Picture 20. Impact point Helmet 3 44695.
Front Flat.

Appendix 1



Picture 21. Front side view 44698.



Picture 22. Side view 44698.



Picture 23. Rear side view 44698.



Picture 24. Top view 44698.

Appendix 1



Picture 25. Impact point Helmet 1 44698.
Crown Kerbstone.



Picture 26. Impact point Helmet 1 44698.
Back Flat.



Picture 27. Impact point Helmet 2 44698.
Side Flat.



Picture 28. Impact point Helmet 2 44698.
Side Kerbstone.

Appendix 1



Picture 29. Front side view 44699.



Picture 30. Side view 44699.



Picture 31. Rear side view 44699.



Picture 32. Top view 44699.

Appendix 1



Picture 33. Impact point Helmet 1 44699.
Front Side Kerbstone.



Picture 34. Impact point Helmet 1 44699.
Side Flat.



Picture 35. Impact point Helmet 2 44699.
Crown Kerbstone.



Picture 36. Impact point Helmet 2 44699.
Side Flat.

Appendix 1



Picture 37. Front side view 44702.



Picture 38. Side view 44702.



Picture 39. Rear side view 44702.



Picture 40. Top view 44702.

Appendix 1



Picture 41. Impact point Helmet 1 44702.
Crown Side Kerbstone.



Picture 42. Impact point Helmet 1 44702.
Back Flat.

Appendix 1



Picture 43. Front side view 44704.



Picture 44. Side view 44704.



Picture 45. Rear side view 44704.



Picture 46. Top view 44704.

Appendix 1



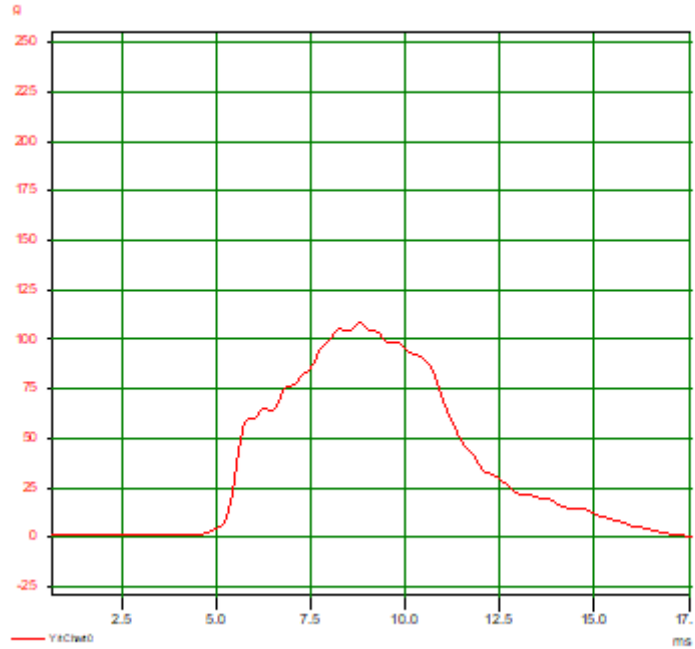
Picture 47. Impact point Helmet 1 44704.
Front Kerbstone.



Picture 48. Impact point Helmet 1 44704.
Side Flat.

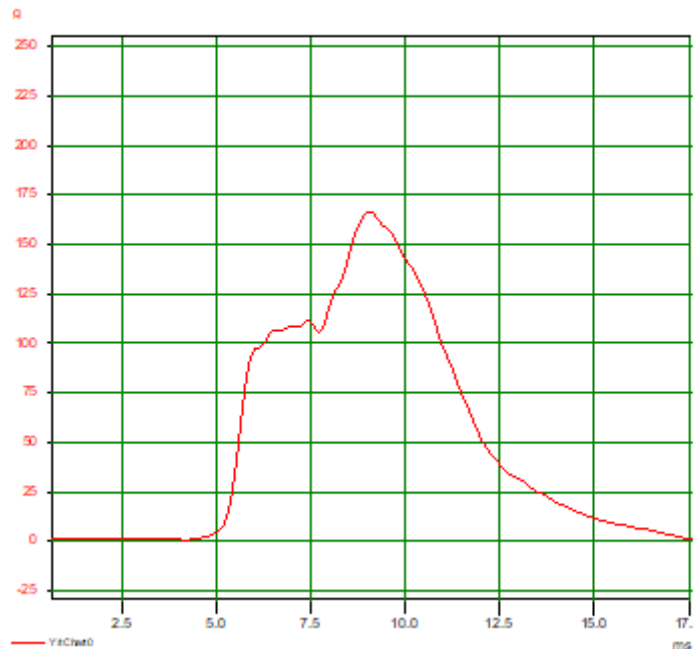
Appendix 2

1 Side Kerb 535 +50 Helmet 1 44690



109g

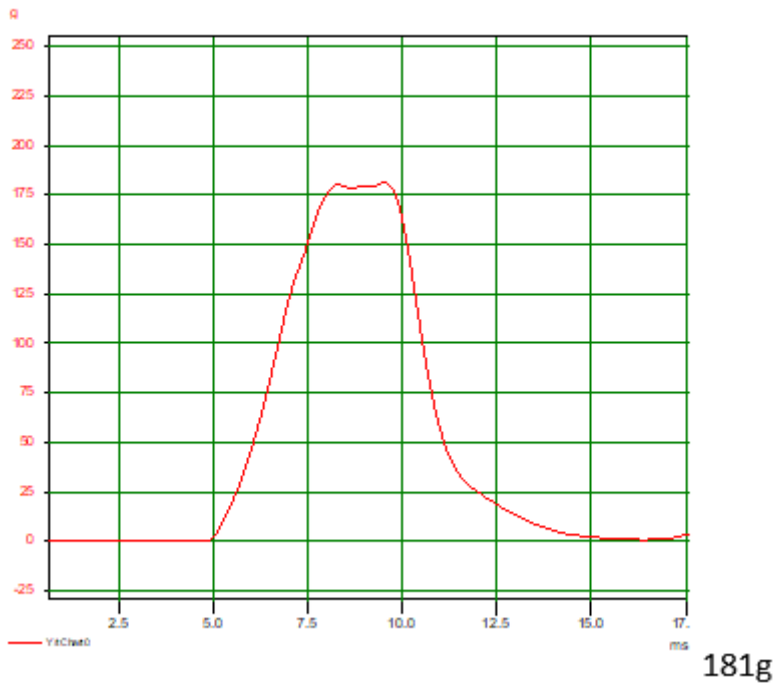
2 Front Flat 535 + 50Helmet 1 44690



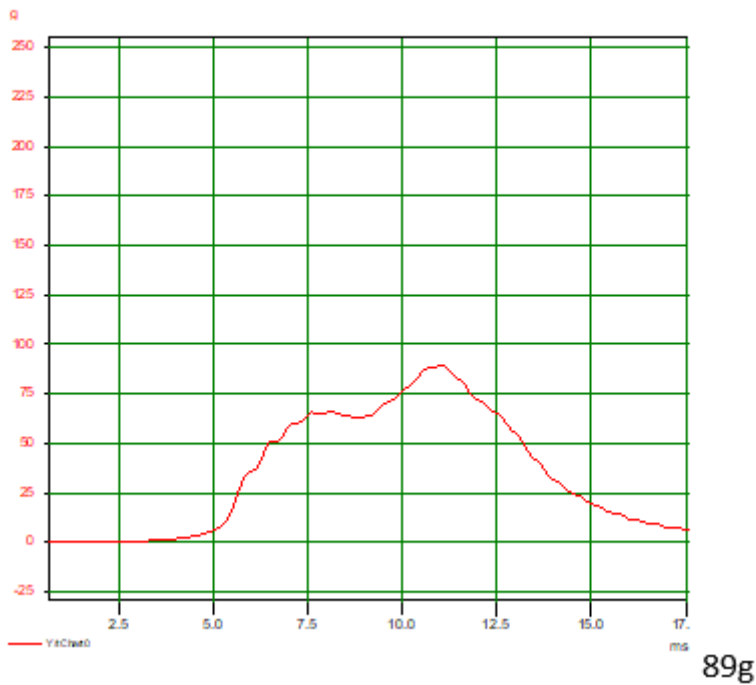
167g

Appendix 2

3 Top Flat 535 -20 Helmet 2 44690

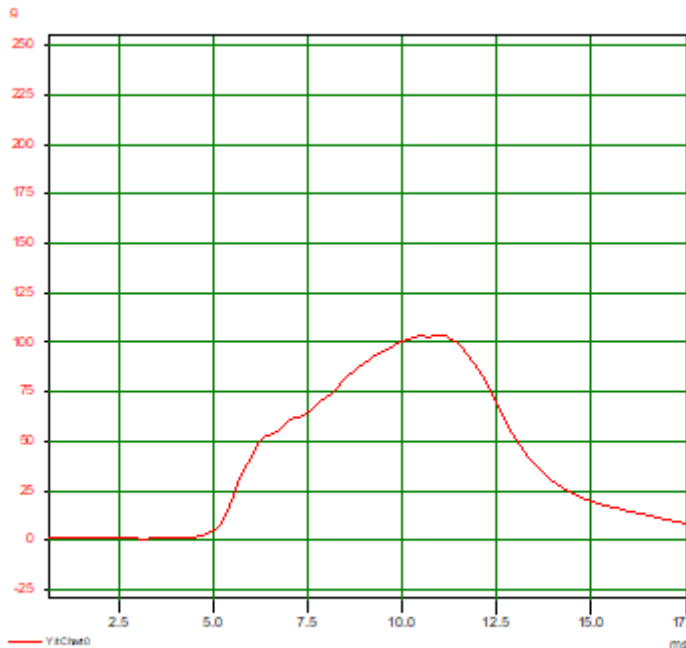


4 Back Kerb 535 -20 Helmet 2 44690



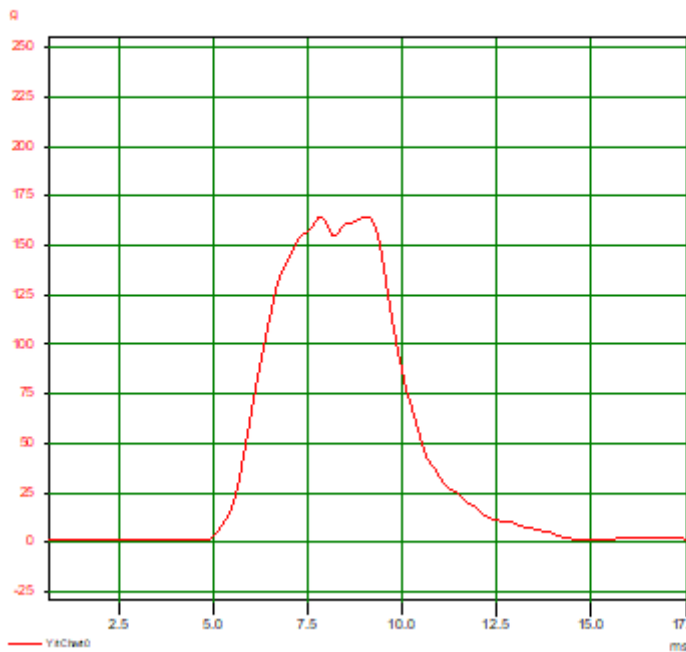
Appendix 2

5 Front Side Right Kerb 535 UV Helmet 3 44690



104g

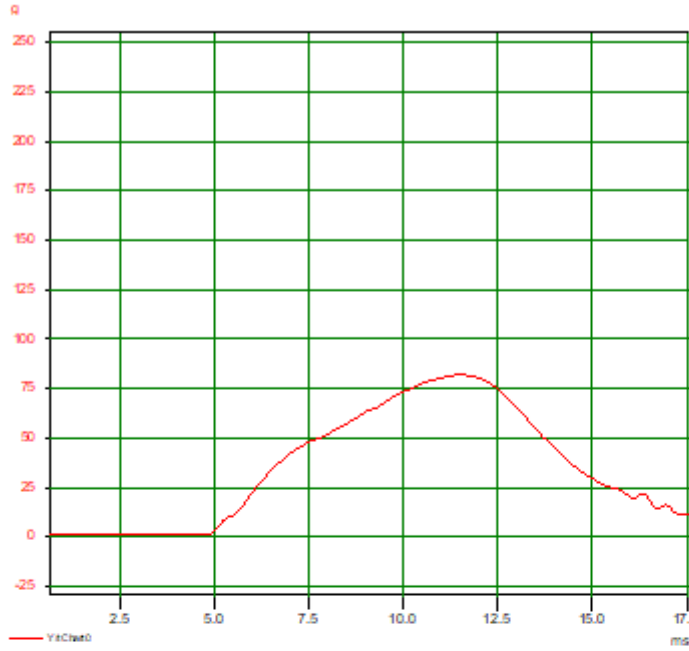
6 Front Side Left Flat 535 UV Helmet 3 44690



165g

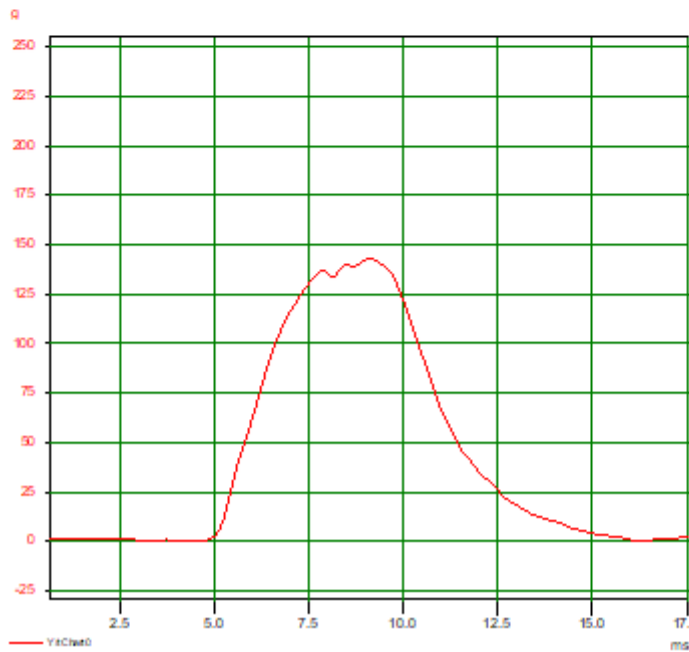
Appendix 2

1 Front Kerb 605 +50 Helmet 1 44695



82g

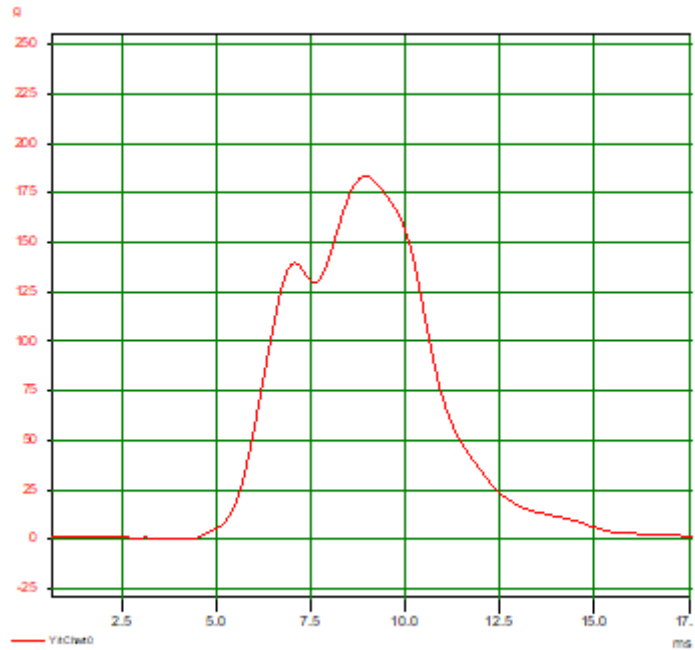
2 Side Flat 605 + 50Helmet 1 44695



143g

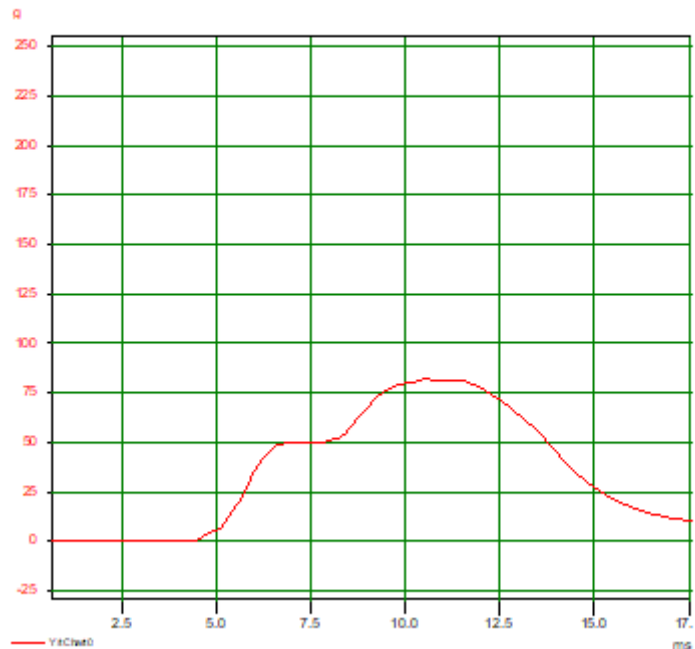
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3 Crown Flat 605 -20 Helmet 2 44695



184g

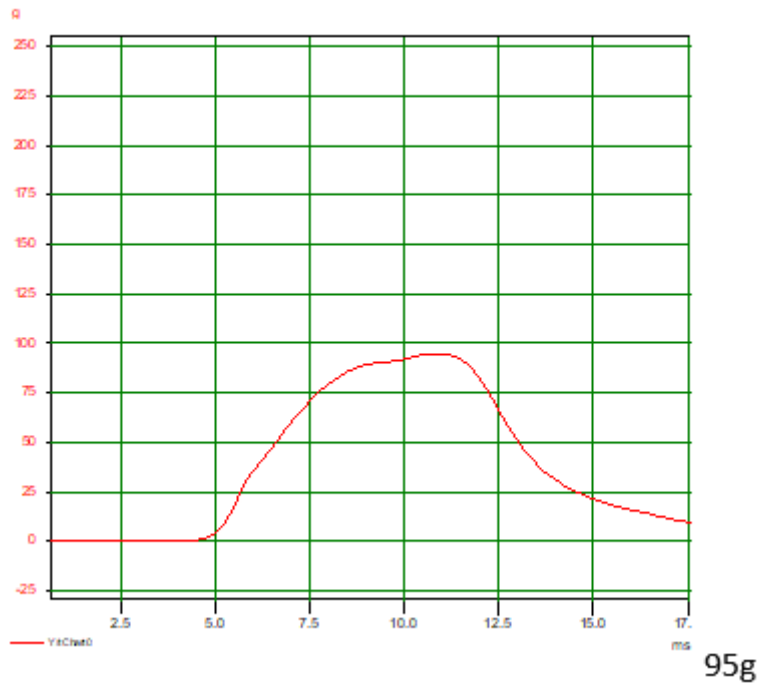
4 Rear Kerb 605 -20 Helmet 2 44695



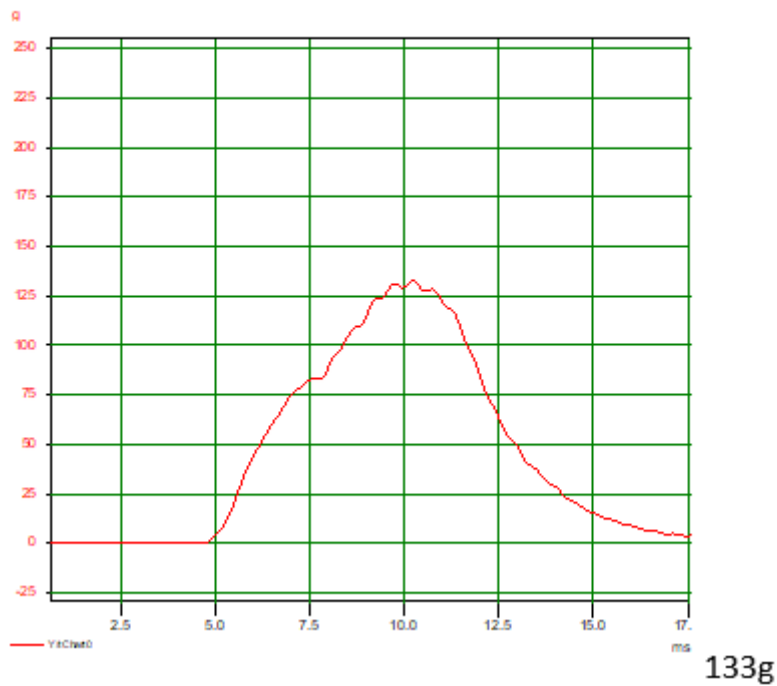
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Appendix 2

5 Side Kerb 605 UV Helmet 3 44695

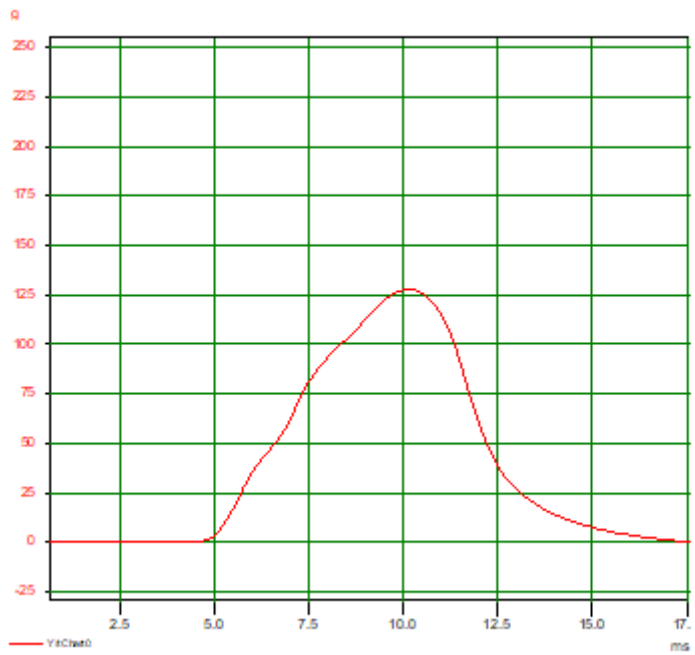


6 Front Flat 605 UV Helmet 3 44695



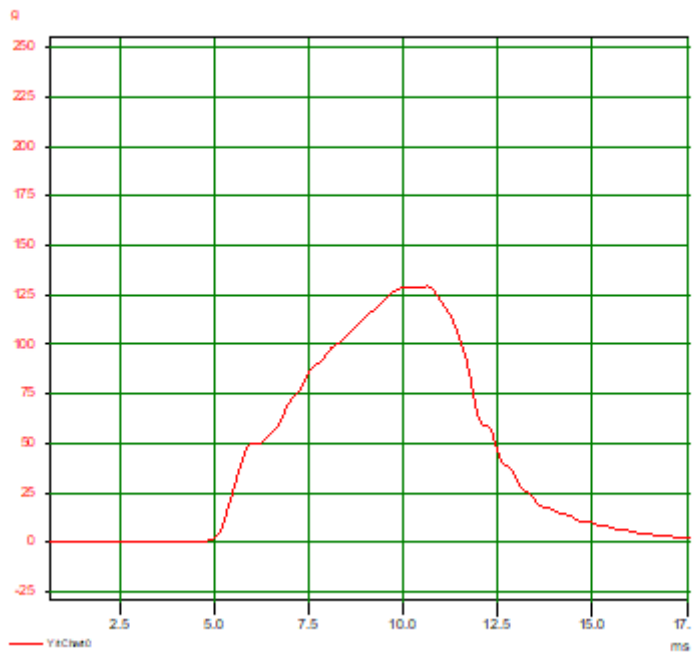
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1 Crown Kerb 535 +50 Helmet 1 44698



128g

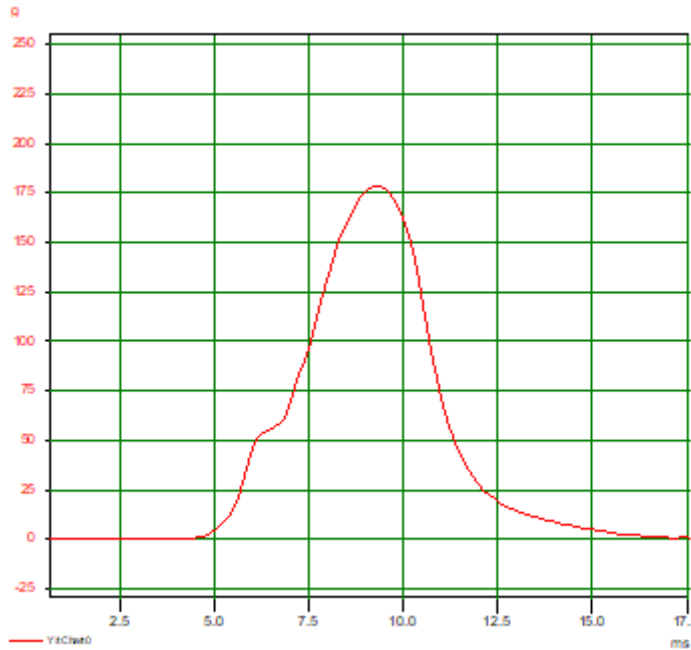
2 Back Flat 535 + 50Helmet 1 44698



129g

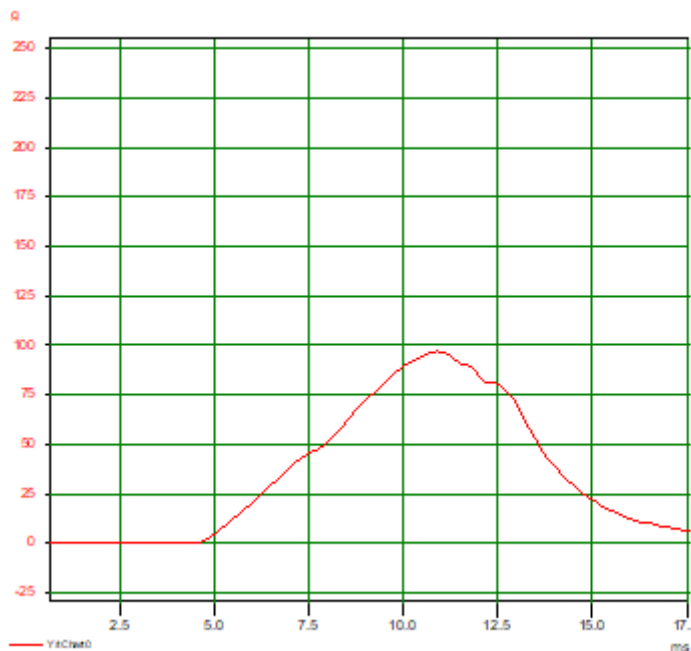
Appendix 2

3 Side Flat 535 -20 Helmet 2 44698



179g

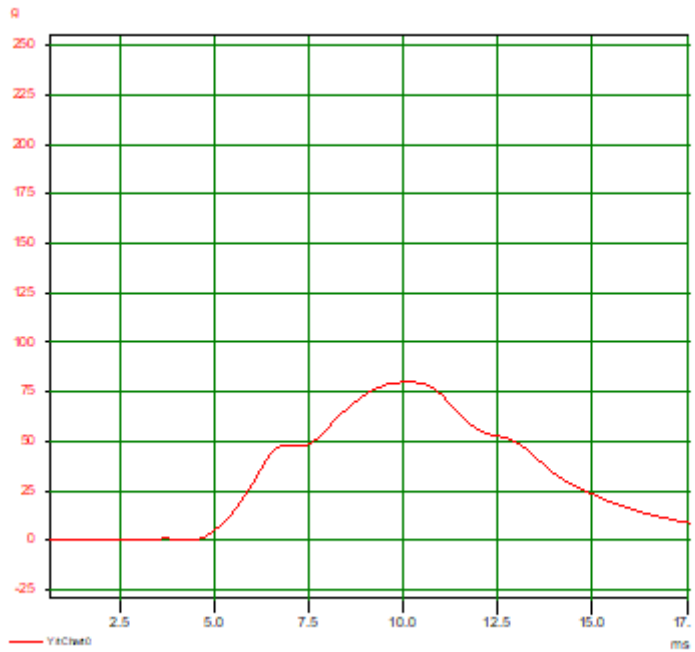
4 Front Crown 535 -20 Helmet 2 44698



97g

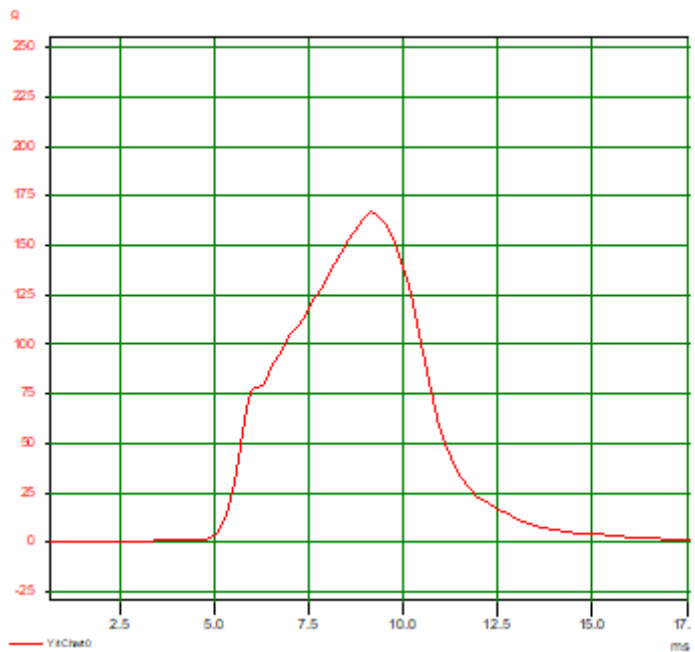
Appendix 2

1 Front Kerb 535 +50 Helmet 1 44699



80g

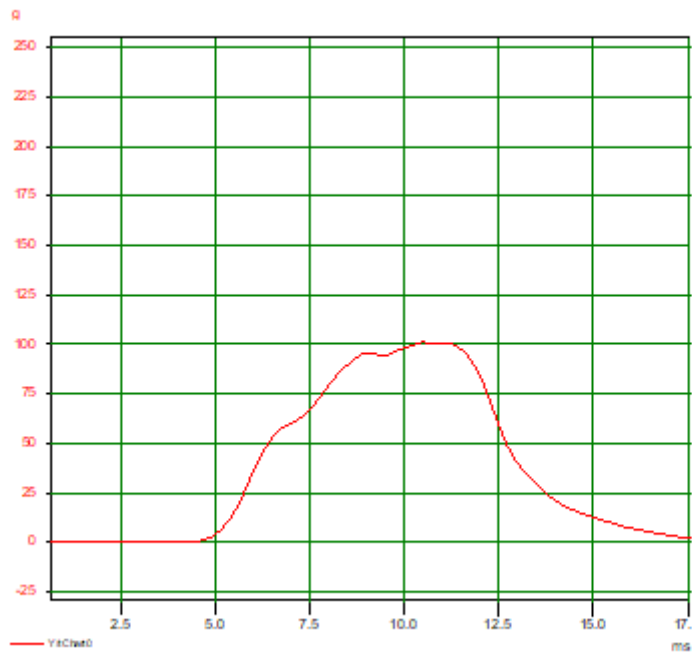
2 Side Flat 535 + 50Helmet 1 44699



167g

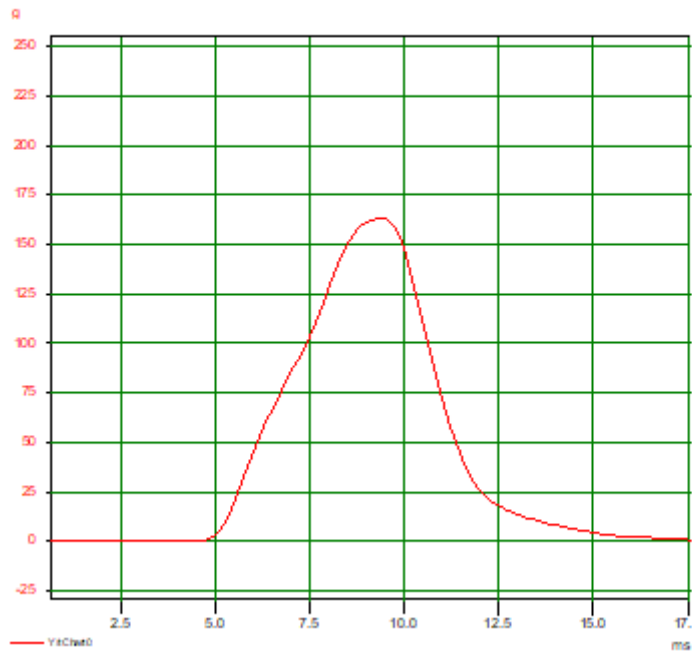
Appendix 2

5 Crown Kerb 535 UV Helmet 3 44699



101g

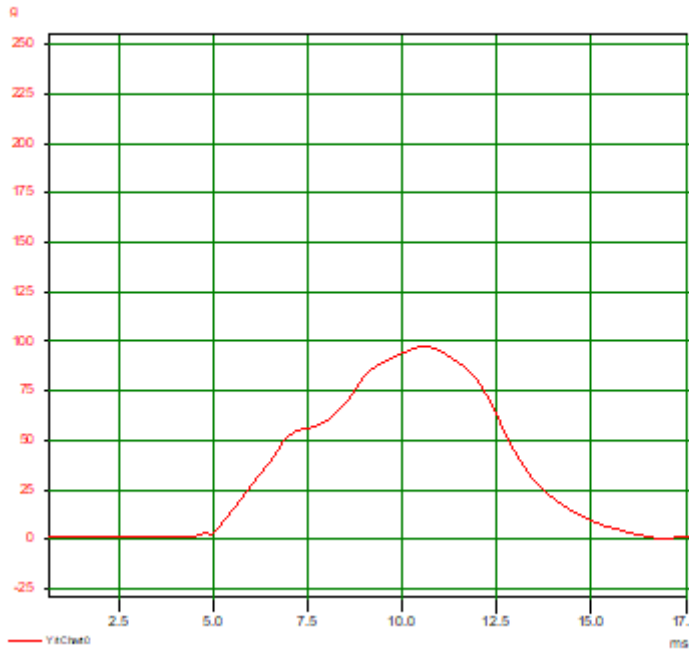
6 Side Flat 535 UV Helmet 3 44699



163g

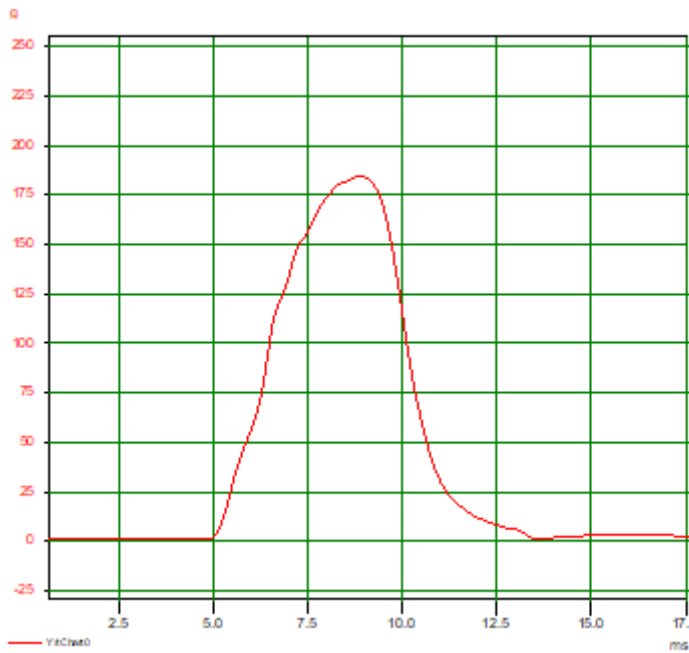
Appendix 2

5 Crown Side Kerb 495 UV Helmet 3 44702



98g

6 Back Flat 495 UV Helmet 3 44702



185g

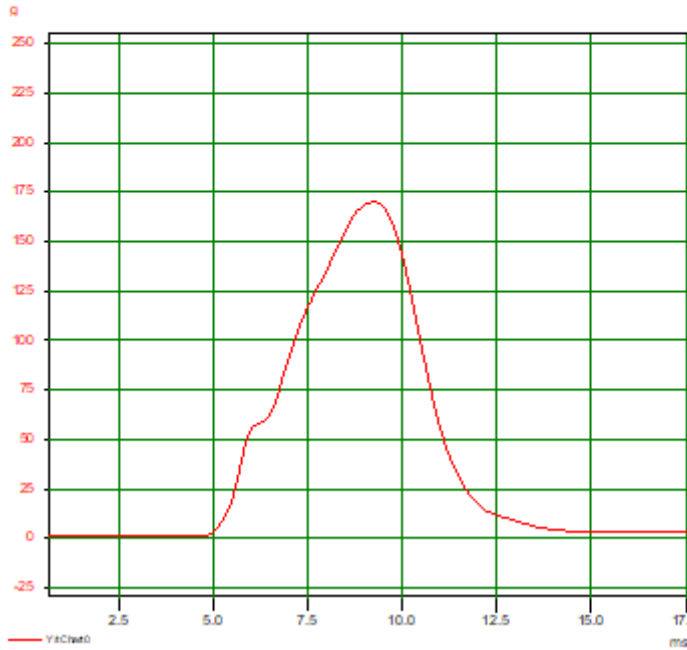
Appendix 2

1 Front Kerb 495 +50 Helmet 1 44704

No Graf Generated

156g

2 Side Flat 495 + 50 Helmet 1 44704



170g

Verifikat

Transaktion 09222115557476848366

Dokument

1141417-2 Schou Y-03 and Y-25 Part test EN 1078 Bicycle helmet

Huvuddokument

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