

SAFETY COMPLIANCE TESTING FOR FMVSS No. 218 MOTORCYCLE HELMETS

**Manufacturer: Zhejiang Bio Industrial & Trade Co., Ltd.
Model: HY-901
Size: XL (61-62 cm)**

Prepared For

**Zhejiang Bio Industrial & Trade Co., Ltd.
1269 QiuBin District, Jinhua City,
Zhejiang Province,
China 321016**

7 November 2013

Report No.: 539.0010.004

Prepared By



**Taicang ACT Sporting Goods Testing Co., Ltd.
No. 35 Zhenghe Road,
Ludu Town, Taicang City, Suzhou,
Jiangsu Province, China 215412
www.ACT-Lab.com**

This document shall not be reproduced except in full without written approval from ACT Lab LLC.



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009.) The Joint Communiqué is available on publications and resources page of the ILAC website at <http://www.ilac.org>. Accreditation listing and certificate can be found at <http://www.iasonline.org>.

Contract File No.: 539.0010

Test File: 004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

TABLE OF CONTENTS

Section I	Purpose of Compliance Test
Section II	Compliance Test Data Summary
Section III	Test Data
Appendix A	Interpretations or Deviations from FMVSS 218
Appendix B	Test Equipment and Calibration
Appendix C	Photographs

Contract File No.: 539.0010

Test File:004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

PURPOSE OF COMPLIANCE TEST

Purpose:

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

Zhejiang Bio Industrial & Trade Co., Ltd.

met the requirements of Federal Motor Vehicle Safety Standard No. 218: Motorcycle Helmets. All samples received were in good condition and appropriate for these tests.

Test Procedure:

This test was performed following TP-218-06 and ACT Lab Cadex Helmet Testing Manual 2.3.

Contract File No.: 539.0010

Test File:004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 4 Jan 2013.dot
Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

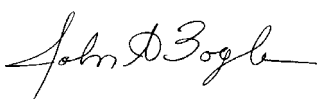
HELMET DATA

Helmet Brand Name	Unknown						
Model Designation	HY-901						
Manufacturer	Zhejiang Bio Industrial & Trade Co., Ltd.						
Helmet Size Label	XL (61-62 cm)						
Test Headform size	Small		Medium		Large		X
Helmet Positioning Index (HPI)	58 mm		Manufacturer supplied		ACT determined		X
Helmet Coverage	Partial		Full		Complete	X	Modular
Shell Material	ABS Plastic						
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)	1342	1344	1344	1342	---
Month & Year of Manufacture	3/13	3/13	3/13	3/13	---

Other Standard Label(s) Present?	None	X	Yes, list	
----------------------------------	------	---	-----------	--

Reviewed by: John Bogler



COMMENTS:

1. This HY-901 XL 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 with face shield removed.

Contract File No.: 539.0010

Test File: 004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

SUMMARY OF TEST RESULTS

INDICATE P - Pass or F - Fail

HELMET	A	B	C	D	COMMENTS
TEST	AMBIENT	LOW TEMP	HIGH TEMP	WATER IMMERSSED	
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	

Contract File No.: 539.0010

Test File:004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

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 12 hours, in the specified environmental condition shown below, prior to test.

Ambient Conditions	21°C ± 6° (70°F ± 10°F); 40% to 60% Relative Humidity
Low Temperature	-10°C + 4°C, -0°C (14°F, + 8°F, - 0°F)
High Temperature	50°C + 0°C, -4°C (122°F, + 0°F, - 8°F)
Water Immersion	25°C ± 6°C (77°F ± 10°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:
23°C	56%

Contract File No.: 539.0010

Test File: 004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

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
539.0010.004-A	Ambient	1	LF SIDE	FLAT	190	6.0430	1.64	0.00	157.3	Pass
539.0010.004-A	Ambient	2	LF SIDE	FLAT	190	6.0102	0.80	0.00	164.5	Pass
539.0010.004-A	Ambient	3	REAR	FLAT	190	5.9967	1.84	0.00	163.6	Pass
539.0010.004-A	Ambient	4	REAR	FLAT	190	5.9992	3.21	0.61	203.1	Pass
539.0010.004-A	Ambient	5	FRONT	HEMI	140	5.1660	0.00	0.00	79.6	Pass
539.0010.004-A	Ambient	6	FRONT	HEMI	140	5.2148	0.00	0.00	121.1	Pass
539.0010.004-A	Ambient	7	RT SIDE	HEMI	140	5.2037	0.00	0.00	100.4	Pass
539.0010.004-A	Ambient	8	RT SIDE	HEMI	140	5.2197	0.00	0.00	102.3	Pass
539.0010.004-B	Cold	1	LF SIDE	FLAT	190	6.0074	0.00	0.00	128.8	Pass
539.0010.004-B	Cold	2	LF SIDE	FLAT	190	6.0455	2.93	0.00	187.7	Pass
539.0010.004-B	Cold	3	REAR	FLAT	190	5.9995	0.00	0.00	142.3	Pass
539.0010.004-B	Cold	4	REAR	FLAT	190	6.0100	3.01	0.55	203.1	Pass
539.0010.004-B	Cold	5	FRONT	HEMI	140	5.2051	0.00	0.00	80.6	Pass
539.0010.004-B	Cold	6	FRONT	HEMI	140	5.2046	0.00	0.00	132.2	Pass
539.0010.004-B	Cold	7	RT SIDE	HEMI	140	5.1923	0.00	0.00	101.8	Pass
539.0010.004-B	Cold	8	RT SIDE	HEMI	140	5.2135	0.00	0.00	90.7	Pass
539.0010.004-C	Hot	1	LF SIDE	FLAT	190	5.9985	0.37	0.00	151.0	Pass
539.0010.004-C	Hot	2	LF SIDE	FLAT	190	6.0023	1.58	0.00	156.3	Pass
539.0010.004-C	Hot	3	REAR	FLAT	190	6.0102	1.97	0.00	169.4	Pass
539.0010.004-C	Hot	4	REAR	FLAT	190	6.0434	2.56	0.33	200.7	Pass
539.0010.004-C	Hot	5	FRONT	HEMI	140	5.1812	0.00	0.00	79.1	Pass
539.0010.004-C	Hot	6	FRONT	HEMI	140	5.1791	0.00	0.00	138.0	Pass
539.0010.004-C	Hot	7	RT SIDE	HEMI	140	5.2052	0.00	0.00	94.6	Pass
539.0010.004-C	Hot	8	RT SIDE	HEMI	140	5.1809	0.00	0.00	92.2	Pass
539.0010.004-D	Wet	1	LF SIDE	FLAT	190	6.0181	0.00	0.00	139.4	Pass
539.0010.004-D	Wet	2	LF SIDE	FLAT	190	6.0136	0.00	0.00	131.2	Pass
539.0010.004-D	Wet	3	REAR	FLAT	190	6.0030	1.90	0.00	163.6	Pass
539.0010.004-D	Wet	4	REAR	FLAT	190	6.0107	2.95	0.00	194.9	Pass
539.0010.004-D	Wet	5	FRONT	HEMI	140	5.1855	0.00	0.00	76.7	Pass
539.0010.004-D	Wet	6	FRONT	HEMI	140	5.1971	0.97	0.00	176.6	Pass
539.0010.004-D	Wet	7	RT SIDE	HEMI	140	5.1890	0.00	0.00	94.1	Pass
539.0010.004-D	Wet	8	RT SIDE	HEMI	140	5.1891	0.00	0.00	93.1	Pass

Contract File No.: 539.0010

Test File: 004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

PENETRATION

Paragraph S5.2 and S7.2

WEIGHT OF STRIKER: 3 kg (6 pounds, 10 ounces)

POINT OF STRIKER: Radius = 0.5mm (0.02 inch), included angle of 60°, + 1.0°, - 0.0°, hardness minimum of 60 Rockwell "C" Scale and a cone height of not less than 3.8 cm (1.5 inches).

HEIGHT OF FALL: 300cm, 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

Contract File No.: 539.0010

Test File: 004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

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	1.4
B	LOW TEMPERATURE	1.8
C	HIGH TEMPERATURE	1.3
D	WATER IMMERSED	1.5

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°

Contract File No.: 539.0010

Test File:004

T:\Templates\DOT Helmet Templates\ Official DOT Report Template for ACT Taicang 4 Jan 2013.dot
Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

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	Vent Cover Operation Switch (Non-rigid)	7mm

COMMENTS: The vent cover operation switch is greater than 5 mm in height but is loosely attached to the shell and therefore deemed non-rigid.

Contract File No.: 539.0010

Test File:004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 4 Jan 2013.dot
Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

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
(a) Manufacturer's name or identification	Pass
(b) Precise model designation	Pass
(c) Size	Pass
(d) Month and year of manufacture	Pass
(e) The symbol DOT... on the outer surface, in a color that contrasts with the background, in letters at least 1 cm high, centered laterally with the horizontal centerline of the symbol located a minimum of 2.9 cm and a maximum of 3.5 cm from the bottom edge of the posterior portion of the helmet	Pass
(f) Instructions to the purchaser as follows:	-----
(1) Shell and liner constructed of (identify type(s) of materials).	Pass
(2) Helmet can be seriously damaged by some common substances without damage being visible to the user.	Pass
(2) Apply only the following: (Recommended cleaning agents, paints, adhesives, etc., as appropriate.	Pass
(3) Make no modifications.	Pass
(3) Fasten helmet securely.	Pass
(3) If helmet experiences a severe blow, return it to the manufacturer for inspection, or destroy it and replace it.	Pass

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

Contract File No.: 539.0010

Test File: 004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

TEST DATA

Contract File No.: 539.0010

Test File:004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 4 Jan 2013.dot
Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

Uni-Axial Calibration

M.E.P. Pad Model : 1 MEP

Helmet Manufacturer : Bio
Address :

Laboratory Temperature : 23 deg C

Laboratory Humidity : 56 %

Selected Filter Frequency : 1000 Hz

Acc. sensitivity (axis Z) : 10.12 mV/G

Acc. sensitivity (axis X) : 0.00 mV/G

Acc. sensitivity (axis Y) : 0.00 mV/G

Testing Laboratory : Taicang ACT Lab

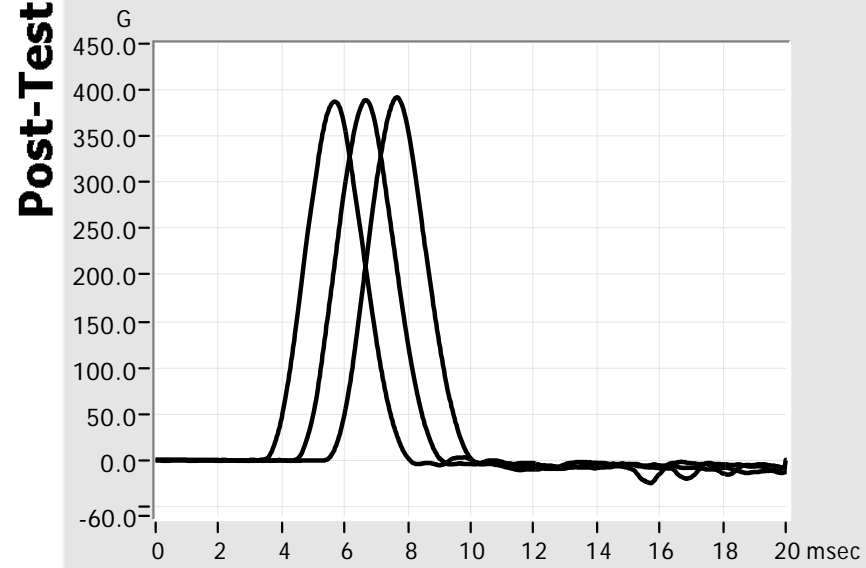
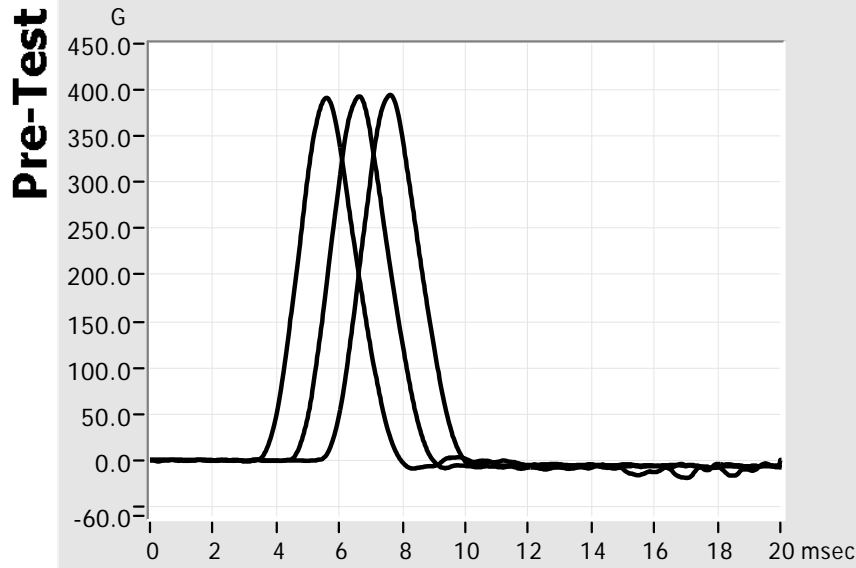
Address : No.35 Zhenghe Road, Ludu Town,
Taicang City, Suzhou, Jiangsu Province,
China 215412

Drop Device : Spherical Impactor (Uni-Axial)

Drop mass assembly : 6.100 kg Time gate flag height : 25.60 mm

Laboratory Technician name : Jesse

Calibration peak : 400.0 G +/- 20.00 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	391.3	4.5835	110.0	2.40	1.99	2013-11-07	10:46:00	1.3	Pass
	2	392.7	4.5795	110.0	2.43	2.02	2013-11-07	10:47:03	1.4	Pass
	3	394.2	4.5996	110.0	2.43	2.03	2013-11-07	10:48:03	1.0	Pass
Post-Test	1	387.0	4.5903	110.0	2.43	2.04	2013-11-07	11:35:22	1.2	Pass
	2	388.9	4.6042	110.0	2.45	2.04	2013-11-07	11:36:25	0.9	Pass
	3	391.8	4.6264	110.0	2.45	2.05	2013-11-07	11:37:28	0.4	Pass

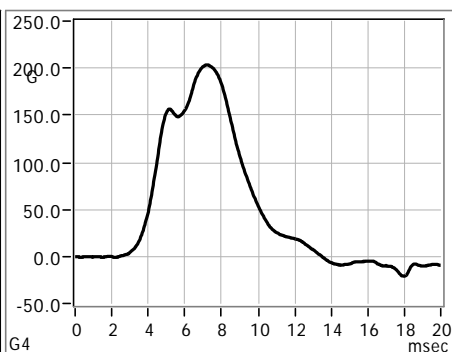
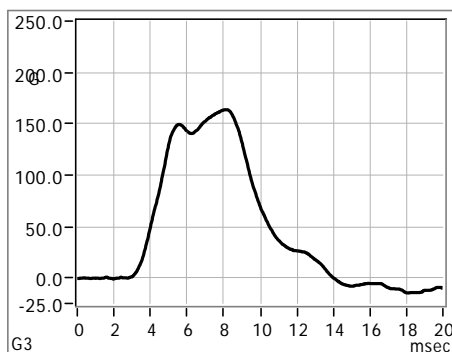
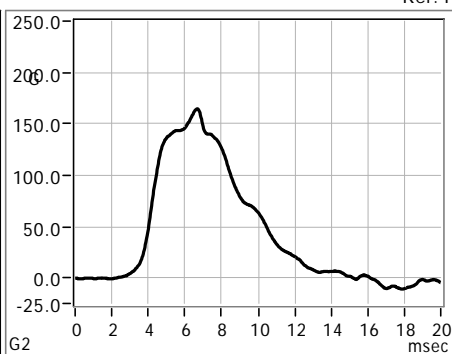
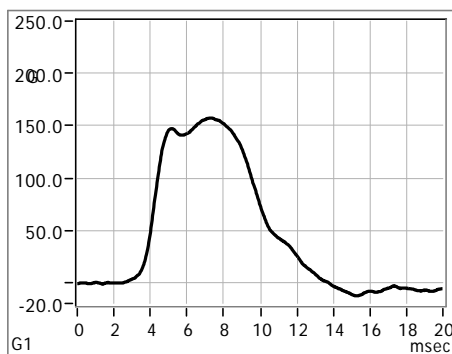
Curve impact #2 : shift of 1ms
Curve impact #3 : shift of 2ms

Impact Uni-Axial

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

Helmet Manufacturer : Bio
 Address :

Laboratory Technician name : Jesse
 Batch Number :
 Ref. P.O. Number :



Model : HY-901
 Color : Black
 Size : XL
 Weight : 1342.00 g
 Manufacturing Date : 07 Nov 2013
 Standard Request : FMVSS218
 Identification Code : 539.0010.004-A
 Headform Model : D.O.T.
 Headform Size : D D.O.T
 Conditioning : Ambient
 Laboratory Temperature : 23 deg C
 Laboratory Humidity : 56 %
 Selected Filter Frequency : 1650 Hz
 Maximum Peak G's authorized : 400 G
 Maximum Peak m/s² authorized : 3923 m/s²
 Drop mass assembly : 6.100 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	157.3	6.0430	190.0	FLAT	1.64	0.00	LF SIDE	2013-11-07	10:54:07	1.0	Pass
2	164.5	6.0102	190.0	FLAT	0.80	0.00	LF SIDE	2013-11-07	10:54:46	1.5	Pass
3	163.6	5.9967	190.0	FLAT	1.84	0.00	REAR	2013-11-07	11:13:42	1.8	Pass
4	203.1	5.9992	190.0	FLAT	3.21	0.61	REAR	2013-11-07	11:14:00	1.7	Pass

Impact Uni-Axial

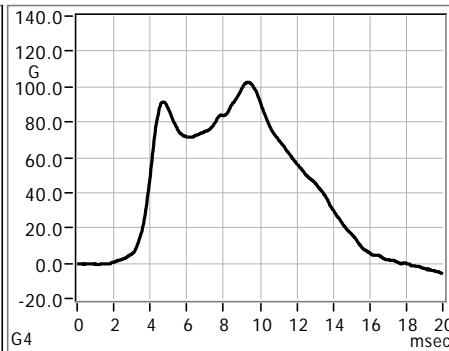
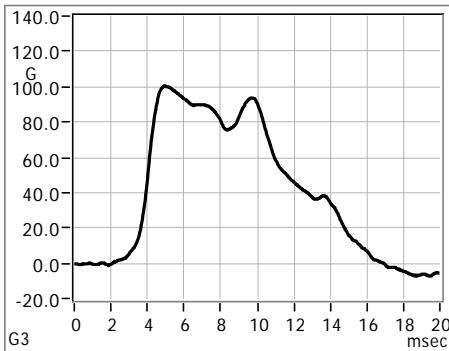
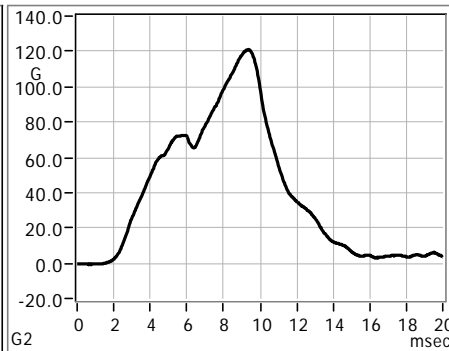
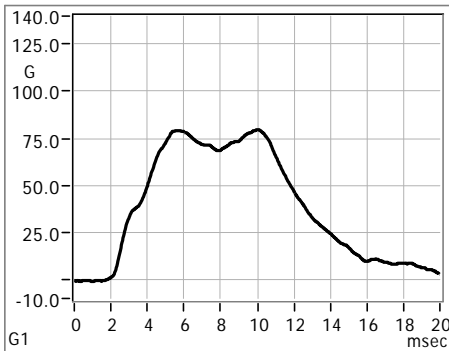
Testing Laboratory : Taicang ACT Lab
 Address : No.35 Zhenghe Road, Ludu Town,
 Taicang City, Suzhou, Jiangsu
 Province, China 215412

Helmet Manufacturer : Bio
 Address :

Laboratory Technician name : Jesse

Batch Number :

Ref. P.O. Number :



Model : HY-901
 Color : Black
 Size : XL
 Weight : 1342.00 g
 Manufacturing Date : 07 Nov 2013
 Standard Request : FMVSS218
 Identification Code : 539.0010.004-A
 Headform Model : D.O.T.
 Headform Size : D D.O.T
 Conditioning : Ambient
 Laboratory Temperature : 23 deg C
 Laboratory Humidity : 56 %
 Selected Filter Frequency : 1650 Hz
 Maximum Peak G's authorized : 400 G
 Maximum Peak m/s² authorized : 3923 m/s²
 Drop mass assembly : 6.100 kg
 Time gate flag height : 25.60 mm
 Acc. sensibility (axis Z) : 10.12

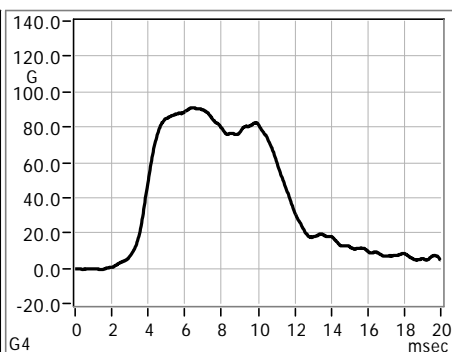
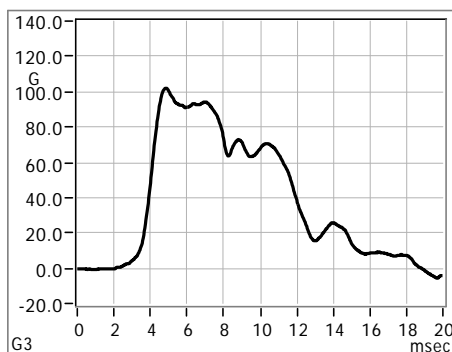
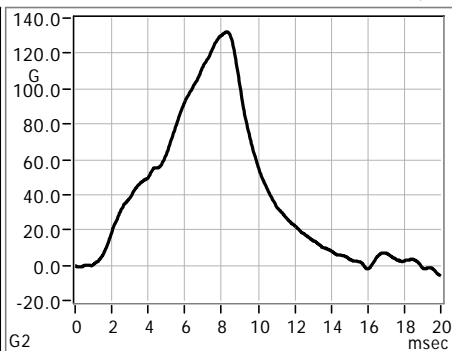
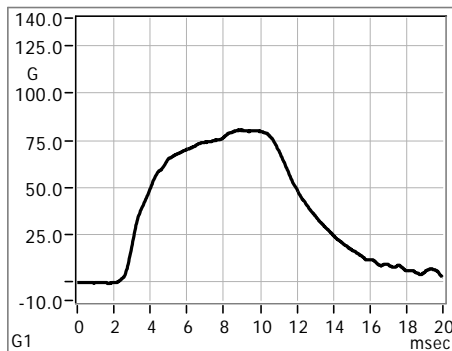
Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
5	79.6	5.1660	140.0	HEMI	0.00	0.00	FRONT	2013-11-07	11:18:15	1.4	Pass
6	121.1	5.2148	140.0	HEMI	0.00	0.00	FRONT	2013-11-07	11:18:45	0.5	Pass
7	100.4	5.2037	140.0	HEMI	0.00	0.00	RT SIDE	2013-11-07	11:32:20	0.7	Pass
8	102.3	5.2197	140.0	HEMI	0.00	0.00	RT SIDE	2013-11-07	11:32:39	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 : Bio
 Address :

Laboratory Technician name : Jesse
 Batch Number :
 Ref. P.O. Number :



Model : HY-901
 Color : Black
 Size : XL
 Weight : 1344.00 g
 Manufacturing Date : 07 Nov 2013
 Standard Request : FMVSS218
 Identification Code : 539.0010.004-B
 Headform Model : D.O.T.
 Headform Size : D D.O.T
 Conditioning : Cold
 Laboratory Temperature : 23 deg C
 Laboratory Humidity : 56 %
 Selected Filter Frequency : 1650 Hz
 Maximum Peak G's authorized : 400 G
 Maximum Peak m/s² authorized : 3923 m/s²
 Drop mass assembly : 6.100 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	80.6	5.2051	140.0	HEMI	0.00	0.00	FRONT	2013-11-07	11:20:20	0.7	Pass
6	132.2	5.2046	140.0	HEMI	0.00	0.00	FRONT	2013-11-07	11:20:36	0.7	Pass
7	101.8	5.1923	140.0	HEMI	0.00	0.00	RT SIDE	2013-11-07	11:30:58	0.9	Pass
8	90.7	5.2135	140.0	HEMI	0.00	0.00	RT SIDE	2013-11-07	11:31:14	0.5	Pass

Impact Uni-Axial

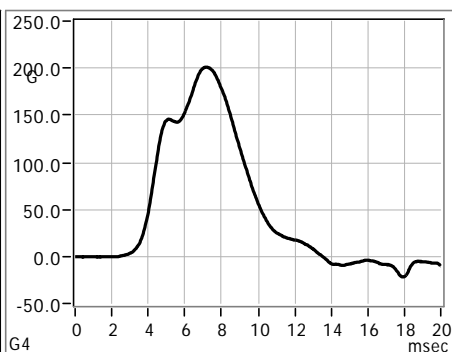
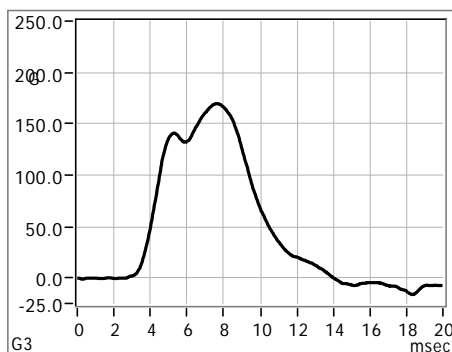
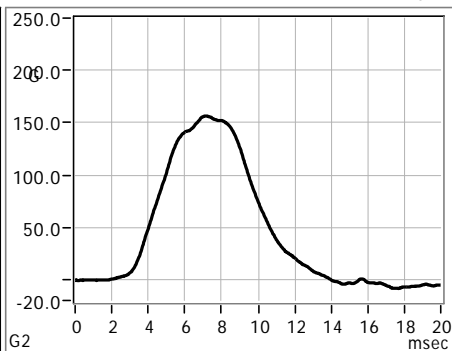
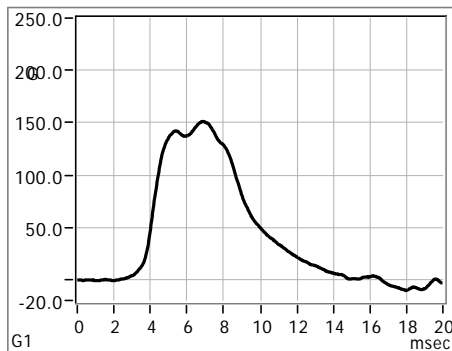
Testing Laboratory : Taicang ACT Lab
 Address : No.35 Zhenghe Road, Ludu Town,
 Taicang City, Suzhou, Jiangsu
 Province, China 215412

Helmet Manufacturer : Bio
 Address :

Laboratory Technician name : Jesse

Batch Number :

Ref. P.O. Number :



Model : HY-901
 Color : Black
 Size : XL
 Weight : 1344.00 g
 Manufacturing Date : 07 Nov 2013
 Standard Request : FMVSS218
 Identification Code : 539.0010.004-C
 Headform Model : D.O.T.
 Headform Size : D D.O.T
 Conditioning : Hot
 Laboratory Temperature : 23 deg C
 Laboratory Humidity : 56 %
 Selected Filter Frequency : 1650 Hz
 Maximum Peak G's authorized : 400 G
 Maximum Peak m/s² authorized : 3923 m/s²
 Drop mass assembly : 6.100 kg
 Time gate flag height : 25.60 mm
 Acc. sensibility (axis Z) : 10.12

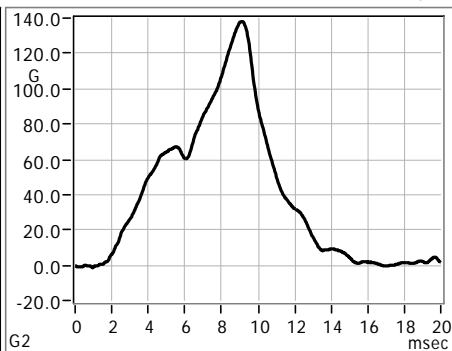
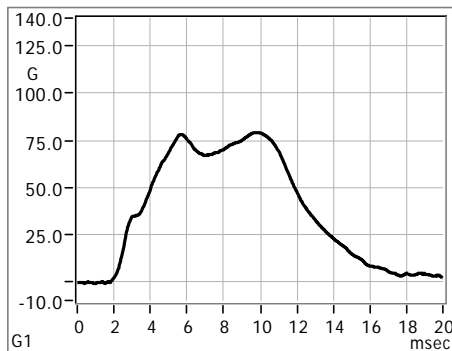
Impact #	Peak Acc. (G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
1	151.0	5.9985	190.0	FLAT	0.37	0.00	LF SIDE	2013-11-07	10:59:14	1.7	Pass
2	156.3	6.0023	190.0	FLAT	1.58	0.00	LF SIDE	2013-11-07	10:59:36	1.7	Pass
3	169.4	6.0102	190.0	FLAT	1.97	0.00	REAR	2013-11-07	11:10:13	1.5	Pass
4	200.7	6.0434	190.0	FLAT	2.56	0.33	REAR	2013-11-07	11:10:31	1.0	Pass

Impact Uni-Axial

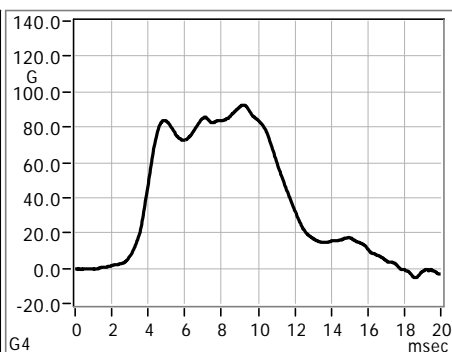
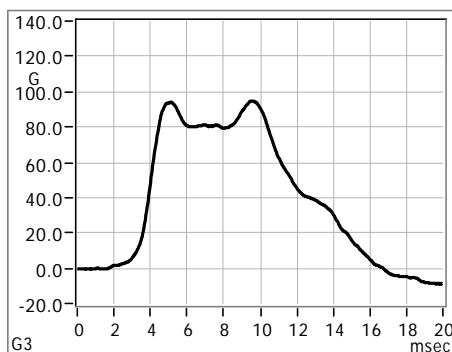
Testing Laboratory : Taicang ACT Lab
 Address : No.35 Zhenghe Road, Ludu Town,
 Taicang City, Suzhou, Jiangsu
 Province, China 215412

Helmet Manufacturer : Bio
 Address :

Laboratory Technician name : Jesse
 Batch Number :
 Ref. P.O. Number :



Model : HY-901
 Color : Black
 Size : XL
 Weight : 1344.00 g
 Manufacturing Date : 07 Nov 2013
 Standard Request : FMVSS218
 Identification Code : 539.0010.004-C
 Headform Model : D.O.T.
 Headform Size : D D.O.T
 Conditioning : Hot
 Laboratory Temperature : 23 deg C
 Laboratory Humidity : 56 %
 Selected Filter Frequency : 1650 Hz
 Maximum Peak G's authorized : 400 G
 Maximum Peak m/s² authorized : 3923 m/s²
 Drop mass assembly : 6.100 kg
 Time gate flag height : 25.60 mm
 Acc. sensibility (axis Z) : 10.12



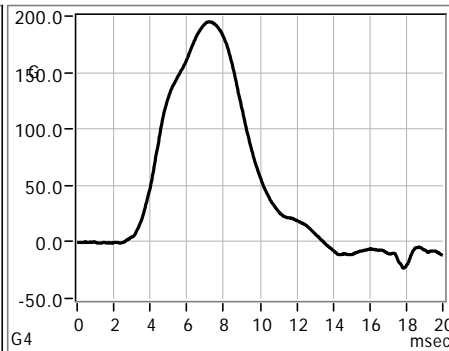
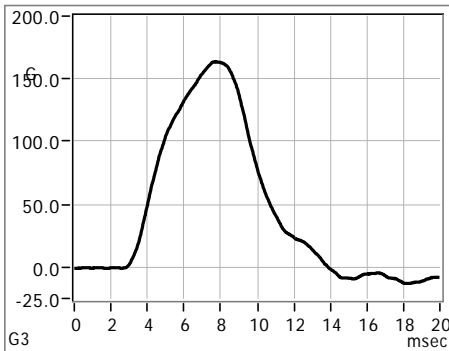
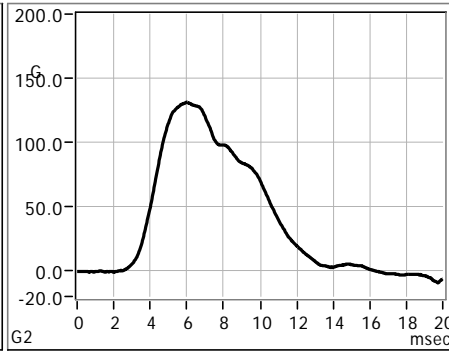
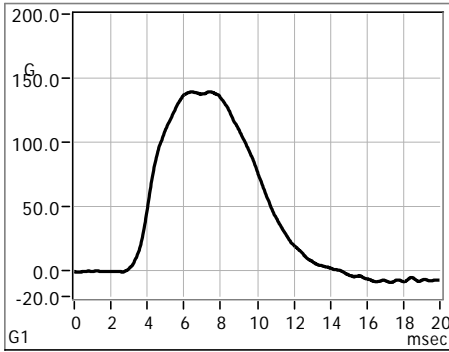
Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
5	79.1	5.1812	140.0	HEMI	0.00	0.00	FRONT	2013-11-07	11:22:06	1.1	Pass
6	138.0	5.1791	140.0	HEMI	0.00	0.00	FRONT	2013-11-07	11:22:23	1.2	Pass
7	94.6	5.2052	140.0	HEMI	0.00	0.00	RT SIDE	2013-11-07	11:29:26	0.7	Pass
8	92.2	5.1809	140.0	HEMI	0.00	0.00	RT SIDE	2013-11-07	11:29:42	1.1	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 : Bio
 Address :

Laboratory Technician name : Jesse
 Batch Number :
 Ref. P.O. Number :



Model : HY-901
 Color : Black
 Size : XL
 Weight : 1342.00 g
 Manufacturing Date : 07 Nov 2013
 Standard Request : FMVSS218
 Identification Code : 539.0010.004-D
 Headform Model : D.O.T.
 Headform Size : D D.O.T
 Conditioning : Wet
 Laboratory Temperature : 23 deg C
 Laboratory Humidity : 56 %
 Selected Filter Frequency : 1650 Hz
 Maximum Peak G's authorized : 400 G
 Maximum Peak m/s² authorized : 3923 m/s²
 Drop mass assembly : 6.100 kg
 Time gate flag height : 25.60 mm
 Acc. sensibility (axis Z) : 10.12

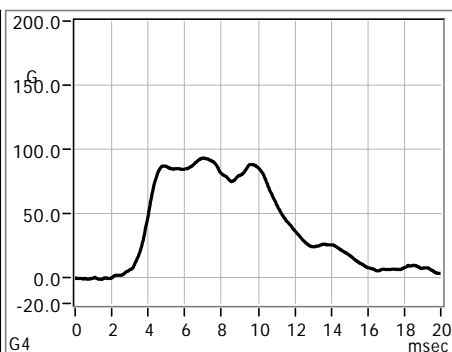
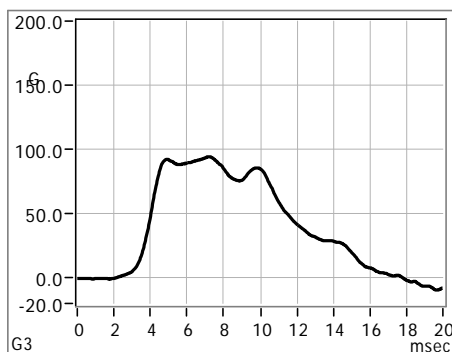
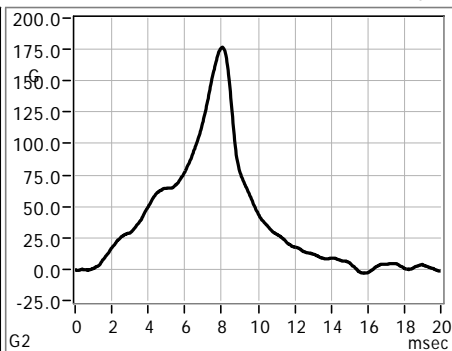
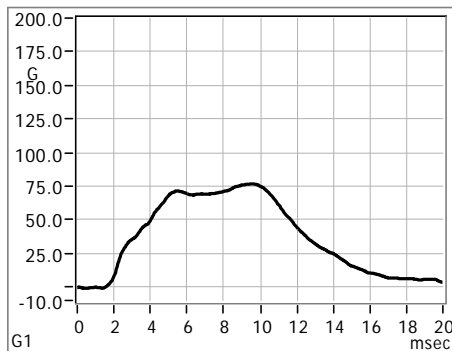
Impact #	Peak Acc. (G)	Velocity IN (m/sec)	Drop Height (cm)	Anvil type	Delta T 150G (msec)	Delta T 200G (msec)	Position	Test Date	Test Time	Friction (%)	PASS or FAIL
1	139.4	6.0181	190.0	FLAT	0.00	0.00	LF SIDE	2013-11-07	11:02:55	1.4	Pass
2	131.2	6.0136	190.0	FLAT	0.00	0.00	LF SIDE	2013-11-07	11:04:24	1.5	Pass
3	163.6	6.0030	190.0	FLAT	1.90	0.00	REAR	2013-11-07	11:08:14	1.7	Pass
4	194.9	6.0107	190.0	FLAT	2.95	0.00	REAR	2013-11-07	11:08:40	1.5	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 : Bio
 Address :

Laboratory Technician name : Jesse
 Batch Number :
 Ref. P.O. Number :



Model : HY-901
 Color : Black
 Size : XL
 Weight : 1342.00 g
 Manufacturing Date : 07 Nov 2013
 Standard Request : FMVSS218
 Identification Code : 539.0010.004-D
 Headform Model : D.O.T.
 Headform Size : D D.O.T
 Conditioning : Wet
 Laboratory Temperature : 23 deg C
 Laboratory Humidity : 56 %
 Selected Filter Frequency : 1650 Hz
 Maximum Peak G's authorized : 400 G
 Maximum Peak m/s² authorized : 3923 m/s²
 Drop mass assembly : 6.100 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	76.7	5.1855	140.0	HEMI	0.00	0.00	FRONT	2013-11-07	11:24:37	1.0	Pass
6	176.6	5.1971	140.0	HEMI	0.97	0.00	FRONT	2013-11-07	11:24:54	0.8	Pass
7	94.1	10.1370	140.0	HEMI	0.00	0.00	RT SIDE	2013-11-07	11:27:52	-93.5	Pass
8	93.1	5.1891	140.0	HEMI	0.00	0.00	RT SIDE	2013-11-07	11:28:07	1.0	Pass

DOT Auto – Test results

Laboratory

Laboratory ACT Lab
Technician Edward
Temperature 23°C
Humidity 56%

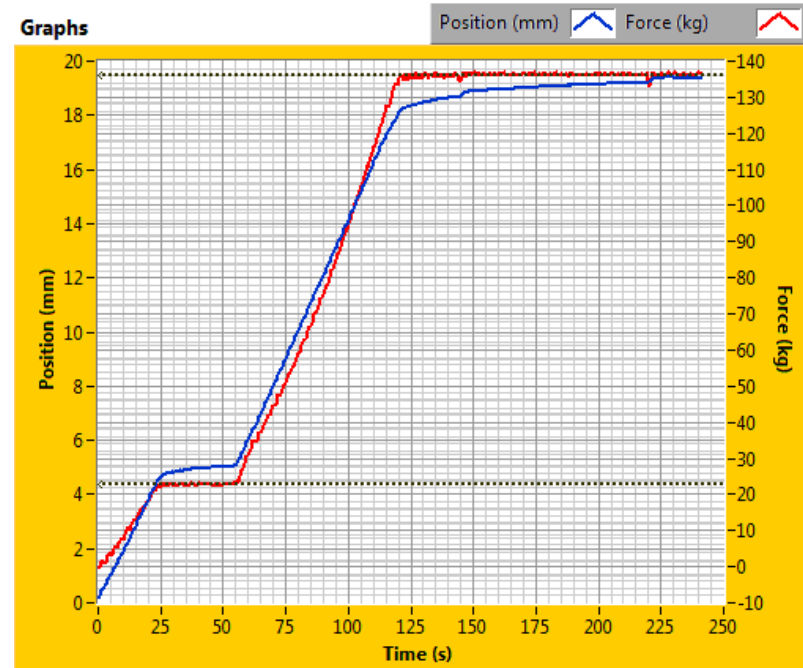
Sample

Model HY-901
Color Black
Size XL
Weight 1342
Manufacturer Bio
Manuf. Date 03/13

Infos

Standard FMVSS No.218
Comment 539.0010.004-A

Graphs



Results

Test	Time Data D/M/Y h:ms	DL ?	Status	Tar1 (Kg)	Tar1 (S)	Tar2 (Kg)	Tar2 (S)	Delta(Del1 to Del2) (mm)	Pass/Fail
Test#20	[07/11/13 12:56:04]	NO	Valid	22.7	30.0	136.1	120.0	14.0	Pass

DOT Auto – Test results

Laboratory

Laboratory ACT Lab
Technician Edward
Temperature 23°C
Humidity 56%

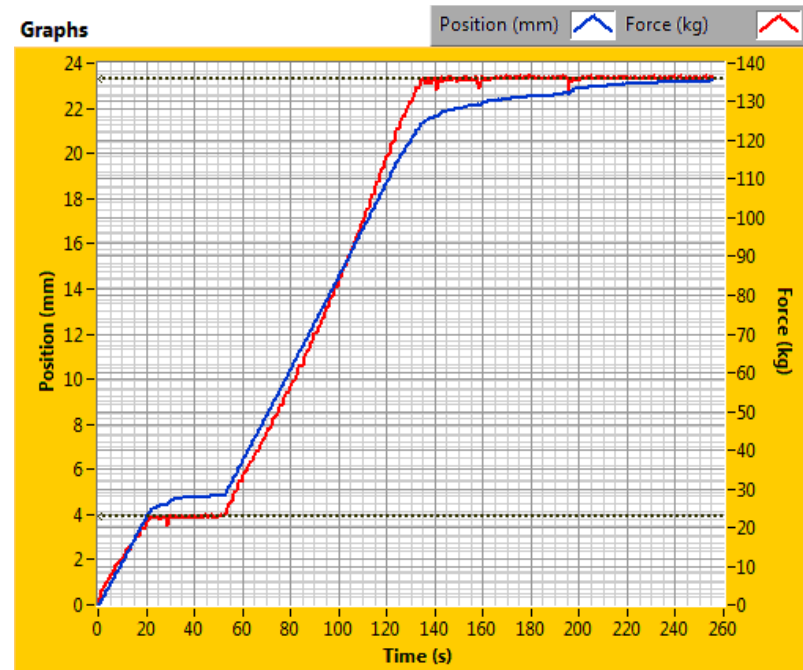
Sample

Model HY-901
Color Black
Size XL
Weight 1344
Manufacturer Bio
Manuf. Date 03/13

Infos

Standard FMVSS No.218
Comment 539.0010.004-B

Graphs



Results

Test	Time Data D/M/Y h:ms	DL ?	Status	Tar1 (Kg)	Tar1 (S)	Tar2 (Kg)	Tar2 (S)	Delta(Del1 to Del2) (mm)	Pass/Fail
Test#21	[07/11/13 13:01:43]	NO	Valid	22.7	30.0	136.1	120.0	17.8	Pass

DOT Auto – Test results

Laboratory

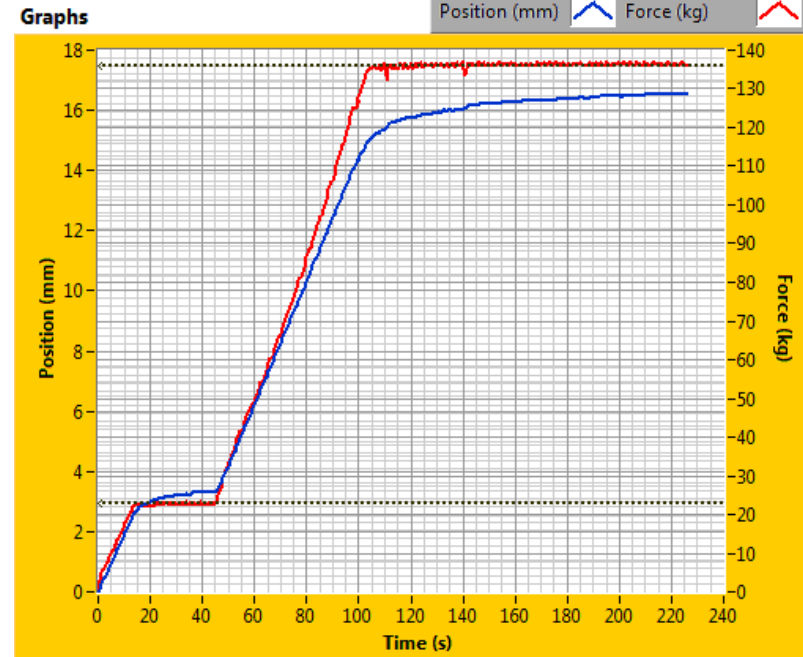
Laboratory ACT Lab
Technician Edward
Temperature 23°C
Humidity 56%

Sample

Model HY-901
Color Black
Size XL
Weight 1344
Manufacturer Bio
Manuf. Date 03/13

Infos

Standard FMVSS No.218
Comment 539.0010.004-C



Results

Test	Time Data D/M/Y h:ms	DL ?	Status	Tar1 (Kg)	Tar1 (S)	Tar2 (Kg)	Tar2 (S)	Delta(Del1 to Del2) (mm)	Pass/Fail
Test#22	[07/11/13 13:08:54]	NO	Valid	22.7	30.0	136.1	120.0	12.8	Pass

DOT Auto – Test results

Laboratory

Laboratory ACT Lab
Technician Edward
Temperature 23°C
Humidity 56%

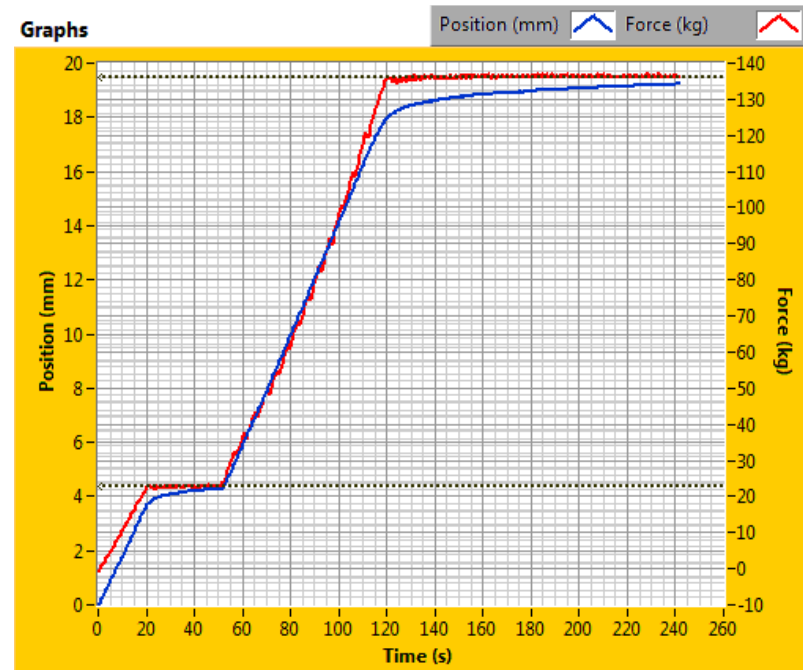
Sample

Model HY-901
Color Black
Size XL
Weight 1342
Manufacturer Bio
Manuf. Date 03/13

Infos

Standard FMVSS No.218
Comment 539.0010.004-D

Graphs



Results

Test	Time Data D/M/Y h:ms	DL ?	Status	Tar1 (Kg)	Tar1 (S)	Tar2 (Kg)	Tar2 (S)	Delta(Del1 to Del2) (mm)	Pass/Fail
Test#23	[07/11/13 13:13:53]	NO	Valid	22.7	30.0	136.1	120.0	14.7	Pass

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.: 539.0010
Test File: 004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 4 Jan 2013.dot
Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013

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.: 539.0010

Test File:004

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

Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013



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	CadexInc	None	None	13 Sep 2013	13 Sep 2014
	Penetrator Tube	ACT Lab	None	None	13 Sep 2013	13 Sep 2014
	Penetrator Dart	CadexInc	ONE 7-10-7	None	13 Sep 2013	13 Sep 2014
	DOT Small Headform	CadexInc	None	5178	13 Sep 2013	13 Sep 2014
	DOT Medium Headform	CadexInc	None	5179	13 Sep 2013	13 Sep 2014
	DOT Large Headform	CadexInc	None	5190	13 Sep 2013	13 Sep 2014
	Reference Headform	CadexInc	None	5181	13 Sep 2013	13 Sep 2014
	Reference Headform	CadexInc	None	5182	13 Sep 2013	13 Sep 2014
	Reference Headform	CadexInc	None	5183	13 Sep 2013	13 Sep 2014
	MEP Pad	CadexInc	None	981220	13 Sep 2013	13 Sep 2014
	Anvil	CadexInc	Flat	None	13 Sep 2013	13 Sep 2014
	Anvil	CadexInc	Hemi	None	13 Sep 2013	13 Sep 2014
	High temp Cabinet	Shanghai Boxn	GZX-9240MBE	8285	13 Sep 2013	13 Sep 2014
	Low temp Cabinet	Haier	DW-25W300	BR062100NO OB29578VMO	13 Sep 2013	13 Sep 2014
	Water conditioning Container	None	None	None	13 Sep 2013	13 Sep 2014
	Retention Strength Tester	CadexInc	None	None	13 Sep 2013	13 Sep 2014
	Laser Level	CadexInc	None	None	13 Sep 2013	13 Sep 2014
	Computer	HP	DX2040	CNG9211DB1	13 Sep 2013	13 Sep 2014

Contract File No.: 539.0010
Test File: 004

Technician: Kidman Yu
Test Date: 7 November 2013

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 17 July 2013.dot
Control Document Rev. 17 July 2013

DOT Calibrated Measurement Equipment										
Description	Manufacture	Model	S/N	Range	Accuracy from Cal Certs	Calibration			Maintenance	
						Last	Next	by	Last	Next
Velocity Gate Flag	CadexInc	None	None	25.6 mm	1.00 mm	13 Sep 2012	13 Sep 2013	ACT	13 Sep 2013	13 Sep 2014
Accelerometer	PCB	353B18	131607	2000 g		13 Sep 2012	13 Sep 2013	KSFY	13 Sep 2013	13 Sep 2014
Power Supply	Santak	MT100	None	-	2.71%	-	-	-	-	-
Charge Amplifier	Schaevitz	ATA2001	None	-		25 Nov 2012	25 Nov 2013	NIM	25 Nov 2013	25 Nov 2014
Control Center System	Cadex	Pc4300	None	-		-	-	-	-	-
Velocity Gate	CadexInc	None	HVTG120090 331-1	-	0.16 ms	31 Mar 2009	NA	CadexInc	31 Mar 2013	NA
Environmental Monitoring	Taiwan Taishi	1360A	090602605	-40 to +95C	2	27 Sep 2010	NA	KSFY	27 Sep 2012	NA
Scale	Henxin	ACS-6	0118223	0-6000 g	0.050 g	12 May 2013	12 May 2014	KSFY	12 May 2013	12 May 2014
Loadcell	CadexInc	9363-b10-300-20T1R	None	300 lbs.	0.1	8 Sep 2012	8 Sep 2013	KSFY	8 Sep 2013	8 Sep 2014
LVDT	Volfa	LWE-200	20028265	2.5 inch	0.01	19 Sep 2012	19 Sep 2013	KSFY	19 Sep 2013	19 Sep 2014
Peripheral Vision Apparatus	Ludufacory	None	None	105 degree	0.7 degree	14 Sep 2012	14 Sep 2013	ACT	14 Sep 2013	14 Sep 2014
Digital Caliper	JS	150X0.01	300065	0-150 mm	0.01 mm	3 May 2013	3 May 2014	KSFY	3 May 2013	3 May 2014
Height Gauge	Shanghai LR	None	9090053	0-500 mm	0.01 mm	14 Sep 2012	14 Sep 2013	KSFY	8 Sep 2013	14 Sep 2014

Contract File No.: 539.0010

Test File: 004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 17 July 2013.dot

Control Document Rev. 17 July 2013

Technician: Kidman Yu

Test Date: 7 November 2013

APPENDIX C
PHOTOGRAPHS

Contract File No.: 539.0010
Test File:004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 4 Jan 2013.dot
Control Document Rev. 21 Feb 2012

Technician: Kidman Yu

Date: 7 November 2013



Monorail Apparatus



Retention System
Strength Test Apparatus



Data Acquisition Equipment



High Temperature Chamber



Low Temperature Conditioning Cabinet



Water Immersion Equipment







