

SAFETY COMPLIANCE TESTING FOR FMVSS No. 218 MOTORCYCLE HELMETS

Brand: BELL
Model: Rogue
Size: Medium

Prepared For

Bell Sports
5550 Scotts Valley Drive,
Scotts Valley, CA

24 September 2012

Report No.: 542.0002.005

Prepared By



Taicang ACT Sporting Goods Testing Co., Ltd.
No. 35 Zhenghe Road,
Ludu Town, Taicang City, Suzhou,
Jiangsu Province, China 215412
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Contract File No.: 542.0002

Test File: 005

T:\Templates\DOT Helmet Templates\Official DOT (early compliance) Report Template for ACT Taicang 4 Jan 2013.dot

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 24 September 2012

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Contract File No.: 542.0002

Test File: 005

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PURPOSE OF EARLY COMPLIANCE TEST

Purpose:

The purpose of this test was to determine if the motorcycle helmets supplied by:

Xiamen Yeu Chuan Composite Technology Co., Ltd.

met the requirements of

Federal Motor Vehicle Safety Standard No. 218: Motorcycle Helmets effective May 13, 2013.

All samples received were in good condition and appropriate for these tests.

Test Procedure:

This test was performed following TP-218-07 and ACT Lab Cadex Helmet Testing Manual 2.3.

Contract File No.: 542.0002

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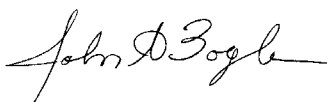
HELMET DATA

Helmet Brand Name	BELL						
Model Designation	Rogue						
Manufacturer	Bell Sports						
Helmet Size Label	M (57-58cm)						
Test Headform size	Small		Medium	X	Large		
Helmet Positioning Index (HPI)	52mm		Manufacturer supplied	X	ACT determined		
Helmet Coverage	Partial	X	Full		Complete		Modular
Shell Material	Fiberglass and Polyester Resin						
Liner Material	Expanded Polystyrene						
Comfort Padding	Resilient Foam						
Buckle Description	Double D-Rings						

HELMET	A Ambient	B Low Temp	C High Temp	D Water Immersed	E Spare
Shell Color/Pattern	Black	Black	Black	Black	---
Weight (grams)	1072	1104	1122	1096	---
Month & Year of Manufacture	9/12	9/12	9/12	9/12	---

Other Standard Label(s) Present?	None	X	Yes, list	
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Reviewed by: John Bogler



COMMENTS:

1. This Rogue Medium helmet met all FMVSS 218 requirements.
2. All helmets were received in undamaged condition and were appropriate for testing.
3. Weights listed above for helmets A-D are as tested.

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SUMMARY OF TEST RESULTS

INDICATE P - Pass or F - Fail

HELMET	A	B	C	D	COMMENTS
TEST	AMBIENT	LOW TEMP	HIGH TEMP	WATER IMMERSED	
IMPACT	P	P	P	P	
PENETRATION	P	P	P	P	
RETENTION	P	P	P	P	

TEST	PASS	FAIL
PERIPHERAL VISION	P	
PROJECTIONS	P	
LABELING	P	

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SELECTION OF APPROPRIATE HEADFORM

Paragraph S6.1 - If the helmet size designation falls into more than one of three size ranges, it shall be tested on each appropriate headform.

HELMET SIZE DESIGNATION	HEADFORM SIZE
Less than or equal to 6-3/4 (European Size 54)	SMALL
Greater than 6-3/4, but less than or equal to 7-1/2 (European Size 60)	MEDIUM
Greater than 7-1/2 (European 60)	LARGE

CONDITIONING FOR TESTING — Paragraph S6.4 — The protective headgear shall be conditioned for not less than 4 hours and no more than 24 hours, in the specified environmental condition shown below, prior to test.

Ambient Conditions	16°C to 26°C (61°F to 79°F); 30% to 70% Relative Humidity
Low Temperature	-15°C to -5°C (5°F to 23°F)
High Temperature	45°C to 55°C (113°F to 131°F)
Water Immersion	16°C to 26°C (61°F to 79°F)

The maximum time during which the protective headgear may be out of the conditioning environment shall not exceed 4 minutes. It must then be returned to the conditioned environment for a minimum of 3 minutes for each minute or portion of a minute in excess of 4 minutes out of the conditioning environment or 12 hours, whichever is less, prior to resumption of testing.

Ambient Temperature	Ambient Humidity:
22°C	52%

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IMPACT ATTENUATION

Helmet ID	Condition	Impact #	Impact Location	Anvil	Drop Height (cm)	Velocity (m/sec)	Duration at 150G (ms)	Duration at 200G (ms)	Peak Acc. (g)	Pass/Fail
542.0002.005-A	Ambient	1	LF SIDE	FLAT	190	6.0282	2.92	0.00	189.6	Pass
542.0002.005-A	Ambient	2	LF SIDE	FLAT	190	6.0396	3.08	1.59	217.6	Pass
542.0002.005-A	Ambient	3	REAR	FLAT	190	5.9990	2.82	0.00	186.7	Pass
542.0002.005-A	Ambient	4	REAR	FLAT	190	6.0594	3.10	1.64	219.5	Pass
542.0002.005-A	Ambient	5	FRONT	HEMI	140	5.2166	0.00	0.00	96.5	Pass
542.0002.005-A	Ambient	6	FRONT	HEMI	140	5.2134	0.00	0.00	134.1	Pass
542.0002.005-A	Ambient	7	RT SIDE	HEMI	140	5.2127	0.00	0.00	90.7	Pass
542.0002.005-A	Ambient	8	RT SIDE	HEMI	140	5.2089	0.00	0.00	133.7	Pass
542.0002.005-B	Cold	1	LF SIDE	FLAT	190	6.0830	3.01	1.33	216.6	Pass
542.0002.005-B	Cold	2	LF SIDE	FLAT	190	6.0590	3.08	1.94	240.3	Pass
542.0002.005-B	Cold	3	REAR	FLAT	190	6.0565	3.31	0.00	196.4	Pass
542.0002.005-B	Cold	4	REAR	FLAT	190	6.0247	3.27	2.04	225.8	Pass
542.0002.005-B	Cold	5	FRONT	HEMI	140	5.2082	0.00	0.00	103.3	Pass
542.0002.005-B	Cold	6	FRONT	HEMI	140	5.2025	0.00	0.00	134.6	Pass
542.0002.005-B	Cold	7	RT SIDE	HEMI	140	5.2079	0.00	0.00	102.3	Pass
542.0002.005-B	Cold	8	RT SIDE	HEMI	140	5.1944	0.00	0.00	133.7	Pass
542.0002.005-C	Hot	1	LF SIDE	FLAT	190	6.0402	2.68	0.00	198.8	Pass
542.0002.005-C	Hot	2	LF SIDE	FLAT	190	6.0729	2.96	0.99	208.9	Pass
542.0002.005-C	Hot	3	REAR	FLAT	190	6.0258	2.70	0.00	177.6	Pass
542.0002.005-C	Hot	4	REAR	FLAT	190	6.0519	3.17	1.17	210.4	Pass
542.0002.005-C	Hot	5	FRONT	HEMI	140	5.1973	0.00	0.00	94.6	Pass
542.0002.005-C	Hot	6	FRONT	HEMI	140	5.1920	0.00	0.00	130.8	Pass
542.0002.005-C	Hot	7	RT SIDE	HEMI	140	5.2035	0.00	0.00	96.5	Pass
542.0002.005-C	Hot	8	RT SIDE	HEMI	140	5.2166	0.00	0.00	136.5	Pass
542.0002.005-D	Wet	1	LF SIDE	FLAT	190	6.0514	3.08	0.00	182.4	Pass
542.0002.005-D	Wet	2	LF SIDE	FLAT	190	6.0312	2.97	0.00	199.3	Pass
542.0002.005-D	Wet	3	REAR	FLAT	190	6.0596	2.10	0.00	163.1	Pass
542.0002.005-D	Wet	4	REAR	FLAT	190	6.0091	2.92	0.00	191.1	Pass
542.0002.005-D	Wet	5	FRONT	HEMI	140	5.2042	0.00	0.00	93.6	Pass
542.0002.005-D	Wet	6	FRONT	HEMI	140	5.2099	0.00	0.00	124.5	Pass
542.0002.005-D	Wet	7	RT SIDE	HEMI	140	5.2093	0.00	0.00	97.9	Pass
542.0002.005-D	Wet	8	RT SIDE	HEMI	140	5.2139	0.00	0.00	130.8	Pass

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PENETRATION

Paragraph S5.2 and S7.2

WEIGHT OF STRIKER: 2.95 to 3.06kg (6 pounds, 8 ounces to 6 pounds, 12 ounces)

POINT OF STRIKER: Radius = 0.5 ± 0.1 mm (0.02 ± 0.004 in.), included angle of $60^\circ \pm 0.5^\circ$, hardness minimum of 60 Rockwell "C" Scale and a cone height of not less than 3.8 ± 0.038 cm (1.5 ± 0.015 in.).

HEIGHT OF FALL: $300\text{cm} \pm 1.5\text{cm}$, measured from the tip of the striker point to the outer surface of the mounted protective headgear.

FAILURE CRITERION: When tested, the protective headgear shall be failed if the penetrator has made an indentation in the headform.

TEST	HELMET	TEST LOCATION	PASS	FAIL	CONDITIONS
1	A	Crown	X		AMBIENT
2	A	Right Rear	X		AMBIENT
3	B	Crown	X		LOW TEMPERATURE
4	B	Right Rear	X		LOW TEMPERATURE
5	C	Crown	X		HIGH TEMPERATURE
6	C	Right Rear	X		HIGH TEMPERATURE
7	D	Crown	X		IMMERSED
8	D	Right Rear	X		IMMERSED

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RETENTION SYSTEM

Paragraph S5.3 and S7.3

REQUIREMENTS:

READING	APPLIED LOAD
INITIAL	22.68kg, + 4.54kg, - 0kg (50.0 Lbs, + 10 Lbs, - 0 Lbs)
FINAL	136kg, + 0kg, - 2.3kg(300.0 Lbs, + 0 Lbs, - 5 Lbs)

ELONGATION NOT TO EXCEED 2.5cm (1.0 INCH) AFTER LOAD INCREASE

HELMET	CONDITIONS	ELONGATION (cm)
A	AMBIENT	1.2
B	LOW TEMPERATURE	1.0
C	HIGH TEMPERATURE	0.9
D	WATER IMMERSED	0.8

PERIPHERAL VISION - Paragraph S5.4 - Helmet shall provide a minimum peripheral vision of 105° to each side of the midsagittal plane. The brow opening shall be at least 2.54cm (1 inch) above all points in the basic plane that are within the angles of peripheral vision.

	REQUIREMENTS	TEST RESULTS
DEGREE EACH SIDE M.S. PLANE	> 105°	Pass: > 105°
BROW OPENING	> 2.5cm (1 inch)	Pass: >2.5cm at 105°

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PROJECTIONS

Paragraph S5.5

REQUIREMENTS:

PROJECTION	REQUIREMENT
Internal rigid	None
External rigid	Operational, shall not protrude more than 5 mm

TEST RESULTS:

PROJECTION	PRESENT?	HEIGHT (mm)
Internal	None	Not Applicable
External	Rivet	1mm

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LABELING

S5.6.1 *Labeling* - Each helmet shall be permanently and legibly labeled, in a manner such that the label(s) can be easily read without removing padding or any other permanent part, with the following:

Required Information	Pass/Fail	Permanent
Manufacturer's name or identification	Pass	Pass
Discrete size	Pass	Pass
Month and year of manufacture	Pass	Pass
Instructions to the purchaser as follows:	-----	-----
"Shell and liner constructed of (identify type(s) of materials)."	Pass	Pass
"Helmet can be seriously damaged by some common substances without damage being visible to the user."	Pass	Pass
"Apply only the following: (Recommended cleaning agents, paints, adhesives, etc., as appropriate.)"	Pass	Pass
"Make no modifications."	Pass	Pass
"Fasten helmet securely."	Pass	Pass
"If helmet experiences a severe blow, return it to the manufacturer for inspection, or destroy it and replace it."	Pass	Pass

COMMENTS: Labels were determined to be both easily read and permanent based on the TP-218-07, Section 12.5.4.

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Date: 24 September 2012

LABELING

S5.6.2 Certification. Each helmet shall be labeled permanently and legibly with a label, constituting the manufacturer's certification that the helmet conforms to the applicable Federal motor vehicle safety standards, that is separate from the label(s) used to comply with S5.6.1, and complies with paragraphs (a) through (c) of this section.

(a) Content, format, and appearance. The label required by paragraph S5.6.2 shall have the following content, format, and appearance:

Required Certification Information	Pass/Fail	Permanent
The symbol "DOT," horizontally centered on the label, in letters not less than 0.38 inch (1.0 cm) high.	Pass	Pass
The term "FMVSS No. 218," horizontally centered beneath the symbol DOT, in letters not less than 0.09 inches (0.23 cm) high.	Pass	
The word "CERTIFIED," horizontally centered beneath the term "FMVSS No. 218," in letters not less than 0.09 inches (0.23 cm) high.	Pass	
The precise model designation horizontally centered above the symbol DOT, in letters and/or numerals not less than 0.09 inch (0.23 cm) high.	Pass	
The manufacturer's name and/or brand, horizontally centered above the model designation, in letters and/or numerals not less than 0.09 inch (0.23 cm) high.	Pass	
All symbols, letters and numerals shall be in a color that contrasts with the background of the label.	Pass	
No information, other than the information specified in subparagraph (a), shall appear on the label.	Pass	
The label shall appear on the outer surface of the helmet and be placed so that it is centered laterally with the horizontal centerline of the DOT symbol located a minimum of 1 inch (2.5 cm) and a maximum of 3 inches (7.6 cm) from the bottom edge of the posterior portion of the helmet.	Pass	

COMMENTS: Labels were determined to be both easily read and permanent based on the TP-218-07, Section 12.5.4.

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Test File: 005

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Date: 24 September 2012

TEST DATA

Contract File No.: 542.0002

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Technician: Kidman Yu

Date: 24 September 2012

Uni-Axial Calibration

M.E.P. Pad Model :

Helmet Manufacturer : Bell

Address :

Testing Laboratory : Taicang ACT Lab

Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu Province,
China 215412

Laboratory Technician name : Kidman

Laboratory Temperature : deg C

Laboratory Humidity : %

Selected Filter Frequency : 1000 Hz

Acc. sensitivity (axis Z) : mV/G

Acc. sensitivity (axis X) : mV/G

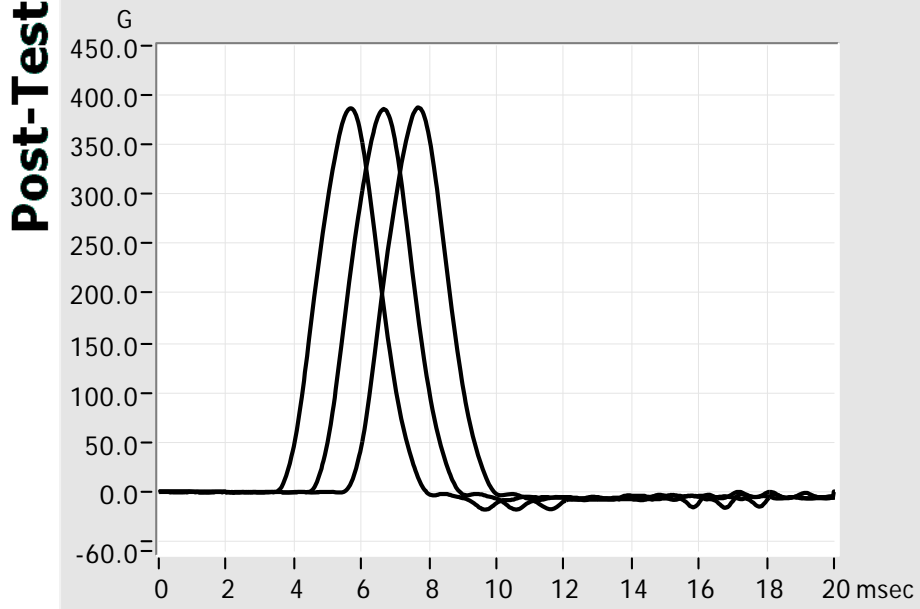
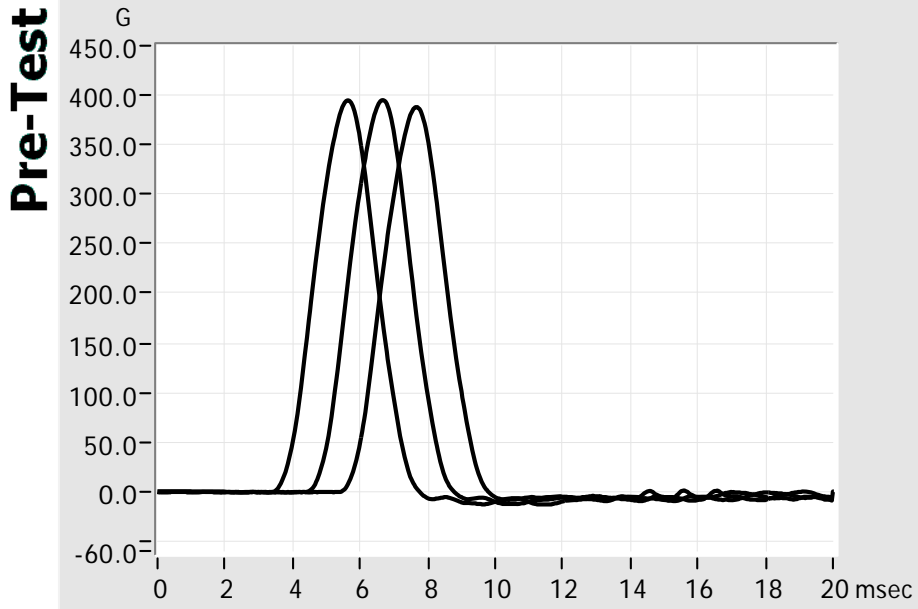
Acc. sensitivity (axis Y) : mV/G

Drop Device :

Drop mass assembly : kg

Time gate flag height : mm

Calibration peak : G +/- G



Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Delta T 150G (msec)	Delta T 200G (msec)	Test Date	Test Time	Friction (%)	PASS or FAIL
Pre-Test	1	394.7	100.0	2.34	1.99	2012-09-24	13:07:43	0.7	Pass
	2	395.2	100.0	2.34	1.99	2012-09-24	13:09:09	0.9	Pass
	3	387.9	4.3872	100.0	2.37	2012-09-24	13:10:19	0.9	Pass
Post-Test	1	387.0	4.3863	100.0	1.99	2012-09-24	13:43:05	1.0	Pass
	2	386.0	4.3784	100.0	1.99	2012-09-24	13:44:09	1.1	Pass
	3	387.4	4.3981	100.0	2.38	2012-09-24	13:45:13	0.7	Pass

Curve impact #2 : shift of 1ms
Curve impact #3 : shift of 2ms

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

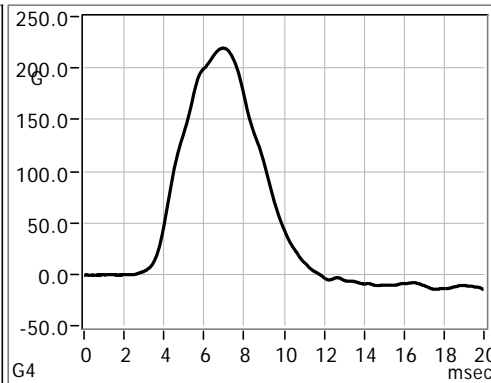
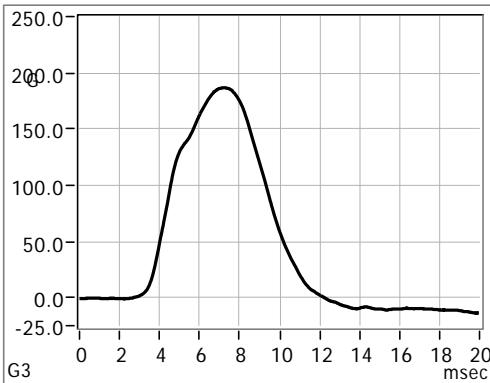
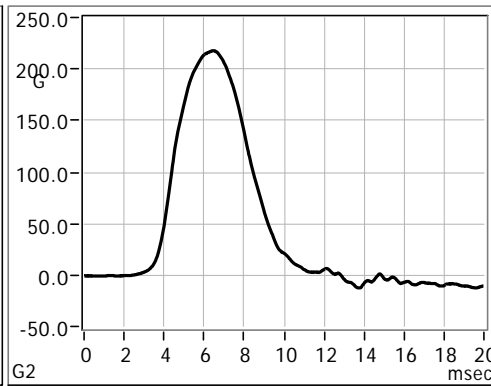
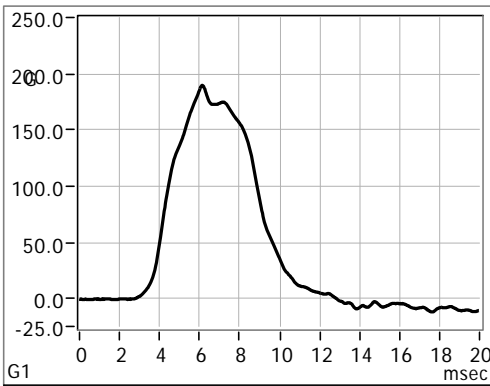
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : Bell
Address :

Laboratory Technician name : Kidman

Batch Number :

Ref. P.O. Number :



Model : Rogue
Color : Black
Size : Medium
Weight : 1072.00 g
Manufacturing Date : 24 Sep 2012
Standard Request : FMVSS218
Identification Code : 542.0002.005-A
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Ambient
Laboratory Temperature : 22 deg C
Laboratory Humidity : 52 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.000 kg
Time gate flag height : 25.60 mm
Acc. sensibility (axis Z) : 10.12

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
1	189.6	6.0282	190.0	FLAT	2.92	0.00	LF SIDE	2012-09-24	13:13:30	1.3	Pass
2	217.6	6.0396	190.0	FLAT	3.08	1.59	LF SIDE	2012-09-24	13:13:52	1.1	Pass
3	186.7	5.9990	190.0	FLAT	2.82	0.00	REAR	2012-09-24	13:26:12	1.7	Pass
4	219.5	6.0594	190.0	FLAT	3.10	1.64	REAR	2012-09-24	13:26:35	0.7	Pass

Impact Uni-Axial

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Address : No.35 Zhenghe Road, Ludu Town,
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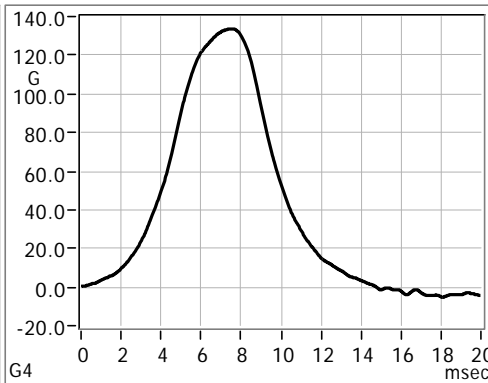
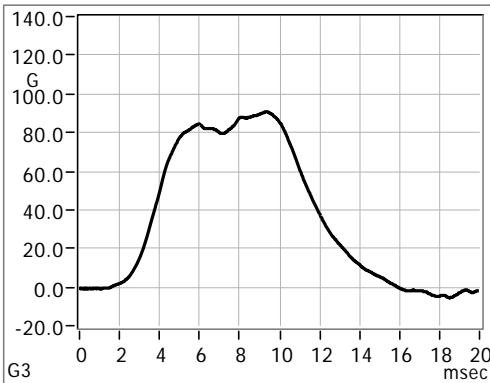
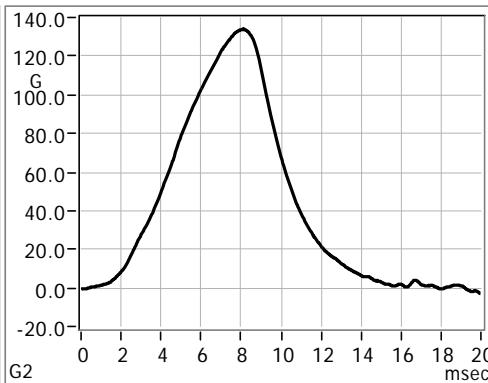
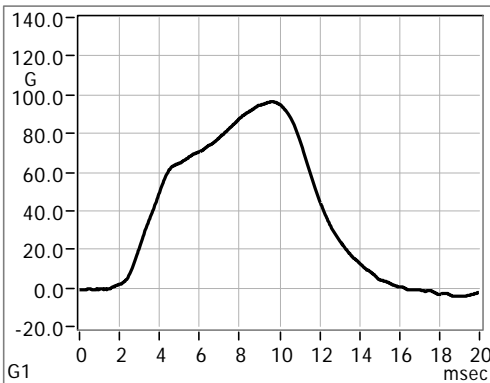
Helmet Manufacturer : Bell

Address :

Laboratory Technician name : Kidman

Batch Number :

Ref. P.O. Number :



Model : Rogue
Color : Black
Size : Medium
Weight : 1072.00 g
Manufacturing Date : 24 Sep 2012
Standard Request : FMVSS218
Identification Code : 542.0002.005-A
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Ambient
Laboratory Temperature : 22 deg C
Laboratory Humidity : 52 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.000 kg
Time gate flag height : 25.60 mm
Acc. sensibility (axis Z) : 10.12

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
5	96.5	5.2166	140.0	HEMI	0.00	0.00	FRONT	2012-09-24	13:29:07	0.4	Pass
6	134.1	5.2134	140.0	HEMI	0.00	0.00	FRONT	2012-09-24	13:29:18	0.5	Pass
7	90.7	5.2127	140.0	HEMI	0.00	0.00	RT SIDE	2012-09-24	13:39:31	0.5	Pass
8	133.7	5.2089	140.0	HEMI	0.00	0.00	RT SIDE	2012-09-24	13:39:40	0.6	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

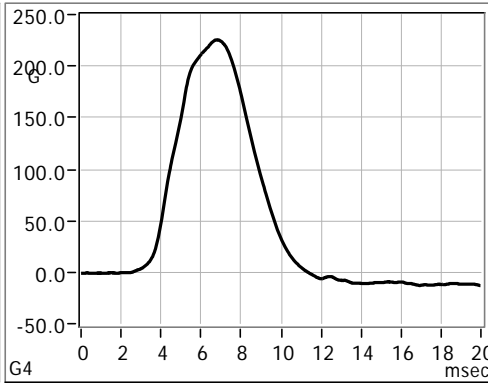
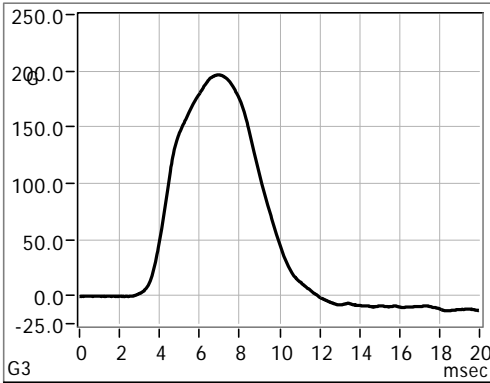
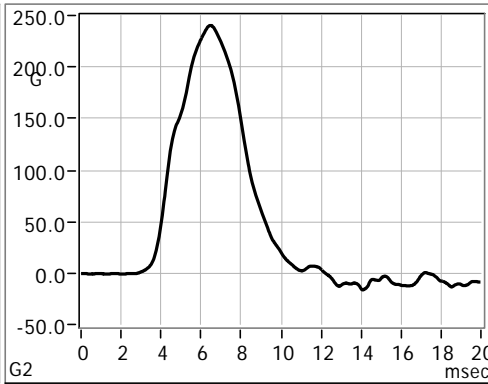
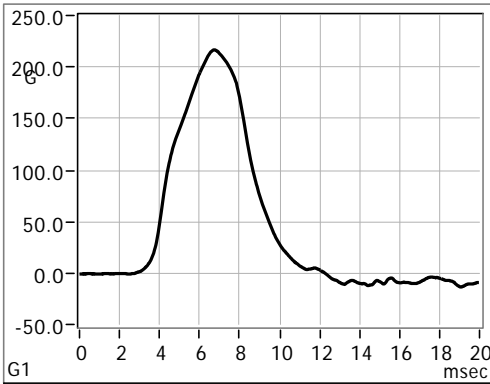
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : Bell
Address :

Laboratory Technician name : Kidman

Batch Number :

Ref. P.O. Number :



Model : Rogue
Color : Black
Size : Medium
Weight : 1104.00 g
Manufacturing Date : 24 Sep 2012
Standard Request : FMVSS218
Identification Code : 542.0002.005-B
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Cold
Laboratory Temperature : 22 deg C
Laboratory Humidity : 52 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.000 kg
Time gate flag height : 25.60 mm
Acc. sensibility (axis Z) : 10.12

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
1	216.6	6.0830	190.0	FLAT	3.01	1.33	LF SIDE	2012-09-24	13:15:00	0.4	Pass
2	240.3	6.0590	190.0	FLAT	3.08	1.94	LF SIDE	2012-09-24	13:15:21	0.7	Pass
3	196.4	6.0565	190.0	FLAT	3.31	0.00	REAR	2012-09-24	13:24:28	0.8	Pass
4	225.8	6.0247	190.0	FLAT	3.27	2.04	REAR	2012-09-24	13:24:50	1.3	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

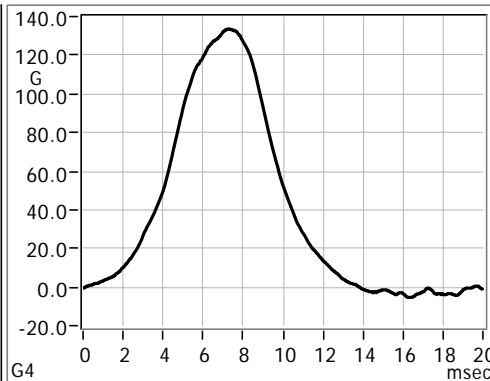
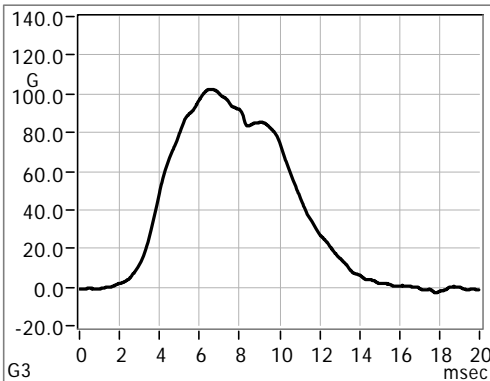
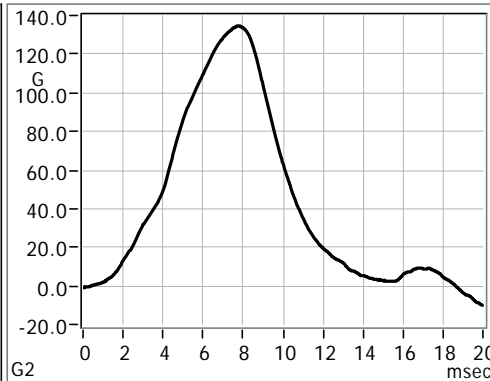
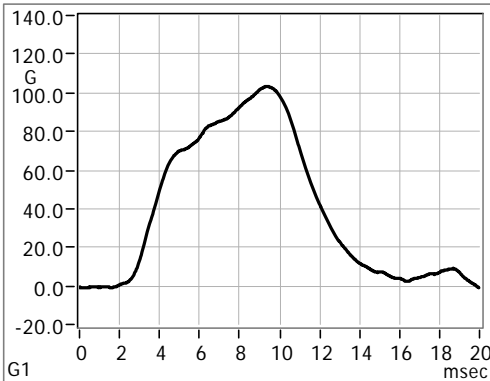
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : Bell
Address :

Laboratory Technician name : Kidman

Batch Number :

Ref. P.O. Number :



Model : Rogue
Color : Black
Size : Medium
Weight : 1104.00 g
Manufacturing Date : 24 Sep 2012
Standard Request : FMVSS218
Identification Code : 542.0002.005-B
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Cold
Laboratory Temperature : 22 deg C
Laboratory Humidity : 52 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.000 kg
Time gate flag height : 25.60 mm
Acc. sensibility (axis Z) : 10.12

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
5	103.3	5.2082	140.0	HEMI	0.00	0.00	FRONT	2012-09-24	13:30:11	0.6	Pass
6	134.6	5.2025	140.0	HEMI	0.00	0.00	FRONT	2012-09-24	13:30:21	0.7	Pass
7	102.3	5.2079	140.0	HEMI	0.00	0.00	RT SIDE	2012-09-24	13:36:16	0.6	Pass
8	133.7	5.1944	140.0	HEMI	0.00	0.00	RT SIDE	2012-09-24	13:36:26	0.9	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

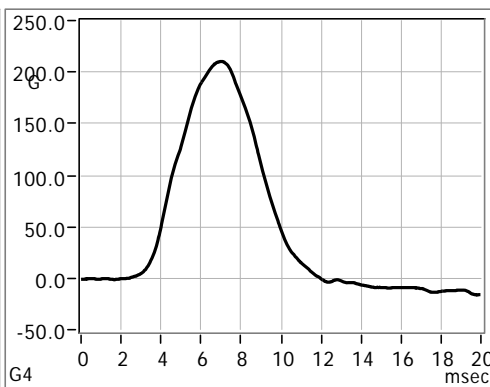
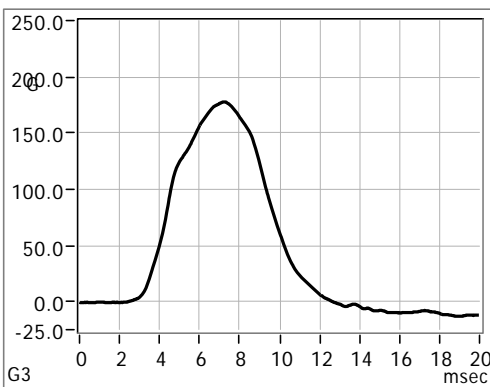
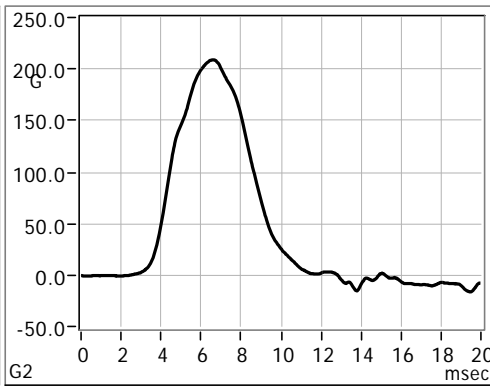
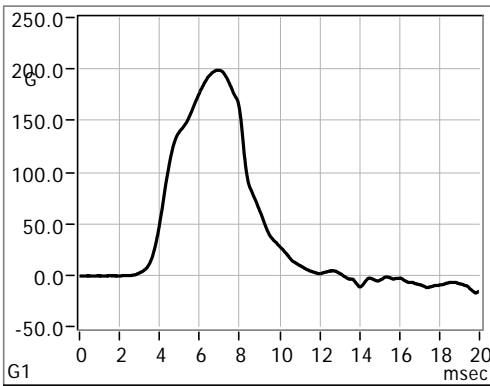
Helmet Manufacturer : Bell

Address :

Laboratory Technician name : Kidman

Batch Number :

Ref. P.O. Number :



Model : Rogue
 Color : Black
 Size : Medium
 Weight : 1122.00 g
 Manufacturing Date : 24 Sep 2012
 Standard Request : FMVSS218
 Identification Code : 542.0002.005-C
 Headform Model : D.O.T.
 Headform Size : C D.O.T
 Conditioning : Hot
 Laboratory Temperature : 22 deg C
 Laboratory Humidity : 52 %
 Selected Filter Frequency : 1650 Hz
 Maximum Peak G's authorized : 400 G
 Maximum Peak m/s² authorized : 3923 m/s²
 Drop mass assembly : 5.000 kg
 Time gate flag height : 25.60 mm
 Acc. sensibility (axis Z) : 10.12

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
1	198.8	6.0402	190.0	FLAT	2.68	0.00	LF SIDE	2012-09-24	13:16:37	1.1	Pass
2	208.9	6.0729	190.0	FLAT	2.96	0.99	LF SIDE	2012-09-24	13:17:12	0.5	Pass
3	177.6	6.0258	190.0	FLAT	2.70	0.00	REAR	2012-09-24	13:22:53	1.3	Pass
4	210.4	6.0519	190.0	FLAT	3.17	1.17	REAR	2012-09-24	13:23:16	0.9	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

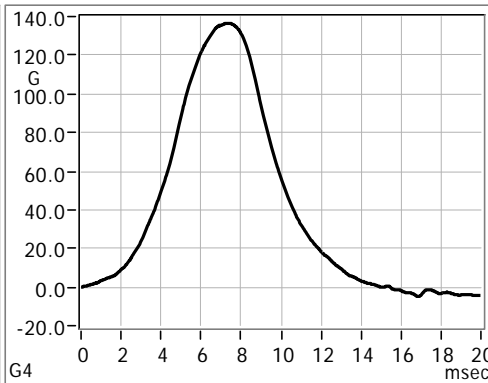
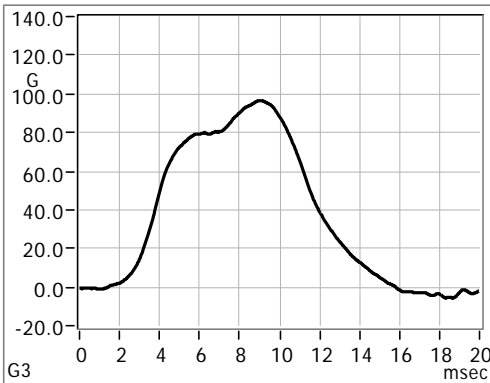
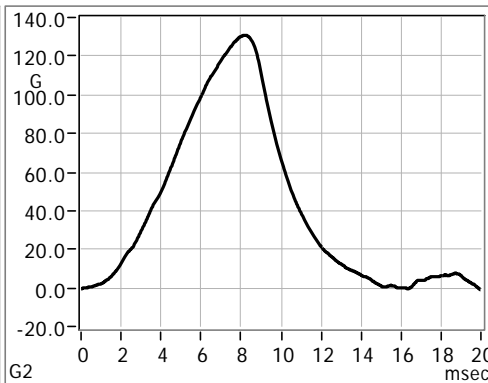
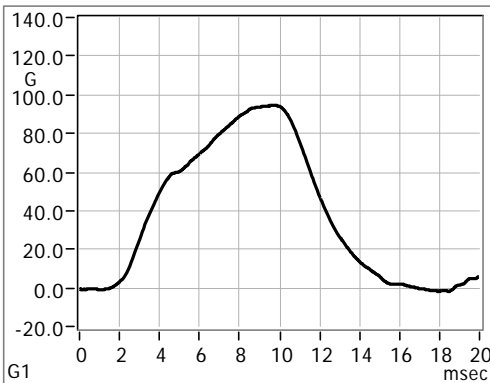
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : Bell
Address :

Laboratory Technician name : Kidman

Batch Number :

Ref. P.O. Number :



Model : Rogue
Color : Black
Size : Medium
Weight : 1122.00 g
Manufacturing Date : 24 Sep 2012
Standard Request : FMVSS218
Identification Code : 542.0002.005-C
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Hot
Laboratory Temperature : 22 deg C
Laboratory Humidity : 52 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.000 kg
Time gate flag height : 25.60 mm
Acc. sensibility (axis Z) : 10.12

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
5	94.6	5.1973	140.0	HEMI	0.00	0.00	FRONT	2012-09-24	13:31:16	0.8	Pass
6	130.8	5.1920	140.0	HEMI	0.00	0.00	FRONT	2012-09-24	13:31:25	0.9	Pass
7	96.5	5.2035	140.0	HEMI	0.00	0.00	RT SIDE	2012-09-24	13:35:04	0.7	Pass
8	136.5	5.2166	140.0	HEMI	0.00	0.00	RT SIDE	2012-09-24	13:35:13	0.4	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

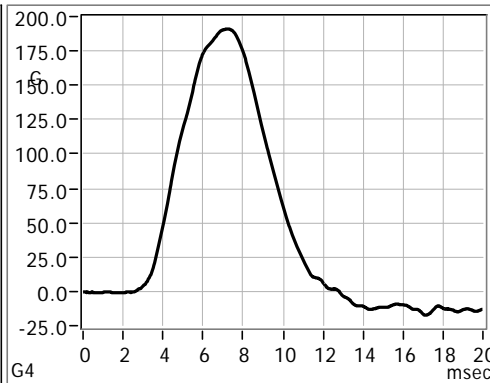
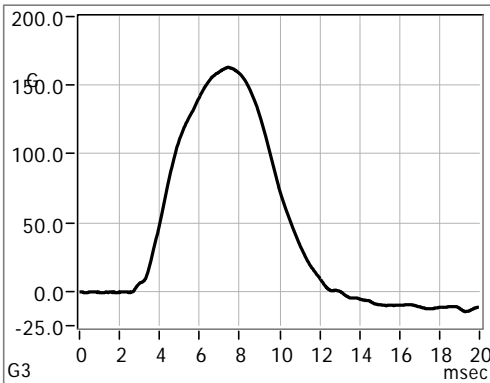
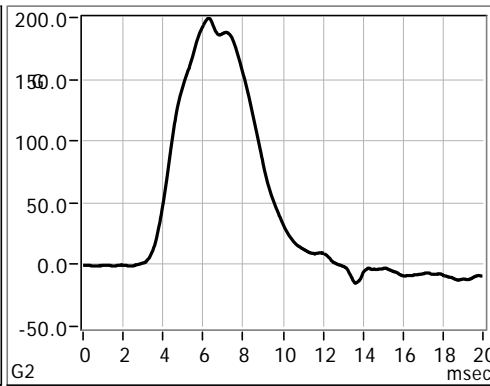
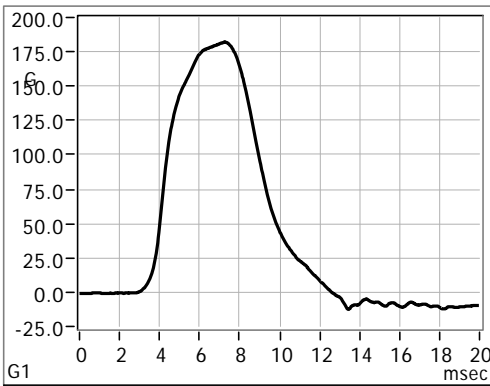
Helmet Manufacturer : Bell

Address :

Laboratory Technician name : Kidman

Batch Number :

Ref. P.O. Number :



Model : Rogue
Color : Black
Size : Medium
Weight : 1096.00 g
Manufacturing Date : 24 Sep 2012
Standard Request : FMVSS218
Identification Code : 542.0002.005-D
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Wet
Laboratory Temperature : 22 deg C
Laboratory Humidity : 52 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.000 kg
Time gate flag height : 25.60 mm
Acc. sensibility (axis Z) : 10.12

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
1	182.4	6.0514	190.0	FLAT	3.08	0.00	LF SIDE	2012-09-24	13:19:03	0.9	Pass
2	199.3	6.0312	190.0	FLAT	2.97	0.00	LF SIDE	2012-09-24	13:19:25	1.2	Pass
3	163.1	6.0596	190.0	FLAT	2.10	0.00	REAR	2012-09-24	13:21:20	0.7	Pass
4	191.1	6.0091	190.0	FLAT	2.92	0.00	REAR	2012-09-24	13:21:45	1.6	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

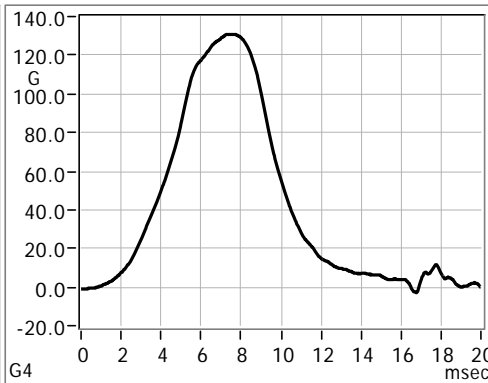
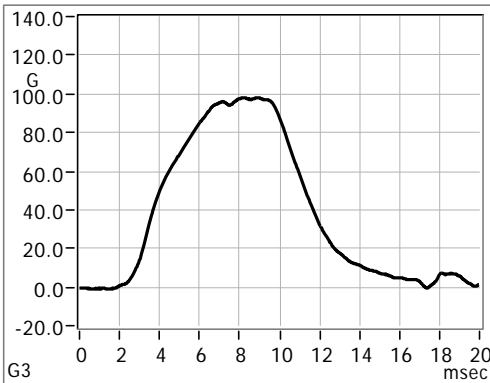
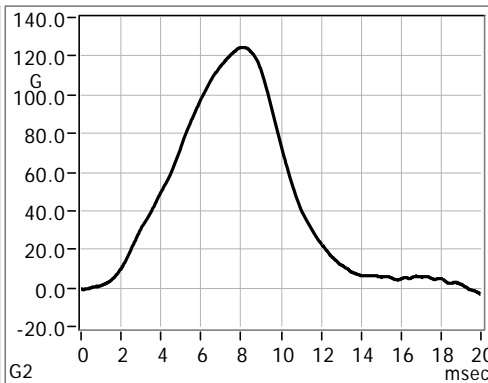
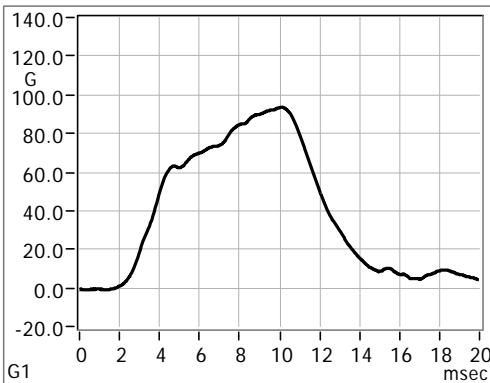
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : Bell
Address :

Laboratory Technician name : Kidman

Batch Number :

Ref. P.O. Number :



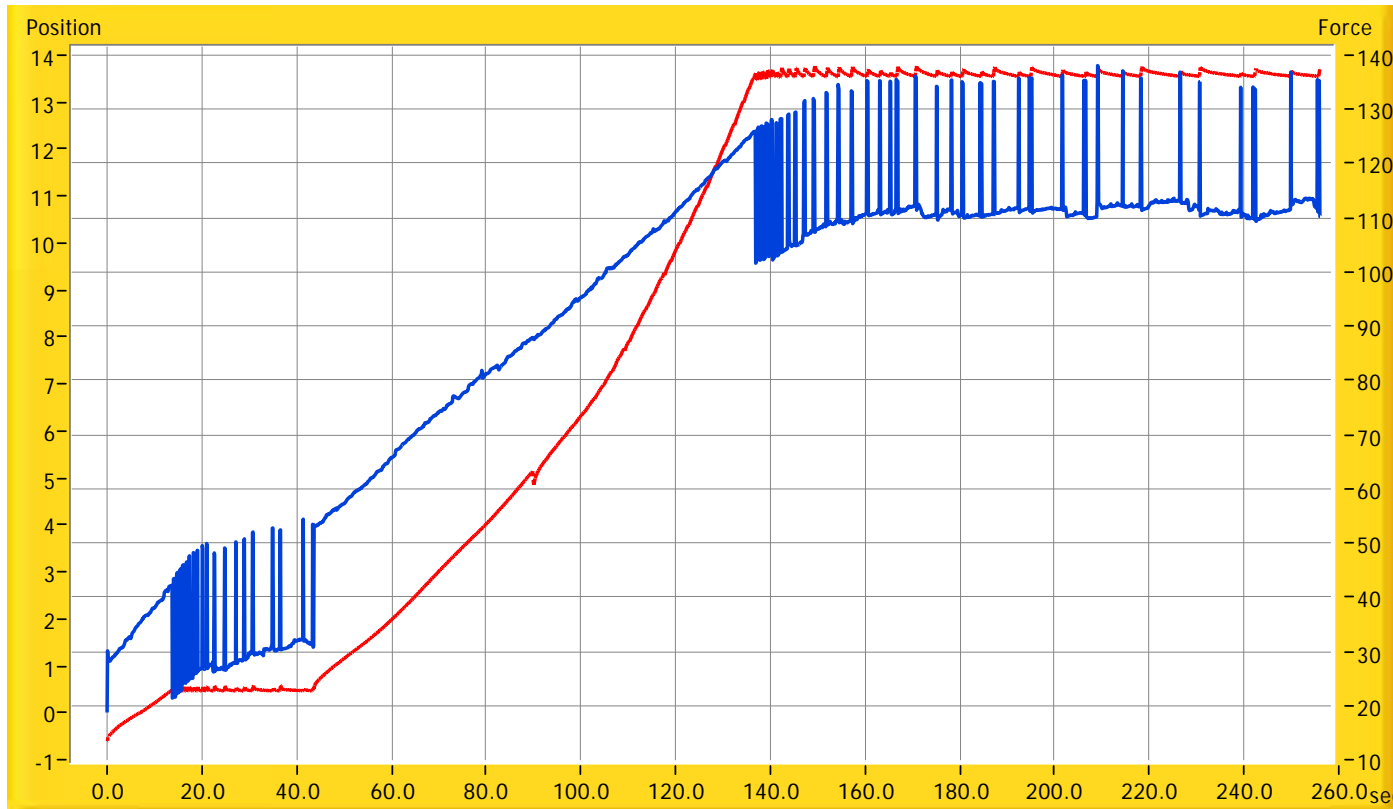
Model : Rogue
Color : Black
Size : Medium
Weight : 1096.00 g
Manufacturing Date : 24 Sep 2012
Standard Request : FMVSS218
Identification Code : 542.0002.005-D
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Wet
Laboratory Temperature : 22 deg C
Laboratory Humidity : 52 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.000 kg
Time gate flag height : 25.60 mm
Acc. sensibility (axis Z) : 10.12

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
5	93.6	5.2042	140.0	HEMI	0.00	0.00	FRONT	2012-09-24	13:32:32	0.7	Pass
6	124.5	5.2099	140.0	HEMI	0.00	0.00	FRONT	2012-09-24	13:32:45	0.6	Pass
7	97.9	5.2093	140.0	HEMI	0.00	0.00	RT SIDE	2012-09-24	13:34:01	0.6	Pass
8	130.8	5.2139	140.0	HEMI	0.00	0.00	RT SIDE	2012-09-24	13:34:13	0.5	Pass

Retention DOT

Helmet Manufacturer : Bell
Address :

Testing Laboratory : Taicang ACT Lab
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412



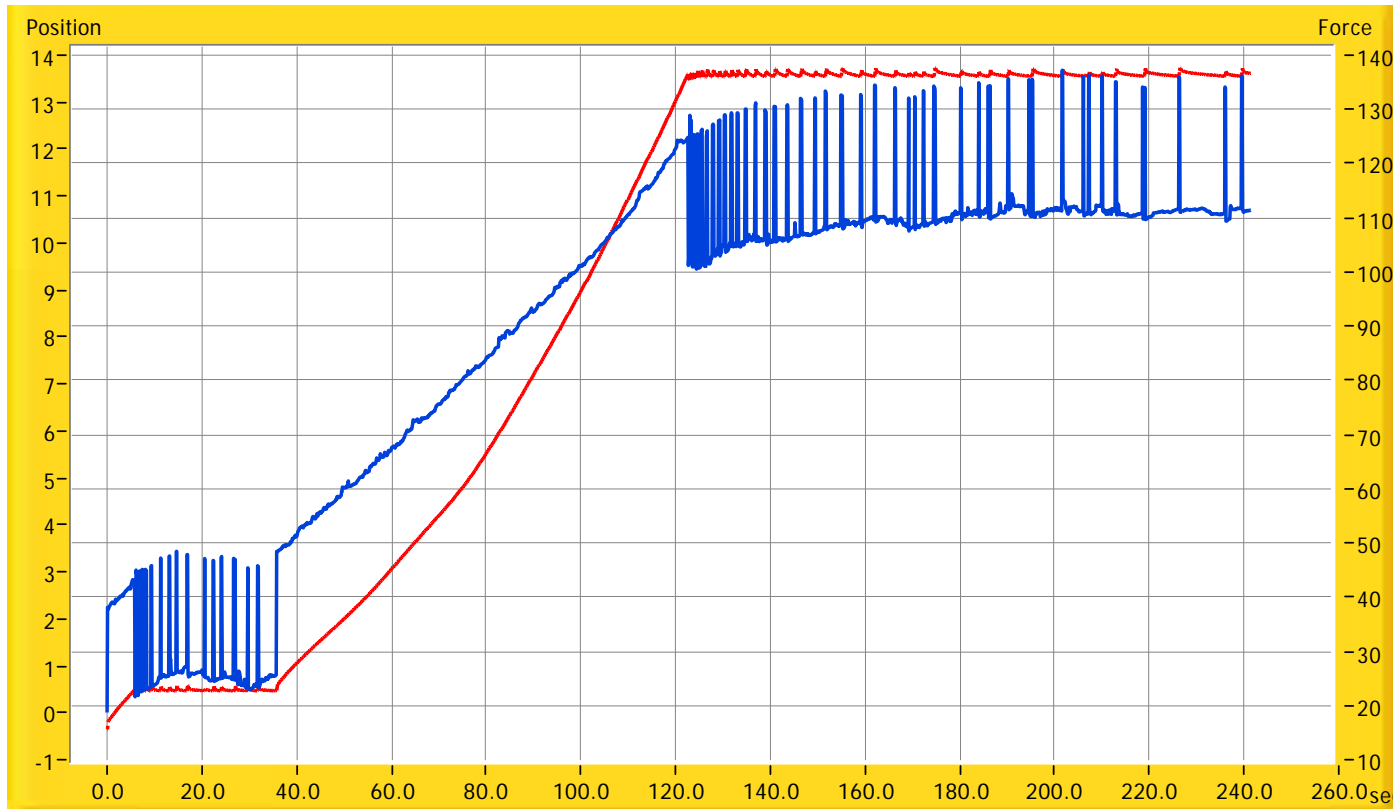
Lab Tech name : Kidman
Batch Number :
Ref. P.O. Number :
Standard Request : FMVSS218
Identification Code : 542.0002.005-A
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Ambient
Model : Rogue
Color : Black
Size : Medium
Weight : 1072.00 g
Manufactur. Date : 24 Sep 2012
Lab. Temperature : 23 deg C
Lab. Humidity : 55 %
Factor multiplier : 4.0223
Load Cell conv. (mV/Lbs) : 12.90
Enc. conv. (p/rot) : 3000 (mm/rot) : 5.0
Max. displacement authorize : 70.00 mm
Max. force authorize : 350.0 Kg
Max. force % fall authorize : 35
Test Procedure :
Target 1 (T1) -> 22.7 (Kg) (+0.0,-0.0)
Delay 1 (D1) -> 30.0 (sec)
Target 2 (T2) -> 136.1 (Kg) (+0.0,-0.0)
Delay 2 (D2) -> 120.0 (sec)
Continue
Stop

Impact #	Displ. (T1D1<->T2D2)	Pass/Fail	Max Force	Max Displ. (from T1D1)	Date	Time
1	12.07 (mm)	Pass	138.0 (Kg)	15.65 (mm)	2012-09-24	17:25:23

Retention DOT

Helmet Manufacturer : Bell
Address :

Testing Laboratory : Taicang ACT Lab
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412



Lab Tech name : Kidman
Batch Number :
Ref. P.O. Number :
Standard Request : FMVSS218
Identification Code : 542.0002.005-B
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Cold
Model : Rogue
Color : Black
Size : Medium
Weight : 1104.00 g
Manufactur. Date : 24 Sep 2012
Lab. Temperature : 23 deg C
Lab. Humidity : 55 %
Factor multiplicator : 4.0223
Load Cell conv. (mV/Lbs) : 12.90
Enc. conv. (p/rot) : 3000 (mm/rot) : 5.0
Max. displacement authorize : 70.00 mm
Max. force authorize : 350.0 Kg
Max. force % fall authorize : 35
Test Procedure :
Target 1 (T1) -> 22.7 (Kg) (+0.0,-0.0)
Delay 1 (D1) -> 30.0 (sec)
Target 2 (T2) -> 136.1 (Kg) (+0.0,-0.0)
Delay 2 (D2) -> 120.0 (sec)
Continue
Stop

Impact #	Displ. (T1D1<->T2D2)	Pass/Fail	Max Force	Max Displ. (from T1D1)	Date	Time
1	9.90 (mm)	Pass	137.6 (Kg)	14.78 (mm)	2012-09-24	17:34:24

Retention DOT

Helmet Manufacturer : Bell
Address :

Testing Laboratory : Taicang ACT Lab
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Lab Tech name : Kidman

Batch Number :

Ref. P.O. Number :

Standard Request : FMVSS218

Identification Code : 542.0002.005-C

Headform Model : D.O.T.

Headform Size : C D.O.T

Conditioning : Hot

Model : Rogue

Color : Black

Size : Medium

Weight : 1122.00 g

Manufactur. Date : 24 Sep 2012

Lab. Temperature : 23 deg C

Lab. Humidity : 55 %

Factor multiplier : 4.0223

Load Cell conv. (mV/Lbs) : 12.90

Enc. conv. (p/rot) : 3000 (mm/rot) : 5.0

Max. displacement authorize : 70.00 mm

Max. force authorize : 350.0 Kg

Max. force % fall authorize : 35

Test Procedure :

Target 1 (T1) -> 22.7 (Kg) (+0.0,-0.0)

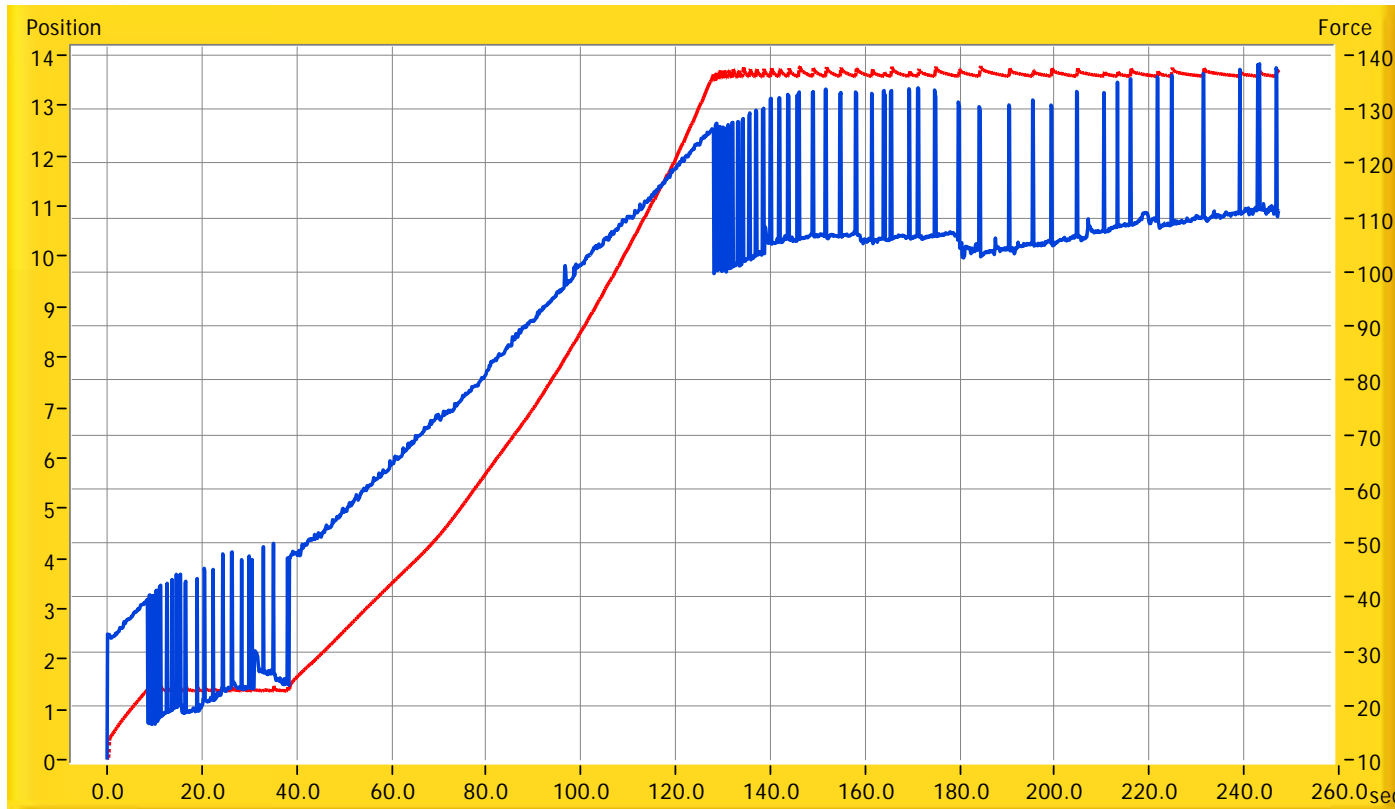
Delay 1 (D1) -> 30.0 (sec)

Target 2 (T2) -> 136.1 (Kg) (+0.0,-0.0)

Delay 2 (D2) -> 120.0 (sec)

Continue

Stop



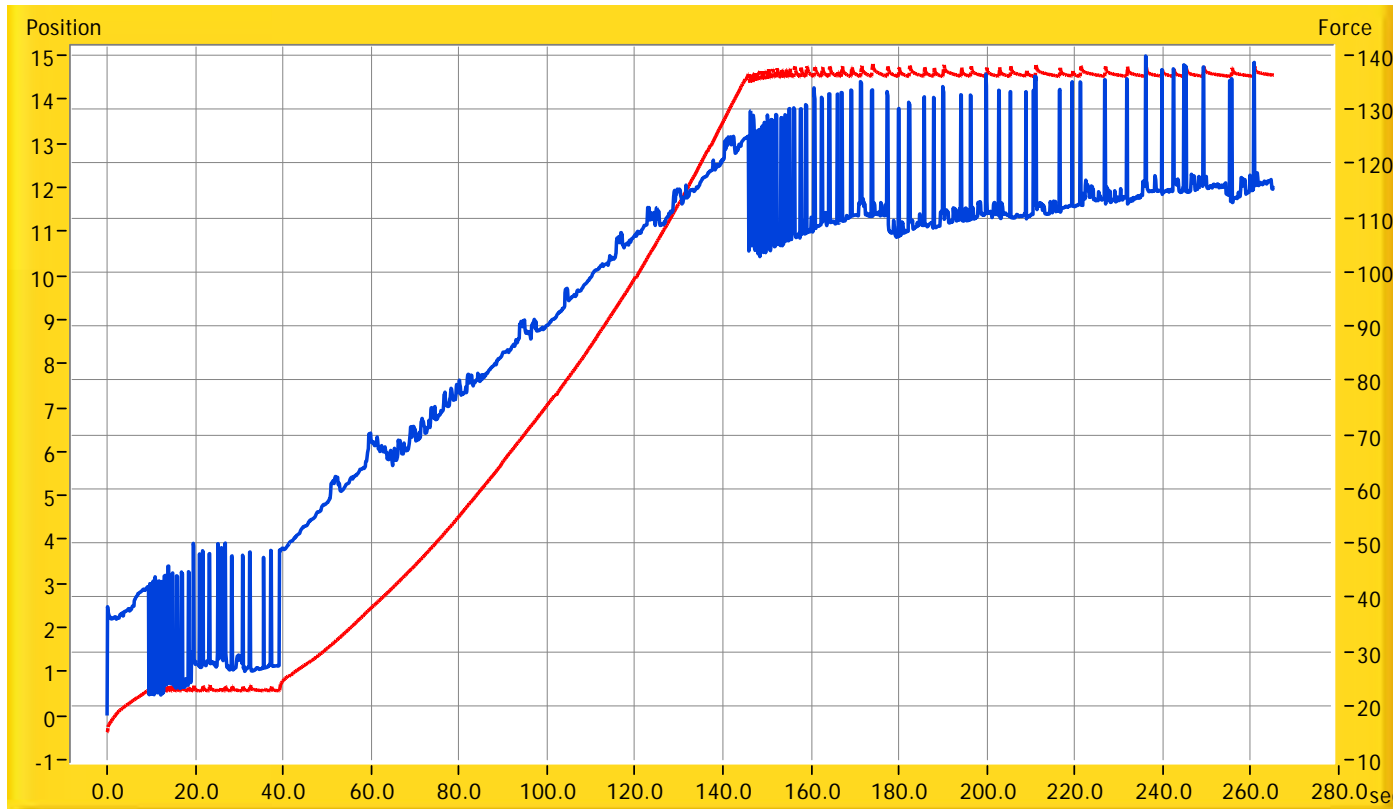
Impact #	Displ. (T1D1<->T2D2)	Pass/Fail	Max Force	Max Displ. (from T1D1)	Date	Time
1	9.37 (mm)	Pass	138.0 (Kg)	14.52 (mm)	2012-09-24	17:39:52

Retention DOT

Helmet Manufacturer : Bell
Address :

Testing Laboratory : Taicang ACT Lab

Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412



Lab Tech name : Kidman

Batch Number :

Ref. P.O. Number :

Standard Request : FMVSS218

Identification Code : 542.0002.005-D

Headform Model : D.O.T.

Headform Size : C D.O.T

Conditioning : Wet

Model : Rogue

Color : Black

Size : Medium

Weight : 1096.00 g

Manufactur. Date : 24 Sep 2012

Lab. Temperature : 23 deg C

Lab. Humidity : 55 %

Factor multiplier : 4.0223

Load Cell conv. (mV/Lbs) : 12.90

Enc. conv. (p/rot) : 3000 (mm/rot) : 5.0

Max. displacement authorize : 70.00 mm

Max. force authorize : 350.0 Kg

Max. force % fall authorize : 35

Test Procedure :

Target 1 (T1) -> 22.7 (Kg) (+0.0,-0.0)

Delay 1 (D1) -> 30.0 (sec)

Target 2 (T2) -> 136.1 (Kg) (+0.0,-0.0)

Delay 2 (D2) -> 120.0 (sec)

Continue

Stop

Impact #	Displ. (T1D1<->T2D2)	Pass/Fail	Max Force	Max Displ. (from T1D1)	Date	Time
1	8.24 (mm)	Pass	138.3 (Kg)	14.58 (mm)	2012-09-24	17:46:42



APPENDIX A

INTERPRETATIONS OR DEVIATIONS FROM FMVSS 218

Some of the impact velocities for these tests may be less than the minimum velocities specified in FMVSS 218 at S7.1.4.

Contract File No.: 542.0002

Test File: 005

T:\Templates\DOT Helmet Templates\Official DOT (early compliance) Report Template for ACT Taicang 4 Jan 2013.dot

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 24 September 2012

APPENDIX B

EQUIPMENT LIST AND CALIBRATION SCHEDULES

EQUIPMENT INFORMATION

General Information

Drop System: Monorail
Software: Cadex Impact Software v 6.4f

Item	Model	S/N
Computer	VD200PA#AB2	CNG9211DB1
Data Acquisition Board	187570H-01	13EC16A
Time Gate	Cadex	HVTG12009033-1
Control Box	PC4300	CCS120090331-1

Headforms

Item		Model	Assembly Wt., grams
Uni-Axial	Headform Size A DOT SMALL	Cadex	3454
Uni-Axial	Headform Size C DOT MEDIUM	Cadex	4941
Uni-Axial	Headform Size D DOT LARGE	Cadex	6071

Sensors

Item		Model	S/N
Uni-Axial	Accelerometer - axis Z (10.120 mV/G)	2262A-1000	L14009

Contract File No.: 542.0002

Test File: 005

T:\Templates\DOT Helmet Templates\Official DOT (early compliance) Report Template for ACT Taicang 4 Jan 2013.dot

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 24 September 2012

EQUIPMENT LIST AND CALIBRATION SCHEDULES

DOT Fixtures						
<i>Label</i>	<i>Description</i>	<i>Manufacture</i>	<i>Model</i>	<i>S/N</i>	<i>Dimensional Check</i>	<i>Next</i>
	Monorail	Cadex Inc	None	None	13 Sep 2012	13 Sep 2013
	Penetrator Tube	ACT Lab	None	None	13 Sep 2012	13 Sep 2013
	Penetrator Dart	Cadex Inc	ONE 7-10-7	None	13 Sep 2012	13 Sep 2013
	DOT Small Headform	Cadex Inc	None	5178	13 Sep 2012	13 Sep 2013
	DOT Medium Headform	Cadex Inc	None	5179	13 Sep 2012	13 Sep 2013
	DOT Large Headform	Cadex Inc	None	5190	13 Sep 2012	13 Sep 2013
	Reference Headform	Cadex Inc	None	5181	13 Sep 2012	13 Sep 2013
	Reference Headform	Cadex Inc	None	5182	13 Sep 2012	13 Sep 2013
	Reference Headform	Cadex Inc	None	5183	13 Sep 2012	13 Sep 2013
	MEP Pad	Cadex Inc	None	981220	13 Sep 2012	13 Sep 2013
	Anvil	Cadex Inc	Flat	None	13 Sep 2012	13 Sep 2013
	Anvil	Cadex Inc	Hemi	None	13 Sep 2012	13 Sep 2013
	High temp Cabinet	Shanghai Boxn	GZX-9240MBE	8285	13 Sep 2012	13 Sep 2013
	Low temp Cabinet	Haier	DW-25W300	BR062100NO OB29578VMO	13 Sep 2012	13 Sep 2013
	Water conditioning Container	None	None	None	13 Sep 2012	13 Sep 2013
	Retention Strength Tester	Cadex Inc	None	None	13 Sep 2012	13 Sep 2013
	Laser Level	Cadex Inc	None	None	13 Sep 2012	13 Sep 2013
	Computer	HP	DX2040	CNG9211DB1	13 Sep 2012	13 Sep 2013

Contract File No.: 542.0002

Test File: 005

T:\Templates\DOT Helmet Templates\Official DOT (early compliance) Report Template for ACT Taicang 4 Jan 2013.dot

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 24 September 2012

DOT Calibrated Measurement Equipment

Description	Manufacture	Model	S/N	Range	Accuracy from Cal Certs	Calibration			Maintenance	
						Last	Next	by	Last	Next
Velocity Gate Flag	Cadex Inc	None	None	25.6	1.00mm	13 Sep 2011	13 Sep 2012	ACT	13 Sep 2012	13 Sep 2013
Accelerometer	PCB	353B18	131607	2000g		13 Sep 2011	13 Sep 2012	KSFY	13 Sep 2012	13 Sep 2013
Power Supply	Santak	MT100	None	-	2.71%	-	-	-	-	-
Charge Amplifier	Schaevitz	ATA2001	None	-		25 Nov 2011	25 Nov 2012	NIM	25 Nov 2012	25 Nov 2013
Control Center System	Cadex	Pc4300	None	-		-	-	-	-	-
Velocity Gate	Cadex Inc	None	HVTG120090 331-1	-	0.16ms	31 Mar 2009	NA	Cadex Inc	31 Mar 2009	NA
Environmental Monitoring	Taiwan Taishi	1360A	090602605	-40 To +95C	2	27 Sep 2010	NA	KSFY	27 Sep 2010	NA
Scale	Henxin	ACS-6	0118223	0-6000gm	0.050g	12 May 2012	12 May 2013	KSFY	12 May 2012	12 May 2013
Loadcell	Cadex Inc	9363-b10-300-20T1R	None	300lbs.	0.1	8 Sep 2011	8 Sep 2012	KSFY	8 Sep 2012	8 Sep 2013
LVDT	Volfa	LWE-200	20028265	2.5inch	0.01	19 Sep 2011	19 Sep 2012	KSFY	19 Sep 2012	19 Sep 2013
Peripheral Vision Apparatus	Ludu facory	None	None	105 degree	0.7 degree	14 Sep 2011	14 Sep 2012	ACT	14 Sep 2012	14 Sep 2013
Digital Caliper	JS	150X0.01	300065	0-150mm	0.01mm	3 May 2012	3 May 2013	KSFY	3 May 2012	3 May 2013
Height Gauge	Shanghai LR	None	9090053	0-500mm	0.01mm	14 Sep 2011	14 Sep 2012	KSFY	14 Sep 2012	14 Sep 2013

Contract File No.: 542.0002

Test File: 005

T:\Templates\DOT Helmet Templates\Official DOT (early compliance) Report Template for ACT Taicang 4 Jan 2013.dot

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 24 September 2012

APPENDIX C
PHOTOGRAPHS

Contract File No.: 542.0002

Test File: 005

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Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 24 September 2012



Monorail Apparatus



Retention System
Strength Test Apparatus



Data Acquisition Equipment



High Temperature Chamber



Low Temperature Conditioning Cabinet



Water Immersion Equipment



