

# SAFETY COMPLIANCE TESTING FOR FMVSS No. 218 MOTORCYCLE HELMETS

**Manufacturer: Strategic Sports**  
**Model: ST-561(Bell, Mag-9)**  
**Size: Medium (58cm)**

Prepared For

**Dongguan Strategic Sports Ltd.**  
The Third of Liu Huang District, Chanshan Town  
Dongguan City, Guangdong Province  
China

**12 January 2012**

**Report No.: 505.0040.004**

Prepared By



**ACT Lab**

**Quzhong Road, Zhuqiao Village,  
Ludu Town, Taicang City, Suzhou,  
Jiangsu Province, China 215412**

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Contract File No.: 505.0040

Test File: 004

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Control Document Rev. 11 July 2011

Technician: Kidman Yu

Date: 11 January 2012

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## PURPOSE OF COMPLIANCE TEST

### **Purpose:**

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

**Dongguan Strategic Sports 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.**

## HELMET DATA

Helmet Brand Name	Strategic Sports						
Model Designation	ST-561 (Bell, Mag-9)						
Manufacturer	Strategic Sports						
Helmet Size Label	M (58cm)						
Test Headform size	Small		Medium	X		Large	
Helmet Positioning Index (HPI)	50mm	Manufacturer supplied			ACT determined		X
Helmet Coverage	Partial		Full	X	Complete		Modular
Shell Material	ABS & PC Blend						
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	Black
Weight (grams)	1202	1193	1197	1206	1372
Month & Year of Manufacture	Dec. 2011	Dec. 2011	Dec. 2011	Dec. 2011	Dec. 2011

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

### COMMENTS:

1. This ST-561 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 with face shield removed.
4. Weight for helmet E is complete with all components in place.

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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 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:
22°C	59%

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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
505.0040.004-A	Ambient	1	LF SIDE	FLAT	190	5.9962	2.40	0.00	171.8	Pass
505.0040.004-A	Ambient	2	LF SIDE	FLAT	190	6.0041	2.80	1.13	206.5	Pass
505.0040.004-A	Ambient	3	REAR	FLAT	190	6.0160	2.13	0.00	163.1	Pass
505.0040.004-A	Ambient	4	REAR	FLAT	190	5.9785	2.92	0.93	205.5	Pass
505.0040.004-A	Ambient	5	FRONT	HEMI	140	5.2068	0.00	0.00	115.3	Pass
505.0040.004-A	Ambient	6	FRONT	HEMI	140	5.2119	0.00	0.00	147.6	Pass
505.0040.004-A	Ambient	7	RT SIDE	HEMI	140	5.2241	0.00	0.00	90.7	Pass
505.0040.004-A	Ambient	8	RT SIDE	HEMI	140	5.2201	0.00	0.00	110.5	Pass
505.0040.004-B	Cold	1	LF SIDE	FLAT	190	5.9828	2.18	0.00	168.4	Pass
505.0040.004-B	Cold	2	LF SIDE	FLAT	190	6.0143	2.78	1.52	215.2	Pass
505.0040.004-B	Cold	3	REAR	FLAT	190	5.9835	0.79	0.00	153.9	Pass
505.0040.004-B	Cold	4	REAR	FLAT	190	5.9936	2.10	0.00	176.1	Pass
505.0040.004-B	Cold	5	FRONT	HEMI	140	5.1981	0.00	0.00	124.0	Pass
505.0040.004-B	Cold	6	FRONT	HEMI	140	5.2140	0.85	0.00	155.4	Pass
505.0040.004-B	Cold	7	RT SIDE	HEMI	140	5.2134	0.00	0.00	96.5	Pass
505.0040.004-B	Cold	8	RT SIDE	HEMI	140	5.2027	0.00	0.00	105.7	Pass
505.0040.004-C	Hot	1	LF SIDE	FLAT	190	5.9969	2.06	0.00	162.6	Pass
505.0040.004-C	Hot	2	LF SIDE	FLAT	190	5.9886	2.60	0.00	185.8	Pass
505.0040.004-C	Hot	3	REAR	FLAT	190	5.9832	0.00	0.00	148.6	Pass
505.0040.004-C	Hot	4	REAR	FLAT	190	6.0258	2.76	0.00	195.4	Pass
505.0040.004-C	Hot	5	FRONT	HEMI	140	5.2328	0.00	0.00	114.8	Pass
505.0040.004-C	Hot	6	FRONT	HEMI	140	5.2109	0.00	0.00	137.0	Pass
505.0040.004-C	Hot	7	RT SIDE	HEMI	140	5.2256	0.00	0.00	92.2	Pass
505.0040.004-C	Hot	8	RT SIDE	HEMI	140	5.2049	0.00	0.00	102.8	Pass
505.0040.004-D	Wet	1	LF SIDE	FLAT	190	6.0075	2.42	0.00	175.1	Pass
505.0040.004-D	Wet	2	LF SIDE	FLAT	190	6.0160	2.78	0.91	207.0	Pass
505.0040.004-D	Wet	3	REAR	FLAT	190	6.0264	0.00	0.00	130.8	Pass
505.0040.004-D	Wet	4	REAR	FLAT	190	6.0384	0.00	0.00	131.7	Pass
505.0040.004-D	Wet	5	FRONT	HEMI	140	5.2132	0.00	0.00	112.4	Pass
505.0040.004-D	Wet	6	FRONT	HEMI	140	5.2297	0.00	0.00	141.4	Pass
505.0040.004-D	Wet	7	RT SIDE	HEMI	140	5.2351	0.00	0.00	97.5	Pass
505.0040.004-D	Wet	8	RT SIDE	HEMI	140	5.2259	0.00	0.00	109.5	Pass

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## 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	Left Front	P		AMBIENT
2	A	Crown	P		AMBIENT
3	A	Right Rear	P		AMBIENT
4	B	Left Front	P		LOW TEMPERATURE
5	B	Crown	P		LOW TEMPERATURE
6	B	Right Rear	P		LOW TEMPERATURE
7	C	Left Front	P		HIGH TEMPERATURE
8	C	Crown	P		HIGH TEMPERATURE
9	C	Right Rear	P		HIGH TEMPERATURE
10	D	Left Front	P		IMMERSED
11	D	Crown	P		IMMERSED
12	D	Right Rear	P		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	2.0
B	LOW TEMPERATURE	1.8
C	HIGH TEMPERATURE	1.9
D	WATER IMMERSED	1.7

**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	Vent Cover (non-rigid)	7mm

COMMENTS: The vent cover is greater than 5mm in height but is loosely attached to the shell with double sided tape and therefore deemed non rigid.

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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
(a) Manufacturer's name or identification	X	
(b) Precise model designation	X	
(c) Size	X	
(d) Month and year of manufacture	X	
(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	X	
(f) Instructions to the purchaser as follows:		
(1) Shell and liner constructed of (identify type(s) of materials).	X	
(2) Helmet can be seriously damaged by some common substances without damage being visible to the user.	X	
(2) Apply only the following: (Recommended cleaning agents, paints, adhesives, etc., as appropriate).	X	
(3) Make no modifications.	X	
(3) Fasten helmet securely.	X	
(3) If helmet experiences a severe blow, return it to the manufacturer for inspection, or destroy it and replace it.	X	
(4) Any additional relevant safety information should be applied at the time of purchase by means of an attached tag, brochure, or other suitable means.		

COMMENTS: Labels were determined to be both easily read and permanent based on the NHTSA Label Guidance Document.

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## TEST DATA

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# Uni-Axial Calibration

M.E.P. Pad Model

Helmet Manufacturer **Strategic**

Address :

Testing Laboratory **Taicang ACT Lab**

Address : **Quzhong Road, Zhuqiao Village, Ludu Town, Taicang City, Suzhou, China 215412**

Laboratory Technician name :

Laboratory Temperature  deg C

Laboratory Humidity  %

Selected Filter Frequency  Hz

Acc. sensitivity (axis Z) :  mV/G

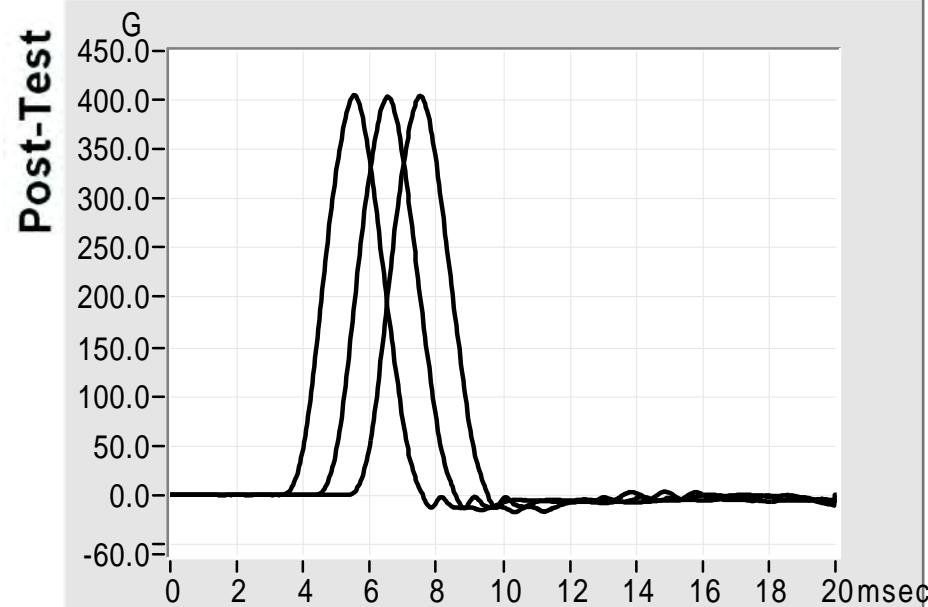
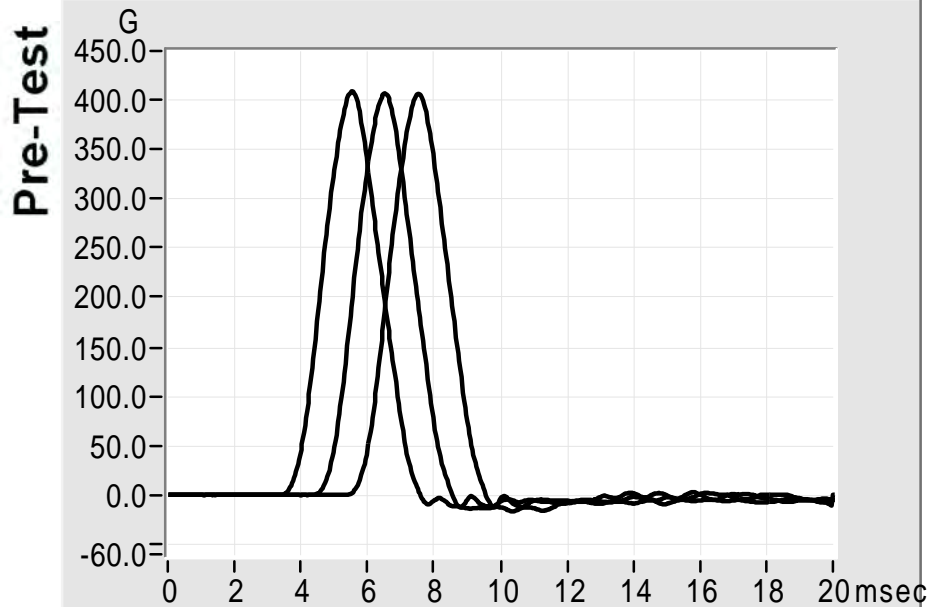
Acc. sensitivity (axis X) :  mV/G

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	408.7	4.4336	103.0	2.30	1.94	2012-01-11	16:43:13	1.4	Pass
	2	406.7	4.4309	103.0	2.30	1.95	2012-01-11	16:44:22	1.4	Pass
	3	406.3	4.4357	103.0	2.30	1.95	2012-01-11	16:45:25	1.3	Pass
Post-Test	1	404.3	4.4374	103.0	2.30	1.95	2012-01-11	17:30:02	1.3	Pass
	2	403.4	4.4292	103.0	2.30	1.96	2012-01-11	17:31:04	1.5	Pass
	3	403.8	4.4312	103.0	2.31	1.96	2012-01-11	17:32:08	1.4	Pass

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

# Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

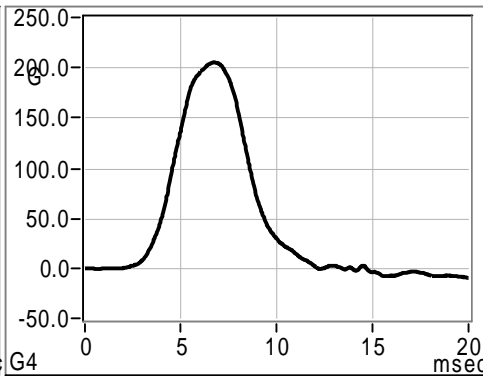
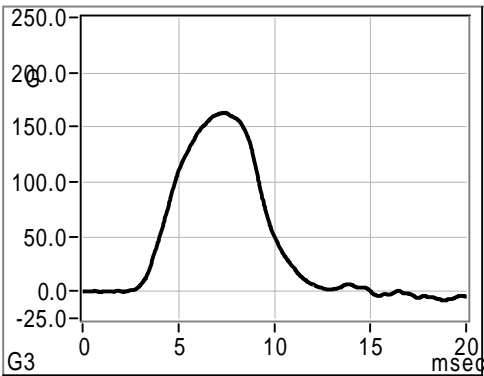
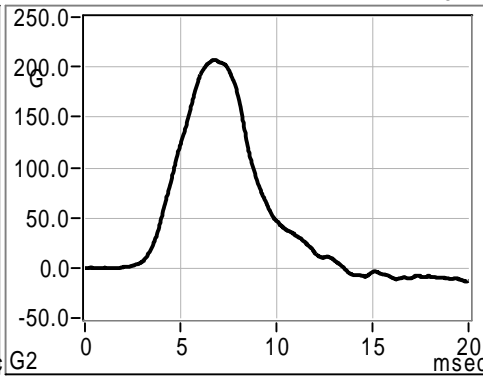
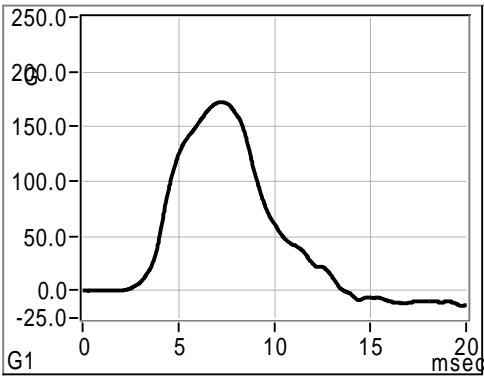
Address : Quzhong Road, Zhuqiao Village, Ludu Town,  
Taicang City, Suzhou, China 215412

Helmet Manufacturer : **Strategic**  
Address :

Laboratory Technician name :

Batch Number :

Ref. P.O. Number :



Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1202.00 g  
Manufacturing Date : 11 January 2012  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-A  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Ambient  
Laboratory Temperature : 22 deg C  
Laboratory Humidity : 59 %  
Selected Filter Frequency : 1650 Hz  
Maximum Peak G's authorized : 400 G  
Maximum Peak m/s<sup>2</sup> authorized : 3923 m/s<sup>2</sup>  
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	171.8	5.9962	190.0	FLAT	2.40	0.00	LF SIDE	2012-01-11	16:48:43	1.8	Pass
2	206.5	6.0041	190.0	FLAT	2.80	1.13	LF SIDE	2012-01-11	16:49:07	1.6	Pass
3	163.1	6.0160	190.0	FLAT	2.13	0.00	REAR	2012-01-11	17:01:46	1.4	Pass
4	205.5	5.9785	190.0	FLAT	2.92	0.93	REAR	2012-01-11	17:02:14	2.1	Pass

# Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

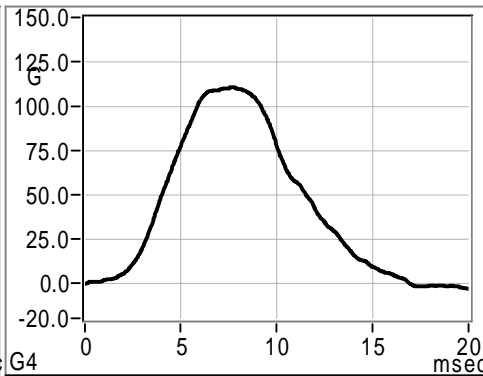
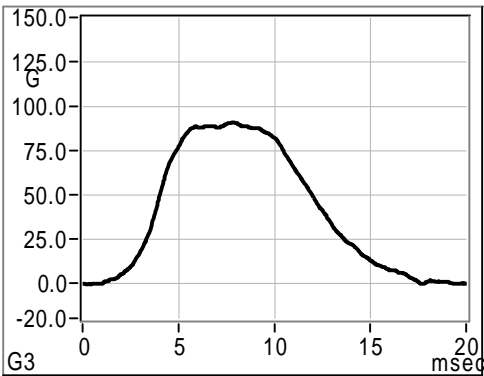
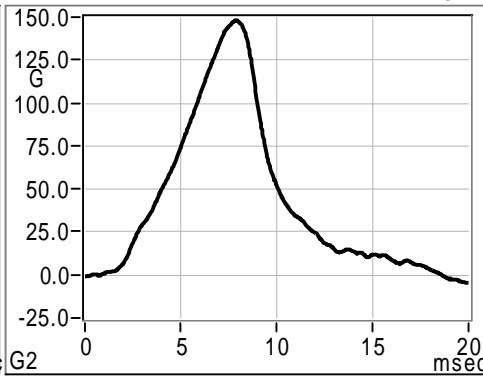
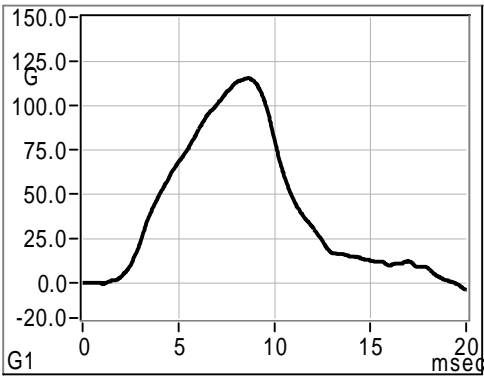
Address : Quzhong Road, Zhuqiao Village, Ludu Town,  
Taicang City, Suzhou, China 215412

Helmet Manufacturer : **Strategic**  
Address :

Laboratory Technician name :

Batch Number :

Ref. P.O. Number :



Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1202.00 g  
Manufacturing Date : 11 January 2012  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-A  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Ambient  
Laboratory Temperature : 22 deg C  
Laboratory Humidity : 59 %  
Selected Filter Frequency : 1650 Hz  
Maximum Peak G's authorized : 400 G  
Maximum Peak m/s<sup>2</sup> authorized : 3923 m/s<sup>2</sup>  
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	115.3	5.2068	143.0	HEMI	0.00	0.00	FRONT	2012-01-11	17:06:55	1.7	Pass
6	147.6	5.2119	143.0	HEMI	0.00	0.00	FRONT	2012-01-11	17:07:08	1.6	Pass
7	90.7	5.2241	143.0	HEMI	0.00	0.00	RT SIDE	2012-01-11	17:27:31	1.4	Pass
8	110.5	5.2201	143.0	HEMI	0.00	0.00	RT SIDE	2012-01-11	17:27:44	1.4	Pass

# Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

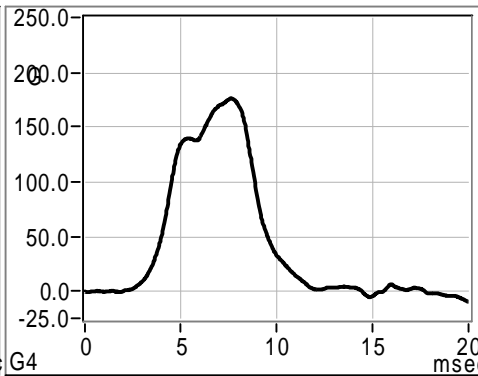
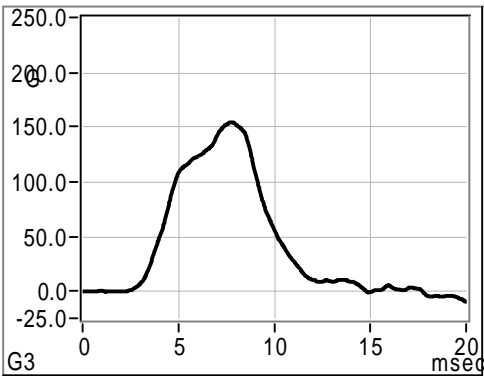
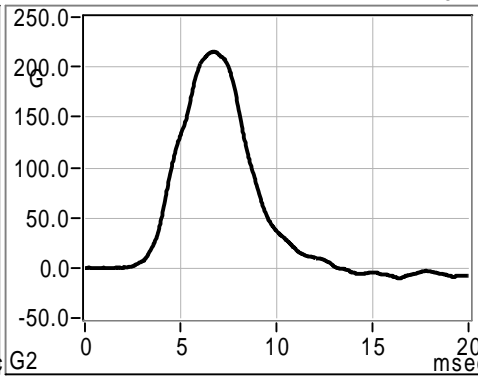
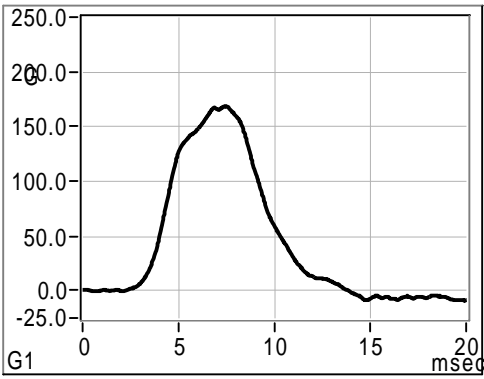
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Helmet Manufacturer : **Strategic**  
Address :

Laboratory Technician name :

Batch Number :

Ref. P.O. Number :



Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1193.00 g  
Manufacturing Date : 11 January 2012  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-B  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Cold  
Laboratory Temperature : 22 deg C  
Laboratory Humidity : 59 %  
Selected Filter Frequency : 1650 Hz  
Maximum Peak G's authorized : 400 G  
Maximum Peak m/s<sup>2</sup> authorized : 3923 m/s<sup>2</sup>  
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	168.4	5.9828	190.0	FLAT	2.18	0.00	LF SIDE	2012-01-11	16:50:40	2.0	Pass
2	215.2	6.0143	190.0	FLAT	2.78	1.52	LF SIDE	2012-01-11	16:51:04	1.5	Pass
3	153.9	5.9835	190.0	FLAT	0.79	0.00	REAR	2012-01-11	17:00:07	2.0	Pass
4	176.1	5.9936	190.0	FLAT	2.10	0.00	REAR	2012-01-11	17:00:23	1.8	Pass



# Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

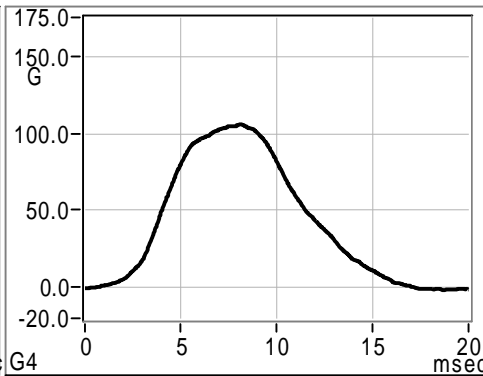
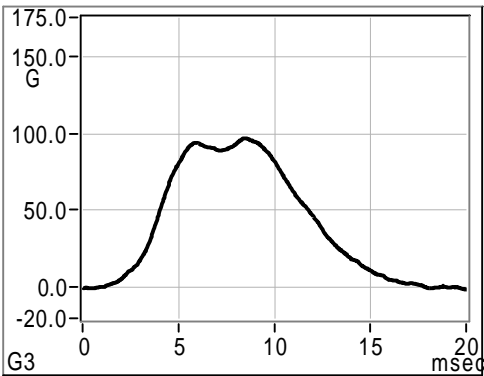
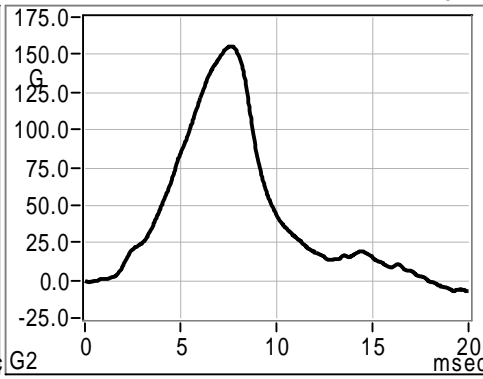
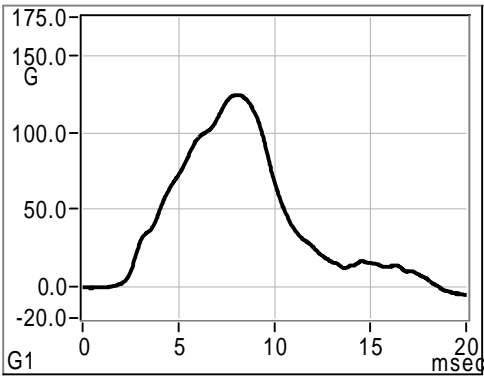
Address : Quzhong Road, Zhuqiao Village, Ludu Town,  
Taicang City, Suzhou, China 215412

Helmet Manufacturer : **Strategic**  
Address :

Laboratory Technician name :

Batch Number :

Ref. P.O. Number :



Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1193.00 g  
Manufacturing Date : 11 January 2012  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-B  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Cold  
Laboratory Temperature : 22 deg C  
Laboratory Humidity : 59 %  
Selected Filter Frequency : 1650 Hz  
Maximum Peak G's authorized : 400 G  
Maximum Peak m/s<sup>2</sup> authorized : 3923 m/s<sup>2</sup>  
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	124.0	5.1981	143.0	HEMI	0.00	0.00	FRONT	2012-01-11	17:09:13	1.8	Pass
6	155.4	5.2140	143.0	HEMI	0.85	0.00	FRONT	2012-01-11	17:09:26	1.5	Pass
7	96.5	5.2134	143.0	HEMI	0.00	0.00	RT SIDE	2012-01-11	17:22:04	1.6	Pass
8	105.7	5.2027	143.0	HEMI	0.00	0.00	RT SIDE	2012-01-11	17:22:16	1.8	Pass

# Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

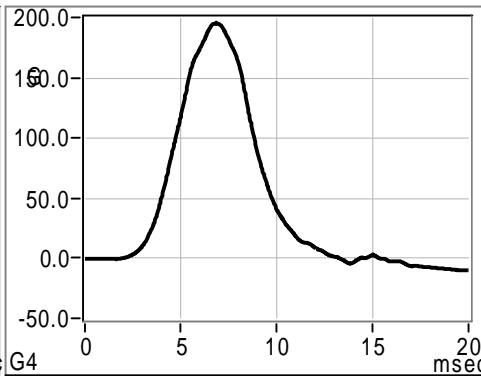
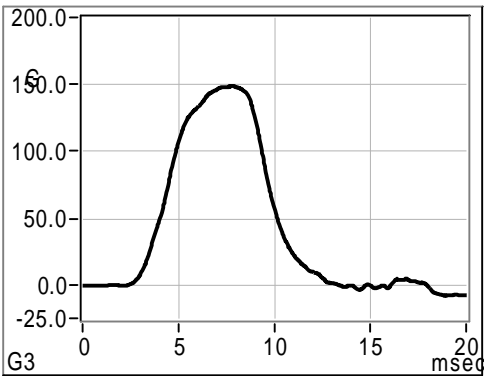
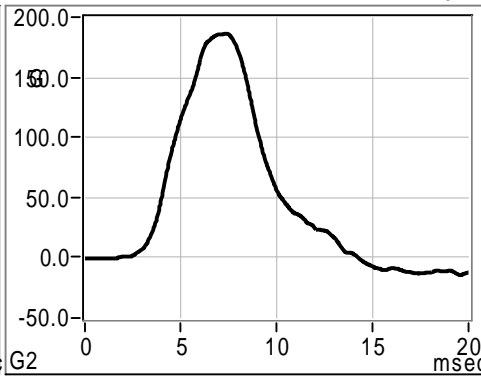
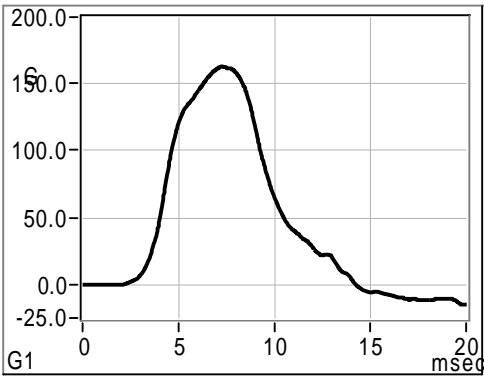
Address : Quzhong Road, Zhuqiao Village, Ludu Town,  
Taicang City, Suzhou, China 215412

Helmet Manufacturer : **Strategic**  
Address :

Laboratory Technician name :

Batch Number :

Ref. P.O. Number :



Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1197.00 g  
Manufacturing Date : 11 January 2012  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-C  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Hot  
Laboratory Temperature : 22 deg C  
Laboratory Humidity : 59 %  
Selected Filter Frequency : 1650 Hz  
Maximum Peak G's authorized : 400 G  
Maximum Peak m/s<sup>2</sup> authorized : 3923 m/s<sup>2</sup>  
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	162.6	5.9969	190.0	FLAT	2.06	0.00	LF SIDE	2012-01-11	16:52:26	1.8	Pass
2	185.8	5.9886	190.0	FLAT	2.60	0.00	LF SIDE	2012-01-11	16:52:44	1.9	Pass
3	148.6	5.9832	190.0	FLAT	0.00	0.00	REAR	2012-01-11	16:58:32	2.0	Pass
4	195.4	6.0258	190.0	FLAT	2.76	0.00	REAR	2012-01-11	16:58:46	1.3	Pass

# Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

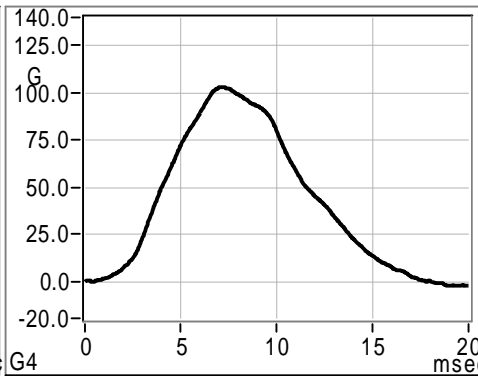
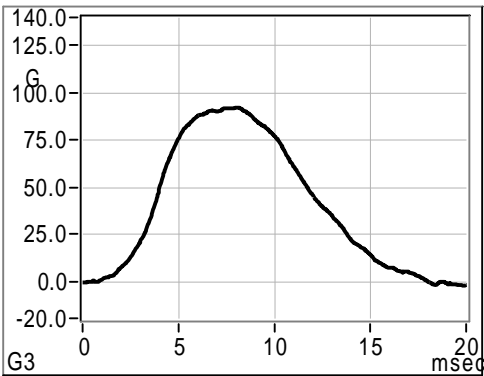
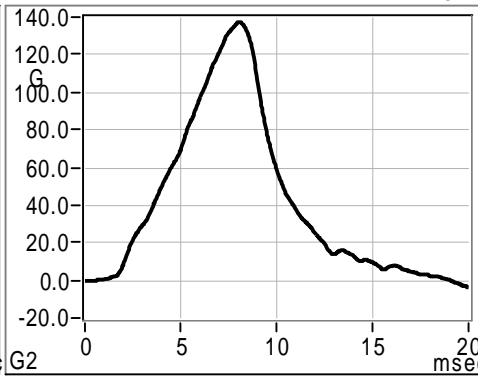
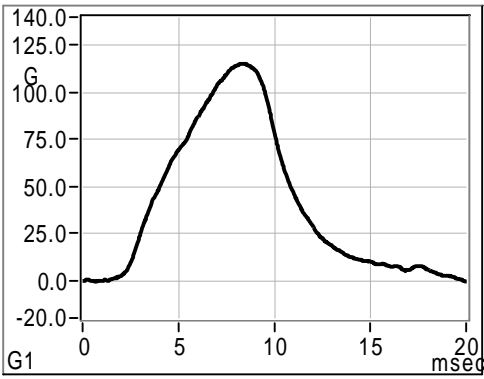
Address : Quzhong Road, Zhuqiao Village, Ludu Town,  
Taicang City, Suzhou, China 215412

Helmet Manufacturer : **Strategic**  
Address :

Laboratory Technician name :

Batch Number :

Ref. P.O. Number :



Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1197.00 g  
Manufacturing Date : 11 January 2012  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-C  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Hot  
Laboratory Temperature : 22 deg C  
Laboratory Humidity : 59 %  
Selected Filter Frequency : 1650 Hz  
Maximum Peak G's authorized : 400 G  
Maximum Peak m/s<sup>2</sup> authorized : 3923 m/s<sup>2</sup>  
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	114.8	5.2328	143.0	HEMI	0.00	0.00	FRONT	2012-01-11	17:10:45	1.2	Pass
6	137.0	5.2109	143.0	HEMI	0.00	0.00	FRONT	2012-01-11	17:11:00	1.6	Pass
7	92.2	5.2256	143.0	HEMI	0.00	0.00	RT SIDE	2012-01-11	17:20:34	1.3	Pass
8	102.8	5.2049	143.0	HEMI	0.00	0.00	RT SIDE	2012-01-11	17:20:47	1.7	Pass

# Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

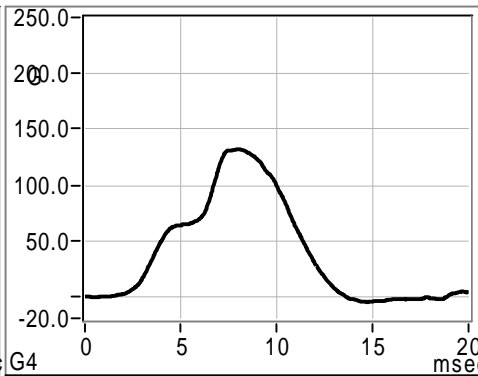
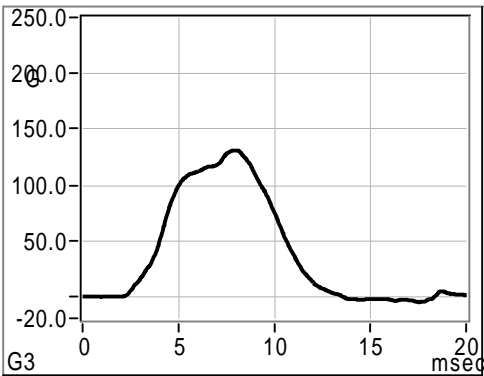
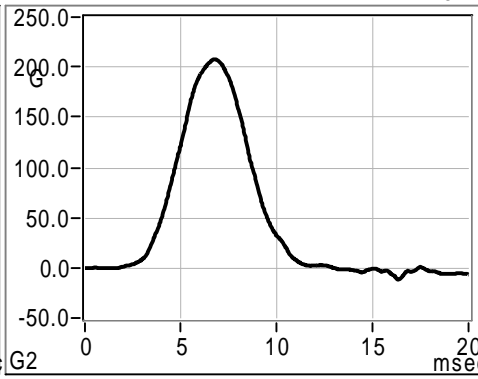
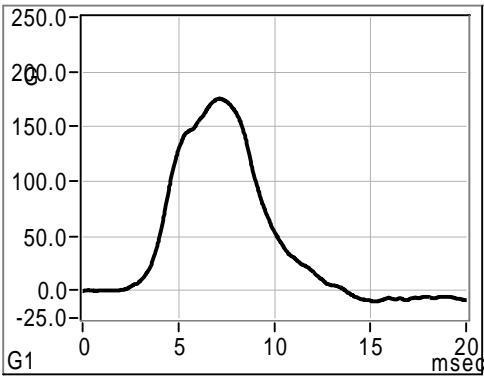
Address : Quzhong Road, Zhuqiao Village, Ludu Town,  
Taicang City, Suzhou, China 215412

Helmet Manufacturer : **Strategic**  
Address :

Laboratory Technician name :

Batch Number :

Ref. P.O. Number :



Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1206.00 g  
Manufacturing Date : 11 January 2012  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-D  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Wet  
Laboratory Temperature : 22 deg C  
Laboratory Humidity : 59 %  
Selected Filter Frequency : 1650 Hz  
Maximum Peak G's authorized : 400 G  
Maximum Peak m/s<sup>2</sup> authorized : 3923 m/s<sup>2</sup>  
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	175.1	6.0075	190.0	FLAT	2.42	0.00	LF SIDE	2012-01-11	16:54:15	1.6	Pass
2	207.0	6.0160	190.0	FLAT	2.78	0.91	LF SIDE	2012-01-11	16:54:33	1.4	Pass
3	130.8	6.0264	190.0	FLAT	0.00	0.00	REAR	2012-01-11	16:56:51	1.3	Pass
4	131.7	6.0384	190.0	FLAT	0.00	0.00	REAR	2012-01-11	16:57:09	1.1	Pass

# Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

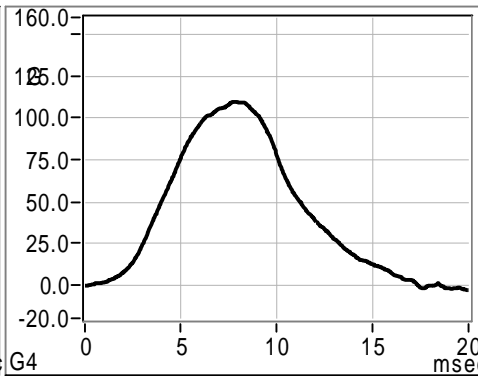
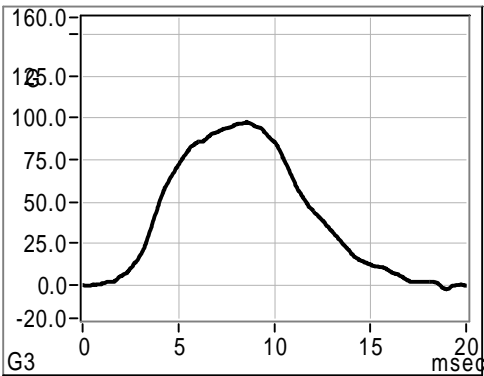
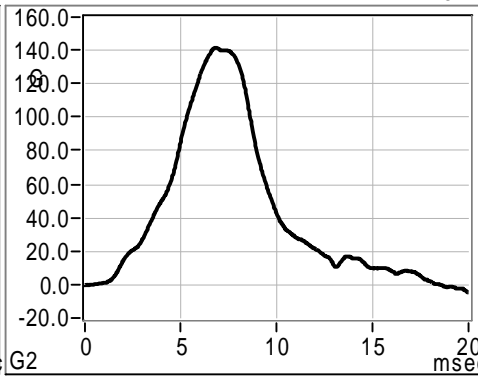
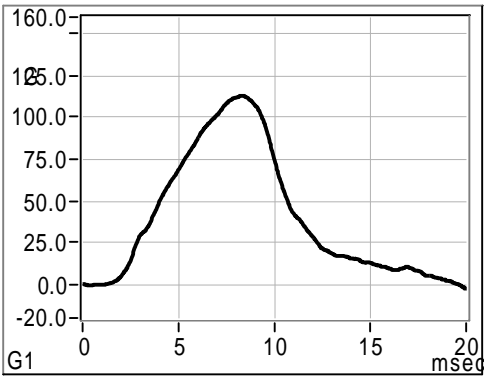
Address : Quzhong Road, Zhuqiao Village, Ludu Town,  
Taicang City, Suzhou, China 215412

Helmet Manufacturer : **Strategic**  
Address :

Laboratory Technician name :

Batch Number :

Ref. P.O. Number :



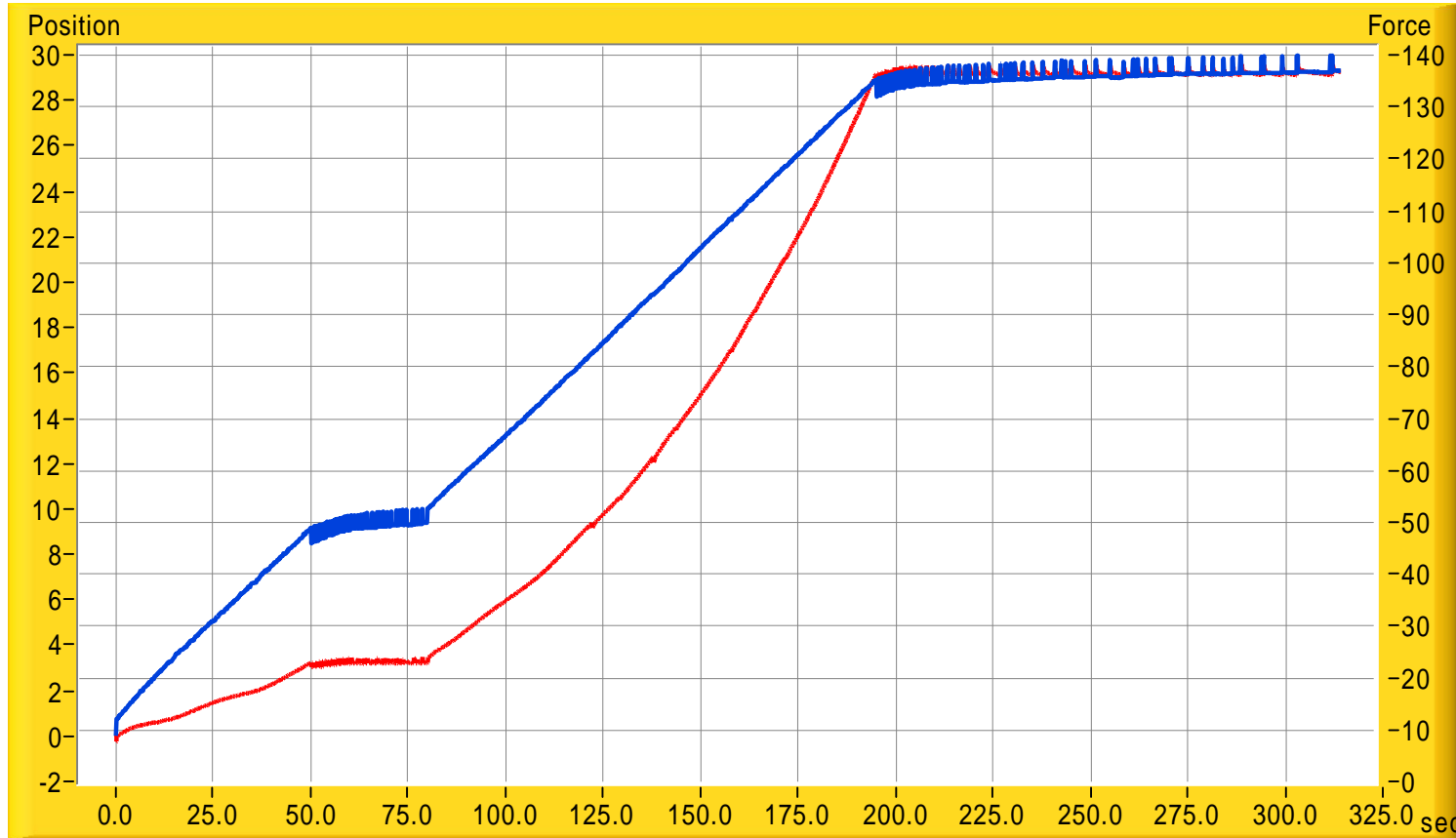
Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1206.00 g  
Manufacturing Date : 11 January 2012  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-D  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Wet  
Laboratory Temperature : 22 deg C  
Laboratory Humidity : 59 %  
Selected Filter Frequency : 1650 Hz  
Maximum Peak G's authorized : 400 G  
Maximum Peak m/s<sup>2</sup> authorized : 3923 m/s<sup>2</sup>  
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	112.4	5.2132	143.0	HEMI	0.00	0.00	FRONT	2012-01-11	17:16:14	1.6	Pass
6	141.4	5.2297	143.0	HEMI	0.00	0.00	FRONT	2012-01-11	17:16:27	1.3	Pass
7	97.5	5.2351	143.0	HEMI	0.00	0.00	RT SIDE	2012-01-11	17:18:38	1.1	Pass
8	109.5	5.2259	143.0	HEMI	0.00	0.00	RT SIDE	2012-01-11	17:18:55	1.3	Pass

# Retention DOT

Helmet Manufacturer : Strategic  
Address :

Testing Laboratory : Taicang ACT Lab  
Address : Quzhong Road, Zhuqiao Village, Ludu  
Town,  
Taicang City, Suzhou, China 215412



Lab Tech name : Kidman  
Batch Number :  
Ref. P.O. Number :  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-A  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Ambient  
Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1202.00 g  
Manufactur. Date : 11 January 2012  
Lab. Temperature : 22 deg C  
Lab. Humidity : 59 %  
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 : 40

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	19.92 (mm)	Pass	138.3 (Kg)	29.31 (mm)	2012-01-11	18:03:55

Position   
Force

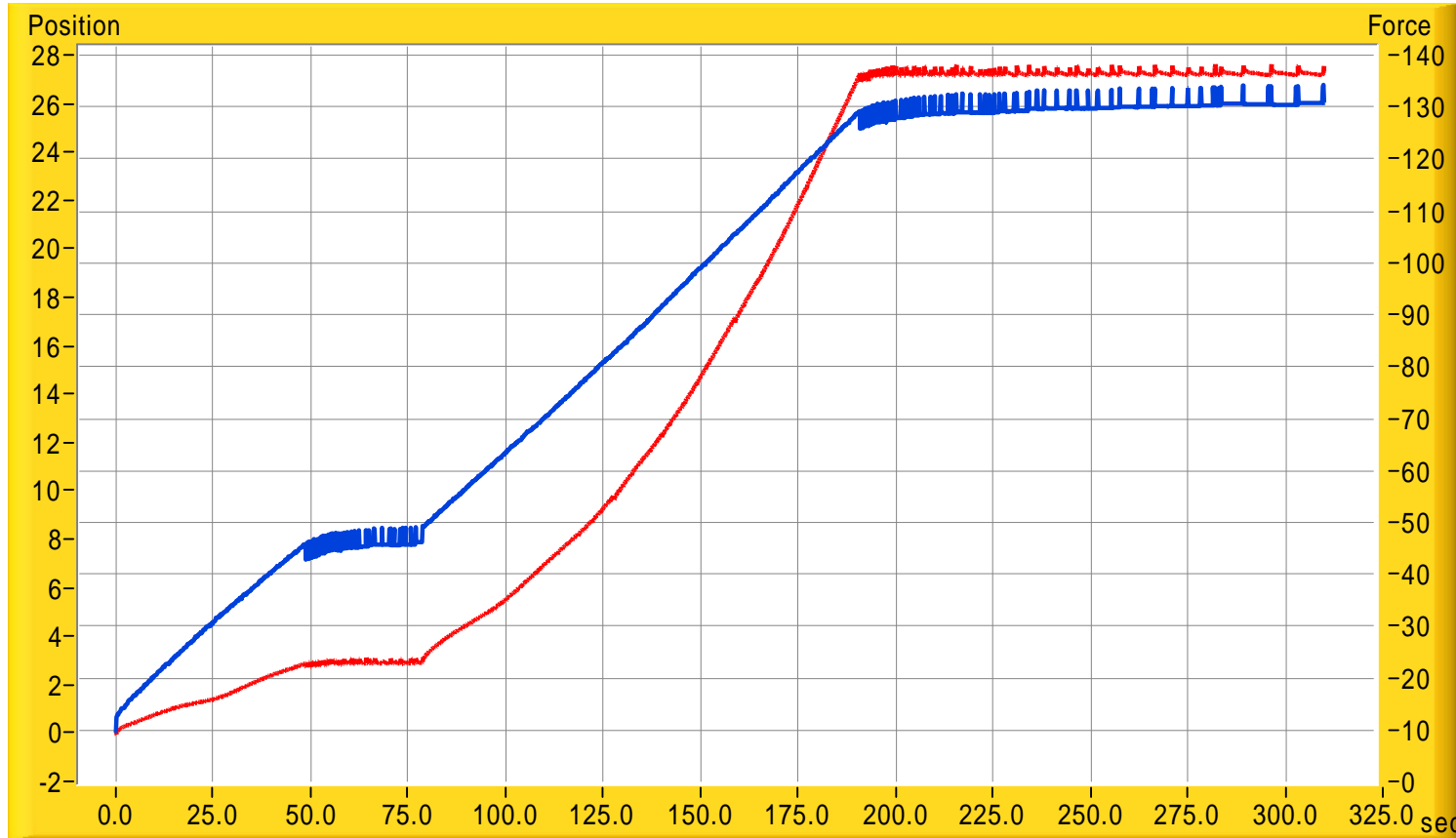
# Retention DOT

Helmet Manufacturer : Stragetic  
Address :

Testing Laboratory : Taicang ACT Lab  
Address : Quzhong Road, Zhuqiao Village, Ludu  
Town,  
Taicang City, Suzhou, China 215412

Lab Tech name : Kidman  
Batch Number :  
Ref. P.O. Number :  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-B  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Cold  
Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1193.00 g  
Manufactur. Date : 11 January 2012  
Lab. Temperature : 22 deg C  
Lab. Humidity : 59 %  
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 : 40

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	18.14 (mm)	Pass	138.1 (Kg)	29.07 (mm)	2012-01-11	18:10:59

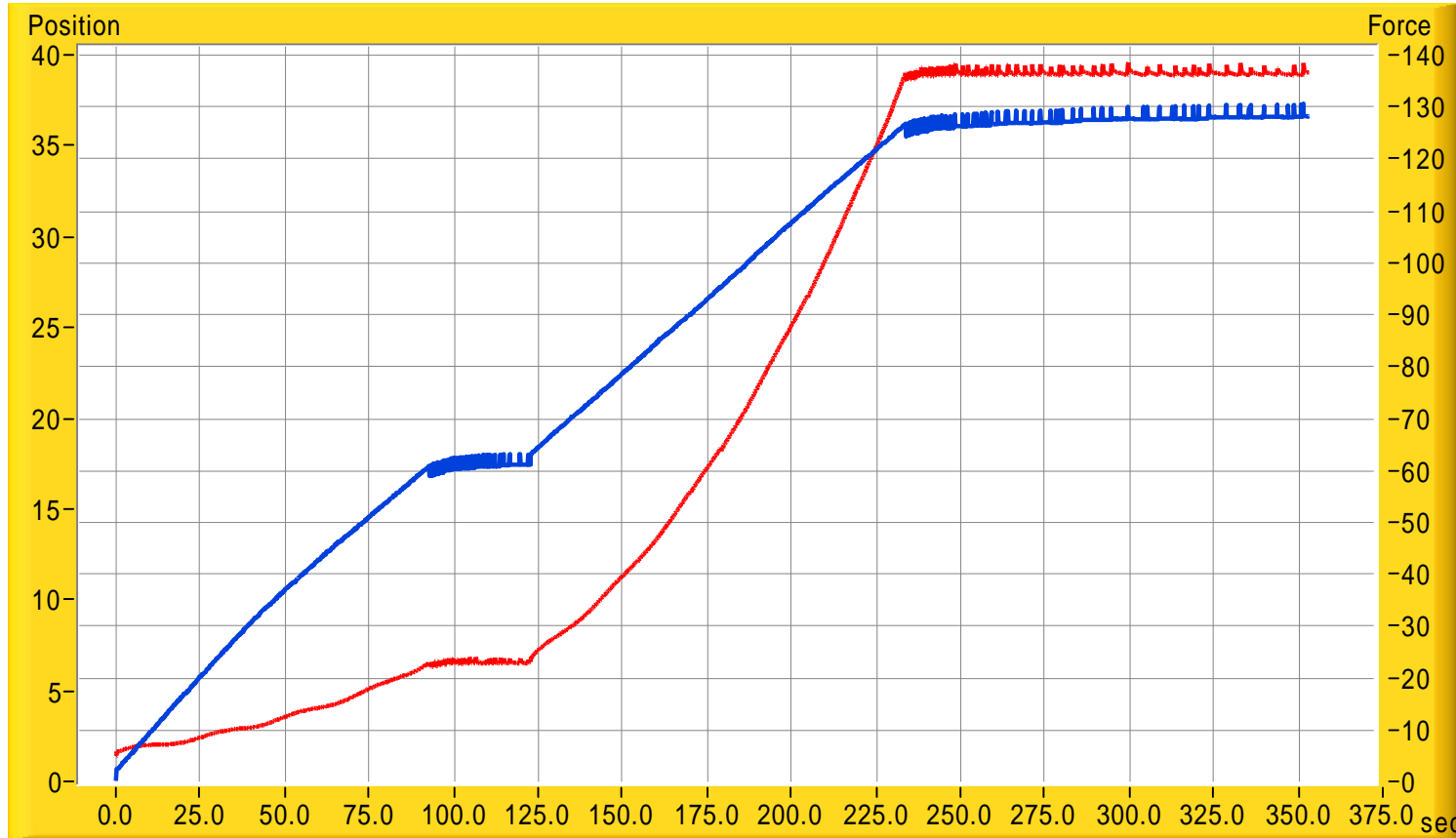
# Retention DOT

Helmet Manufacturer : Stragetic  
Address :

Testing Laboratory : Taicang ACT Lab  
Address : Quzhong Road, Zhuqiao Village, Ludu  
Town,  
Taicang City, Suzhou, China 215412

Lab Tech name : Kidman  
Batch Number :  
Ref. P.O. Number :  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-C  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Hot  
Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1197.00 g  
Manufactur. Date : 11 January 2012  
Lab. Temperature : 22 deg C  
Lab. Humidity : 59 %  
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 : 40

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



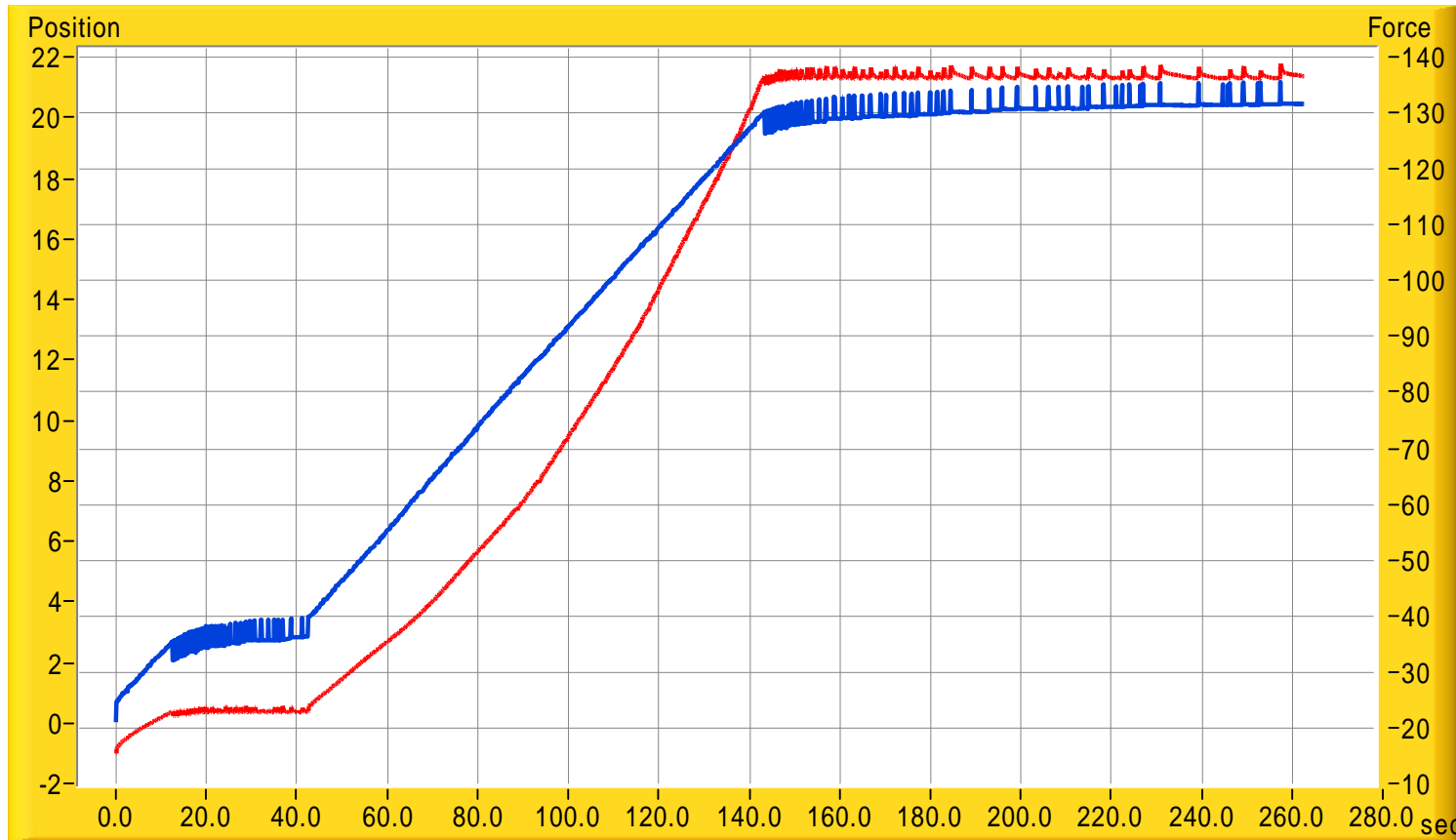
Impact #	Displ. (T1D1<->T2D2)	Pass/Fail	Max Force	Max Displ. (from T1D1)	Date	Time
1	19.21 (mm)	Pass	138.5 (Kg)	29.71 (mm)	2012-01-11	18:18:46



# Retention DOT

Helmet Manufacturer : Stragetic  
Address :

Testing Laboratory : Taicang ACT Lab  
Address : Quzhong Road, Zhuqiao Village, Ludu  
Town,  
Taicang City, Suzhou, China 215412



Lab Tech name : Kidman  
Batch Number :  
Ref. P.O. Number :  
Standard Request : FMVSS218  
Identification Code : 505.0040.004-D  
Headform Model : D.O.T.  
Headform Size : C D.O.T  
Conditioning : Wet  
Model : ST-561(mag-9)  
Color : Black  
Size : Medium  
Weight : 1206.00 g  
Manufactur. Date : 11 January 2012  
Lab. Temperature : 22 deg C  
Lab. Humidity : 59 %  
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 : 40

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	17.61 (mm)	Pass	138.7 (Kg)	24.87 (mm)	2012-01-11	18:25:40

## 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.: 505.0040

Test File: 004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 11 July 2011.dot

Control Document Rev. 11 July 2011

Technician: Kidman Yu

Date: 11 January 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	S/N
Uni-Axial	Headform Size DOT LARGE	Cadex	NA

##### Sensors

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

Contract File No.: 505.0040

Test File: 004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 11 July 2011.dot

Control Document Rev. 11 July 2011

Technician: Kidman Yu

Date: 11 January 2012

**APPENDIX C**  
**PHOTOGRAPHS**

Contract File No.: 505.0040

Test File: 004

T:\Templates\DOT Helmet Templates\Official DOT Report Template for ACT Taicang 11 July 2011.dot

Control Document Rev. 11 July 2011

Technician: Kidman Yu

Date: 11 January 2012



Monorail Apparatus



Retention System  
Strength Test Apparatus



Data Acquisition Equipment













