

SAFETY COMPLIANCE TESTING FOR FMVSS No. 218 MOTORCYCLE HELMETS

Brand: KOV

Model: ESTELAR

Tested Size: L (59-60 cm)

To also include sizes S (55-56 cm) and M (57-58 cm) with same shell and EPS liner size.

Prepared For:

KOV INTERNATIONAL SA DE CV

Carretera Leon-Lagos #2238, Interior 12, COL.
Lagunillas, CP.37600, Leon De Los Aldamas,
Guanajuato, Mexico



Issue Date: 06 November 2023

Final Report: 711.15746.002

Tested 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

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Contract File No.: 711.15746

Test File: 002

Control Document: Official ACT FMVSS No.218 Report Template TP-07 CN 04 September 2023 Rev.27

SharePoint/GlobalResourceLibrary/Reporting/ReportTemplates/Helmets/FMVSS No.218

Technician: Wille Wang

Test Date: 02 November 2023

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PURPOSE OF COMPLIANCE TEST

Purpose:

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

KOV INTERNATIONAL SA DE CV

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 Helmet Cadex Testing Manual 2.3

SUMMARY OF TEST RESULTS

INDICATE Pass or Fail

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

INDICATE Pass or Fail

TEST	PASS/FAIL
PERIPHERAL VISION	Pass
PROJECTIONS	Pass
LABELING	*Pass

COMMENT:

- S5.6 Labeling: *Client has supplied digital artwork for section 5.6.1 and 5.6.2, ACT has only evaluated that the required content is present.

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

COMMENTS:

The manufacturer marked the helmet with its corresponding discrete size: L (59-60 cm), Headform Size: DOT MEDIUM.

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.

AVERAGE LAB TEMPERATURE : 22 °C ; AVERAGE LAB HUMIDITY : 57 %



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
711.15746.002-A	Ambient	1	RT FRONT	FLAT	192.0	5.9809	2.20	0.00	163.2	Pass
711.15746.002-A	Ambient	2	RT FRONT	FLAT	192.0	6.0070	2.74	0.92	207.9	Pass
711.15746.002-A	Ambient	3	LF REAR	FLAT	192.0	6.0220	2.61	0.00	183.0	Pass
711.15746.002-A	Ambient	4	LF REAR	FLAT	192.0	6.0158	2.61	0.00	198.7	Pass
711.15746.002-A	Ambient	5	LF FRONT	HEMI	145.0	5.2679	0.00	0.00	86.7	Pass
711.15746.002-A	Ambient	6	LF FRONT	HEMI	145.0	5.2382	0.00	0.00	137.4	Pass
711.15746.002-A	Ambient	7	RT REAR	HEMI	145.0	5.3274	0.00	0.00	128.2	Pass
711.15746.002-A	Ambient	8	RT REAR	HEMI	145.0	5.3299	0.16	0.00	150.3	Pass
711.15746.002-B	Cold	1	RT FRONT	FLAT	192.0	5.9866	2.46	0.00	179.4	Pass
711.15746.002-B	Cold	2	RT FRONT	FLAT	192.0	5.9997	2.69	1.54	229.2	Pass
711.15746.002-B	Cold	3	LF REAR	FLAT	192.0	6.0135	3.18	1.69	225.9	Pass
711.15746.002-B	Cold	4	LF REAR	FLAT	192.0	6.0299	3.05	1.81	249.4	Pass
711.15746.002-B	Cold	5	LF FRONT	HEMI	145.0	5.1788	0.00	0.00	138.3	Pass
711.15746.002-B	Cold	6	LF FRONT	HEMI	145.0	5.3240	1.48	0.81	227.8	Pass
711.15746.002-B	Cold	7	RT REAR	HEMI	145.0	5.1778	0.00	0.00	109.7	Pass
711.15746.002-B	Cold	8	RT REAR	HEMI	145.0	5.1843	0.00	0.00	124.0	Pass
711.15746.002-C	Hot	1	RT FRONT	FLAT	192.0	6.0191	0.55	0.00	154.0	Pass
711.15746.002-C	Hot	2	RT FRONT	FLAT	192.0	6.0506	2.54	0.00	185.4	Pass
711.15746.002-C	Hot	3	LF REAR	FLAT	192.0	6.0493	0.86	0.00	156.3	Pass
711.15746.002-C	Hot	4	LF REAR	FLAT	192.0	6.0275	3.29	1.34	223.6	Pass
711.15746.002-C	Hot	5	LF FRONT	HEMI	145.0	5.1596	0.00	0.00	85.3	Pass
711.15746.002-C	Hot	6	LF FRONT	HEMI	145.0	5.2161	0.00	0.00	126.3	Pass
711.15746.002-C	Hot	7	RT REAR	HEMI	145.0	5.1731	0.00	0.00	112.0	Pass
711.15746.002-C	Hot	8	RT REAR	HEMI	145.0	5.2119	0.00	0.00	144.3	Pass
711.15746.002-D	Wet	1	RT FRONT	FLAT	192.0	6.0582	2.58	0.00	168.8	Pass
711.15746.002-D	Wet	2	RT FRONT	FLAT	192.0	6.0270	2.68	1.05	217.6	Pass
711.15746.002-D	Wet	3	LF REAR	FLAT	192.0	6.0561	0.00	0.00	148.5	Pass
711.15746.002-D	Wet	4	LF REAR	FLAT	192.0	6.0062	3.14	1.41	227.8	Pass
711.15746.002-D	Wet	5	LF FRONT	HEMI	145.0	5.3162	0.00	0.00	92.7	Pass
711.15746.002-D	Wet	6	LF FRONT	HEMI	145.0	5.2988	0.00	0.00	125.4	Pass
711.15746.002-D	Wet	7	RT REAR	HEMI	145.0	5.3363	0.00	0.00	108.4	Pass
711.15746.002-D	Wet	8	RT REAR	HEMI	145.0	5.2949	0.00	0.00	94.5	Pass

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SharePoint/GlobalResourceLibrary/Reporting/ReportTemplates/Helmets/FMVSS No.218

Technician: Wille Wang

Test Date: 02 November 2023

PENETRATION

Paragraph S5.2 and S7.2

WEIGHT OF STRIKER: 2.95 to 3.06 kg (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	Rear	X		AMBIENT
3	B	Crown	X		LOW TEMPERATURE
4	B	Rear	X		LOW TEMPERATURE
5	C	Crown	X		HIGH TEMPERATURE
6	C	Rear	X		HIGH TEMPERATURE
7	D	Crown	X		WATER IMMERSED
8	D	Rear	X		WATER IMMERSED

COMMENT: Photographs of penetration test locations are found in Appendix C.

RETENTION SYSTEM

Paragraph S5.3 and S7.3

REQUIREMENTS:

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

ELONGATION NOT TO EXCEED 2.54 cm (1.0 INCH) AFTER LOAD INCREASE

HELMET	CONDITIONS	ELONGATION cm
A	AMBIENT	1.48
B	LOW TEMPERATURE	1.46
C	HIGH TEMPERATURE	1.60
D	WATER IMMERSED	1.36

PERIPHERAL VISION

CONFIGURATION - 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 2.54 cm (1 inch) above all points in the basic plane that are within the angles of peripheral vision.

	REQUIREMENTS	TEST RESULTS
PERIPHERAL VISION	> 105°	Pass
BROW OPENING	> 2.5 cm (1 inch)	Pass

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	Rear Spoiler	23.11 mm

COMMENT:

1. The projection is greater than 5 mm in height but is loosely attached to the shell as it can be removed without the aid of a tool and therefore deemed non-rigid.

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	Content/Format	Permanent
Manufacturer's name	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

COMMENT:

- S5.6 Labeling: *Client has supplied digital artwork for section 5.6.1. ACT has only evaluated that the required content is present; the additional requirements for: formatting, appearance, and permanency were not evaluated.

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	Content/Format	Permanent
The symbol “DOT,” horizontally centered on the label, in letters not less than 0.38 inch (1.0 cm) high.	*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	*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	

COMMENT:

- S5.6 Labeling: *Client has supplied digital artwork for section 5.6.2. ACT has only evaluated that the required content is present; the additional requirements for: formatting, appearance, and permanency were not evaluated.

TEST DATA

Contract File No.: 711.15746

Test File: 002

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SharePoint/GlobalResourceLibrary/Reporting/ReportTemplates/Helmets/FMVSS No.218

Technician: Wille Wang

Test Date: 02 November 2023

Uni-Axial Calibration

M.E.P. Pad Model

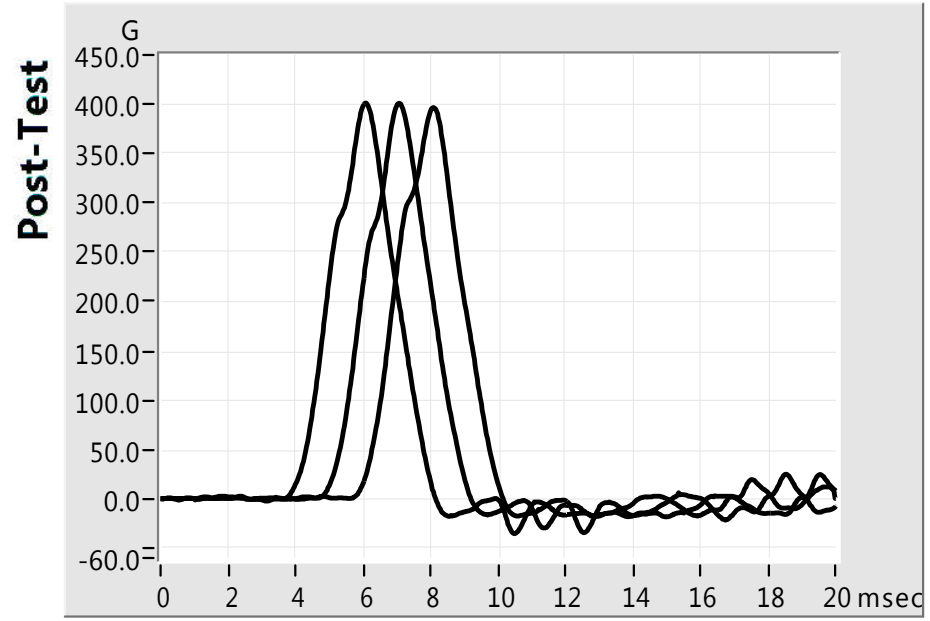
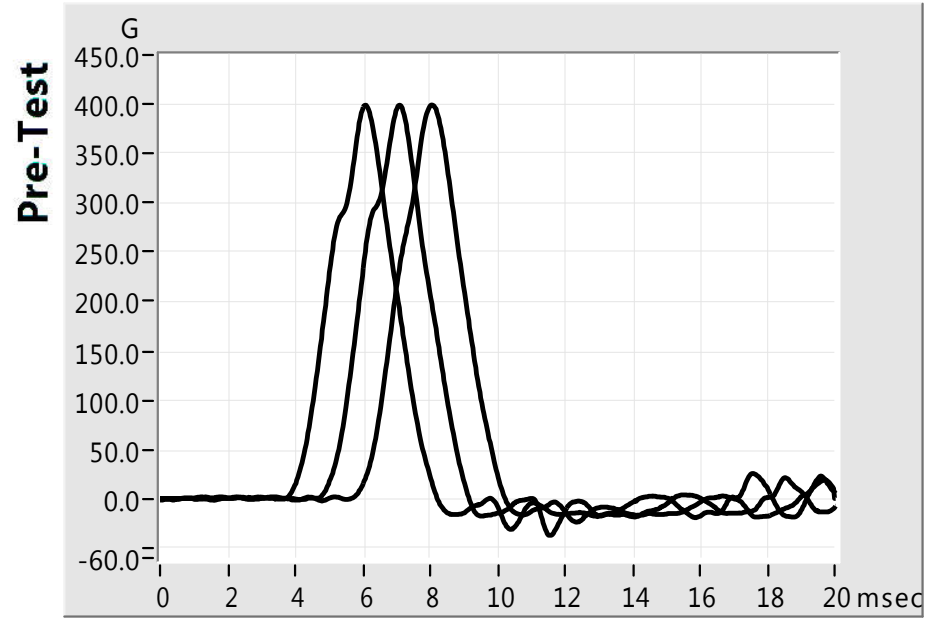
Helmet Manufacturer :KOV
Address :

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

Testing Laboratory :Taicang ACT Lab
 Address : No.605 Shanghai Road, Ludu Town,
 Taicang City, Suzhou, Jiangsu Province,
 China 215412

Drop Device :
 Drop mass assembly : kg Time gate flag height : mm
 Calibration peak : G +/- G

Laboratory Technician name Wille



Impact #	Peak Acc.(G)	HIC	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	
Pre-Test	1	398.8	3556	4.8017	120.0	MEP	2.54	2.14	0/0	2023-11-02	08:47:37	1.0	Pass
	2	398.8	3579	4.8234	120.0	MEP	2.55	2.14	0/0	2023-11-02	08:48:39	0.6	Pass
	3	399.3	3639	4.7099	120.0	MEP	2.51	2.11	0/0	2023-11-02	08:49:41	2.9	Pass
Post-Test	1	401.1	3614	4.8363	120.0	MEP	2.55	2.14	0/0	2023-11-02	16:50:03	0.3	Pass
	2	400.7	3601	4.7920	120.0	MEP	2.53	2.14	0/0	2023-11-02	16:51:05	1.2	Pass
	3	396.5	3600	4.7890	120.0	MEP	2.54	2.12	0/0	2023-11-02	16:52:06	1.3	Pass

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

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

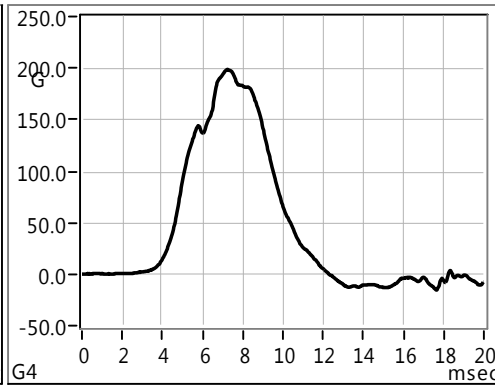
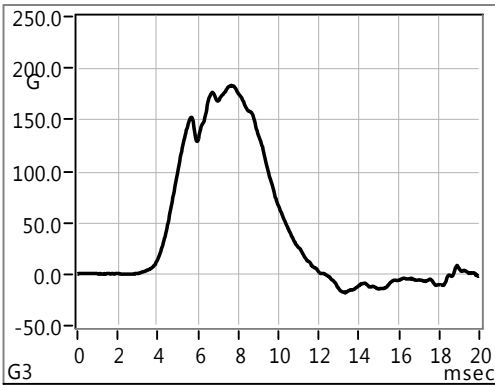
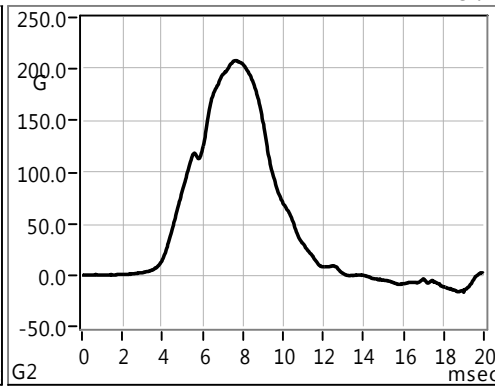
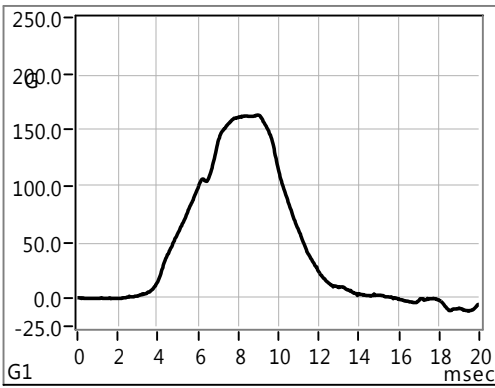
Address : No.605 Shanghai Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : KOV
Address :

Laboratory Technician name : Wille

Batch Number :

Ref. P.O. Number :



Model : ESTELAR
Color : Black
Size : L(59-60CM)
Weight : 1505.00 g
Manufacturing Date : 02 Nov 2023
Standard Request : FMVSS 218
Identification Code : 711.15746.002-A
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Ambient
Laboratory Temperature : 22 deg C
Laboratory Humidity : 57 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s2 authorized : 3923 m/s2
Drop mass assembly : 5.028 kg
Time gate flag height : 25.55 mm
Acc. sensibility (axis Z) : 10.59

Impact #	Peak Acc.(G)	HIC	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	163.2	1005	5.9809	192.0	FLAT	2.20	0.00	RT FRONT	2023-11-02	09:45:05	2.5	Pass
2	207.9	1442	6.0070	192.0	FLAT	2.74	0.92	RT FRONT	2023-11-02	09:45:17	2.1	Pass
3	183.0	1289	6.0220	192.0	FLAT	2.61	0.00	LF REAR	2023-11-02	09:49:45	1.9	Pass
4	198.7	1398	6.0158	192.0	FLAT	2.61	0.00	LF REAR	2023-11-02	09:49:53	2.0	Pass

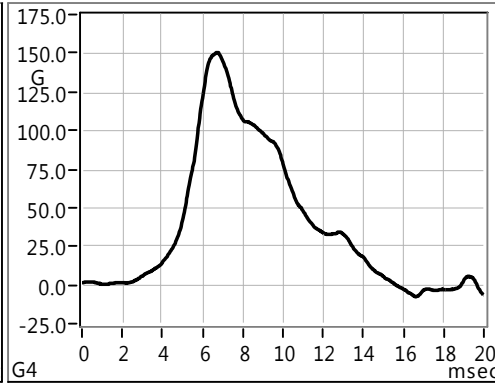
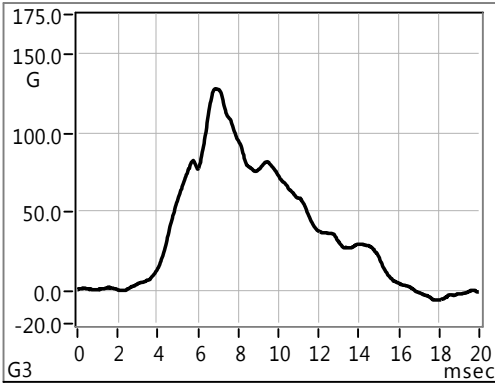
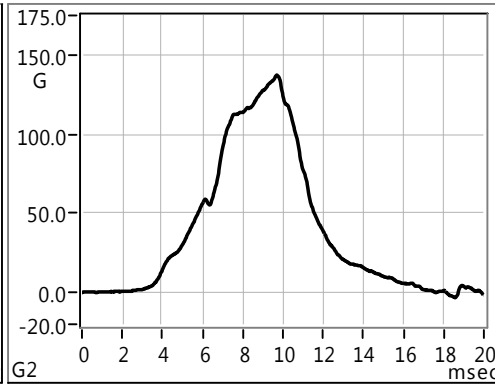
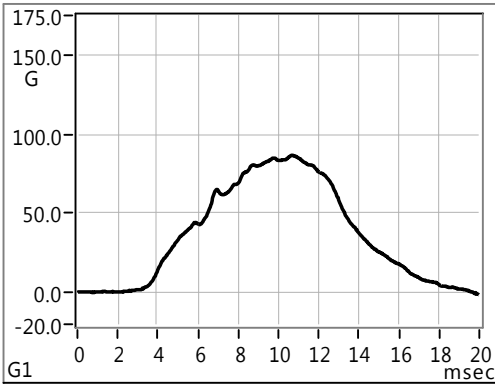
Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

Address : No.605 Shanghai Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : KOV
Address :

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



Model : ESTELAR
Color : Black
Size : L(59-60CM)
Weight : 1505.00 g
Manufacturing Date : 02 Nov 2023
Standard Request : FMVSS 218
Identification Code : 711.15746.002-A
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Ambient
Laboratory Temperature : 22 deg C
Laboratory Humidity : 57 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.028 kg
Time gate flag height : 25.55 mm
Acc. sensibility (axis Z) : 10.59

Impact #	Peak Acc.(G)	HIC	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	86.7	327	5.2679	145.0	HEMI	0.00	0.00	LF FRONT	2023-11-02	09:52:43	1.2	Pass
6	137.4	581	5.2382	145.0	HEMI	0.00	0.00	LF FRONT	2023-11-02	09:52:51	1.8	Pass
7	128.2	419	5.3274	145.0	HEMI	0.00	0.00	RT REAR	2023-11-02	09:54:31	0.1	Pass
8	150.3	607	5.3299	145.0	HEMI	0.16	0.00	RT REAR	2023-11-02	09:54:38	0.1	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

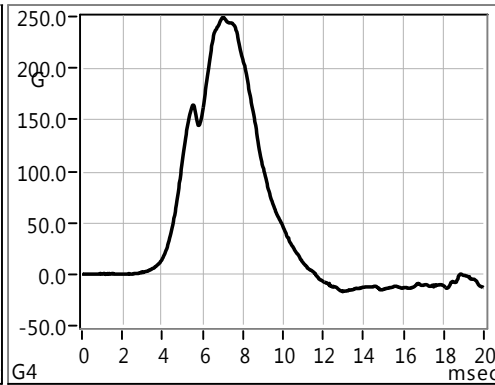
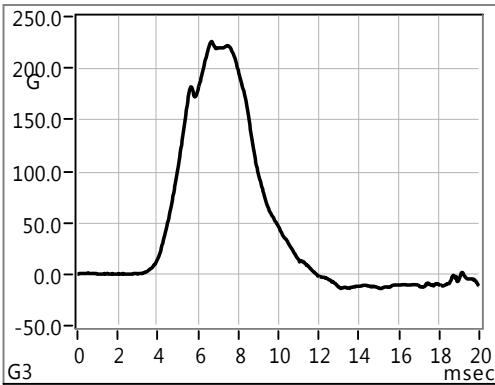
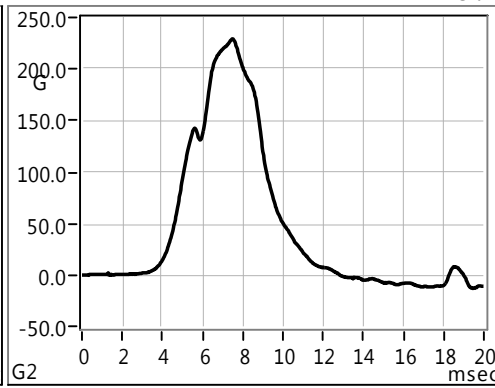
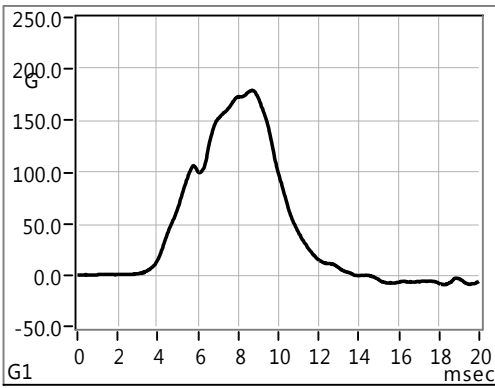
Address : No.605 Shanghai Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : KOV
Address :

Laboratory Technician name : Wille

Batch Number :

Ref. P.O. Number :



Model : ESTELAR
Color : Black
Size : L(59-60CM)
Weight : 1503.00 g
Manufacturing Date : 02 Nov 2023
Standard Request : FMVSS 218
Identification Code : 711.15746.002-B
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Cold
Laboratory Temperature : 22 deg C
Laboratory Humidity : 57 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.028 kg
Time gate flag height : 25.55 mm
Acc. sensibility (axis Z) : 10.59

Impact #	Peak Acc.(G)	HIC	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	179.4	1124	5.9866	192.0	FLAT	2.46	0.00	RT FRONT	2023-11-02	08:55:37	2.4	Pass
2	229.2	1688	5.9997	192.0	FLAT	2.69	1.54	RT FRONT	2023-11-02	08:55:50	2.2	Pass
3	225.9	1821	6.0135	192.0	FLAT	3.18	1.69	LF REAR	2023-11-02	09:01:58	2.0	Pass
4	249.4	1979	6.0299	192.0	FLAT	3.05	1.81	LF REAR	2023-11-02	09:02:12	1.7	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

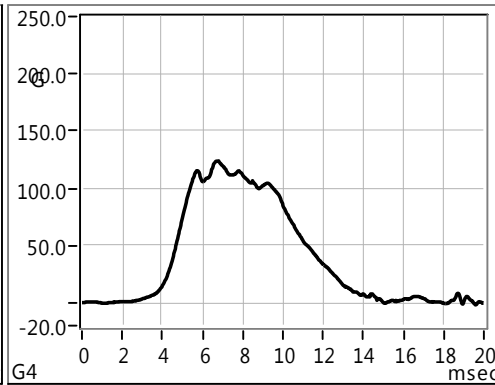
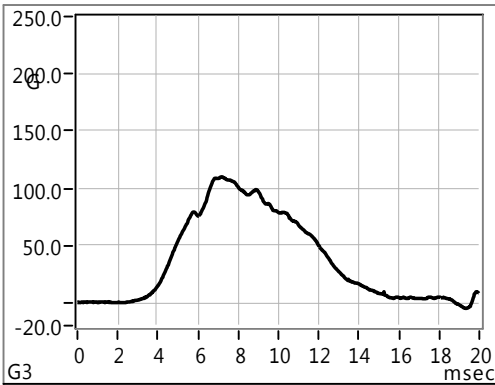
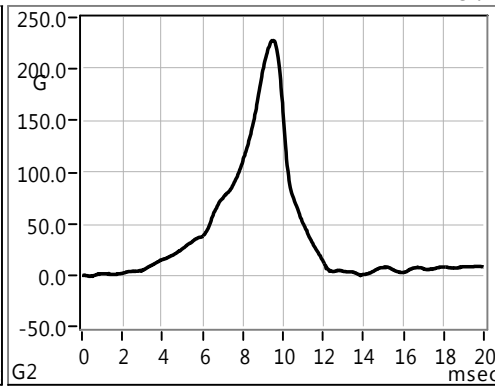
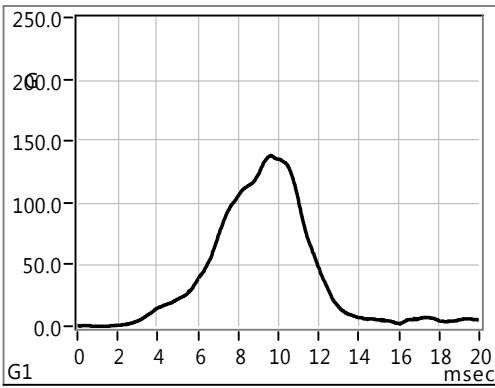
Address : No.605 Shanghai Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : KOV
Address :

Laboratory Technician name : Wille

Batch Number :

Ref. P.O. Number :



Model : ESTELAR
Color : Black
Size : L(59-60CM)
Weight : 1503.00 g
Manufacturing Date : 02 Nov 2023
Standard Request : FMVSS 218
Identification Code : 711.15746.002-B
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Cold
Laboratory Temperature : 22 deg C
Laboratory Humidity : 57 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.028 kg
Time gate flag height : 25.55 mm
Acc. sensibility (axis Z) : 10.59

Impact #	Peak Acc.(G)	HIC	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	138.3	595	5.1788	145.0	HEMI	0.00	0.00	LF FRONT	2023-11-02	09:11:28	2.9	Pass
6	227.8	872	5.3240	145.0	HEMI	1.48	0.81	LF FRONT	2023-11-02	09:11:39	0.2	Pass
7	109.7	453	5.1778	145.0	HEMI	0.00	0.00	RT REAR	2023-11-02	09:16:11	2.9	Pass
8	124.0	607	5.1843	145.0	HEMI	0.00	0.00	RT REAR	2023-11-02	09:16:15	2.8	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

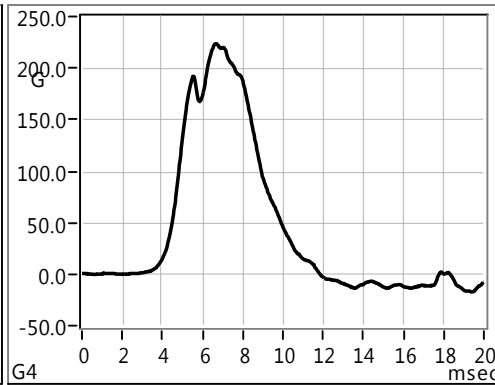
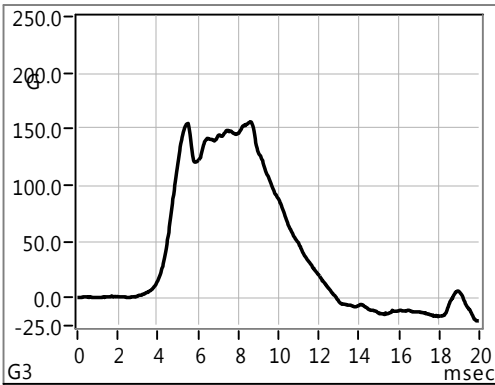
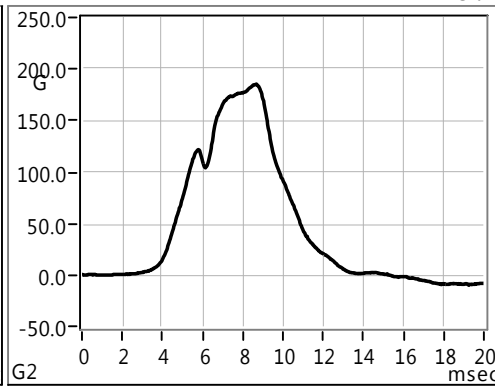
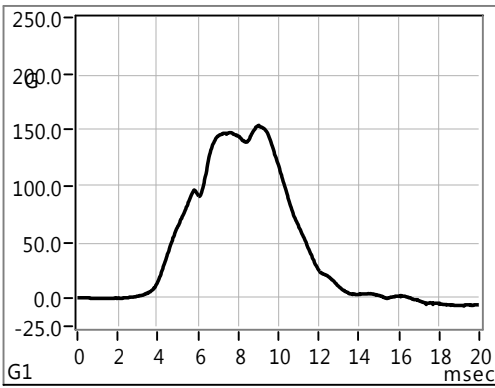
Address : No.605 Shanghai Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : KOV
Address :

Laboratory Technician name : Wille

Batch Number :

Ref. P.O. Number :



Model : ESTELAR
Color : Black
Size : L(59-60CM)
Weight : 1506.00 g
Manufacturing Date : 02 Nov 2023
Standard Request : FMVSS 218
Identification Code : 711.15746.002-C
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Hot
Laboratory Temperature : 22 deg C
Laboratory Humidity : 57 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.028 kg
Time gate flag height : 25.55 mm
Acc. sensibility (axis Z) : 10.59

Impact #	Peak Acc.(G)	HIC	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	154.0	957	6.0191	192.0	FLAT	0.55	0.00	RT FRONT	2023-11-02	08:56:53	1.9	Pass
2	185.4	1227	6.0506	192.0	FLAT	2.54	0.00	RT FRONT	2023-11-02	08:57:03	1.4	Pass
3	156.3	1065	6.0493	192.0	FLAT	0.86	0.00	LF REAR	2023-11-02	09:03:03	1.4	Pass
4	223.6	1773	6.0275	192.0	FLAT	3.29	1.34	LF REAR	2023-11-02	09:03:10	1.8	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

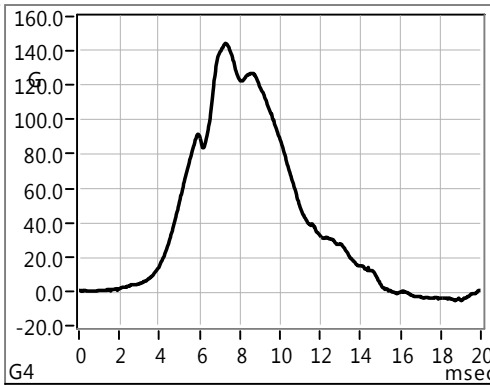
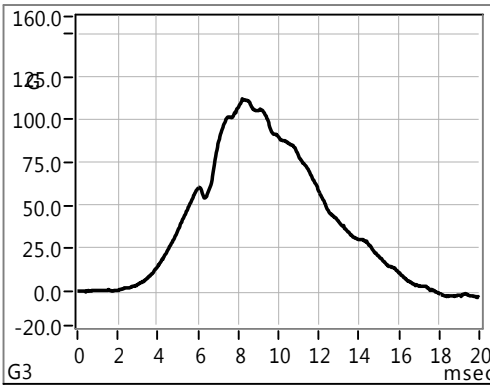
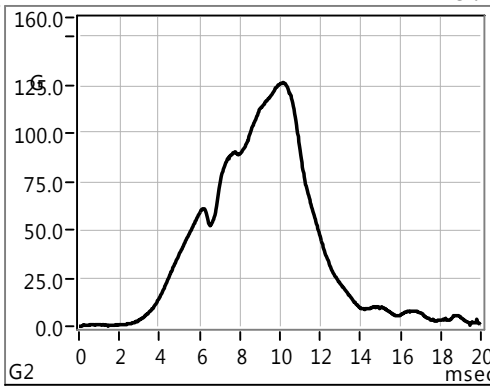
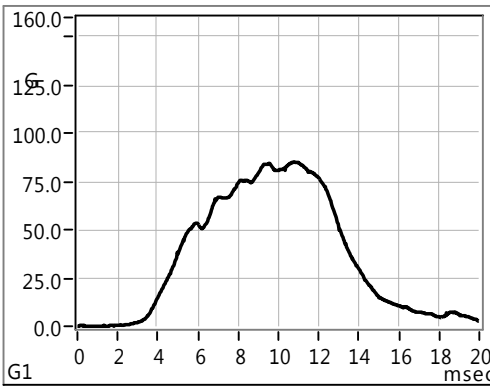
Address : No.605 Shanghai Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : KOV
Address :

Laboratory Technician name : Wille

Batch Number :

Ref. P.O. Number :



Model : ESTELAR
Color : Black
Size : L(59-60CM)
Weight : 1506.00 g
Manufacturing Date : 02 Nov 2023
Standard Request : FMVSS 218
Identification Code : 711.15746.002-C
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Hot
Laboratory Temperature : 22 deg C
Laboratory Humidity : 57 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.028 kg
Time gate flag height : 25.55 mm
Acc. sensibility (axis Z) : 10.59

Impact #	Peak Acc.(G)	HIC	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	85.3	331	5.1596	145.0	HEMI	0.00	0.00	LF FRONT	2023-11-02	09:12:26	3.2	Pass
6	126.3	474	5.2161	145.0	HEMI	0.00	0.00	LF FRONT	2023-11-02	09:12:33	2.2	Pass
7	112.0	429	5.1731	145.0	HEMI	0.00	0.00	RT REAR	2023-11-02	09:16:46	3.0	Pass
8	144.3	638	5.2119	145.0	HEMI	0.00	0.00	RT REAR	2023-11-02	09:16:50	2.3	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

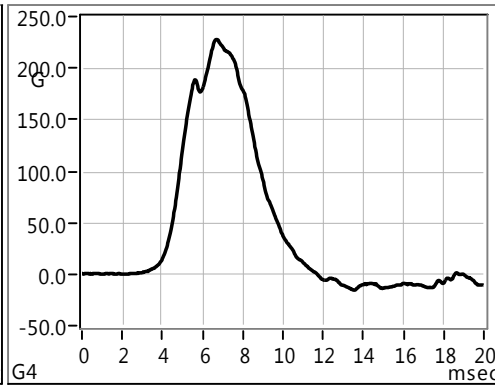
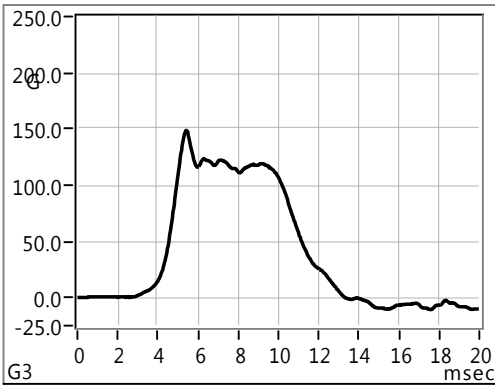
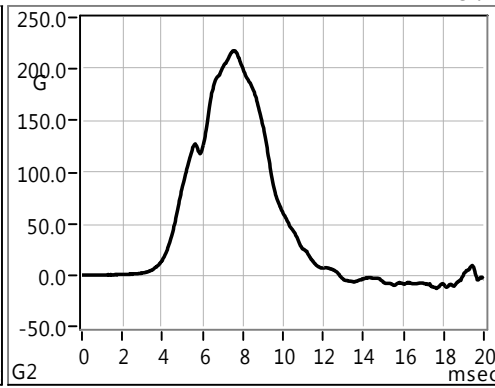
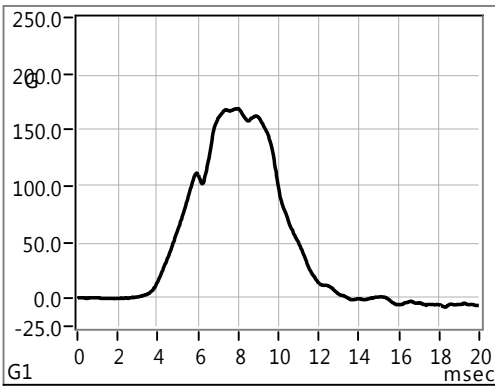
Address : No.605 Shanghai Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : KOV
Address :

Laboratory Technician name : Wille

Batch Number :

Ref. P.O. Number :



Model : ESTELAR
Color : Black
Size : L(59-60CM)
Weight : 1500.00 g
Manufacturing Date : 02 Nov 2023
Standard Request : FMVSS 218
Identification Code : 711.15746.002-D
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Wet
Laboratory Temperature : 22 deg C
Laboratory Humidity : 57 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.028 kg
Time gate flag height : 25.55 mm
Acc. sensibility (axis Z) : 10.59

Impact #	Peak Acc.(G)	HIC	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	168.8	1089	6.0582	192.0	FLAT	2.58	0.00	RT FRONT	2023-11-02	09:46:32	1.3	Pass
2	217.6	1468	6.0270	192.0	FLAT	2.68	1.05	RT FRONT	2023-11-02	09:47:11	1.8	Pass
3	148.5	832	6.0561	192.0	FLAT	0.00	0.00	LF REAR	2023-11-02	09:50:21	1.3	Pass
4	227.8	1738	6.0062	192.0	FLAT	3.14	1.41	LF REAR	2023-11-02	09:50:35	2.1	Pass

Impact Uni-Axial

Testing Laboratory : Taicang ACT Lab

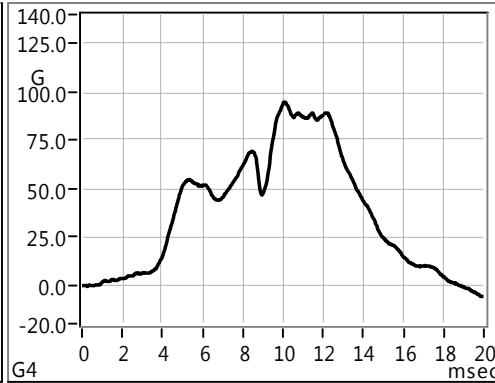
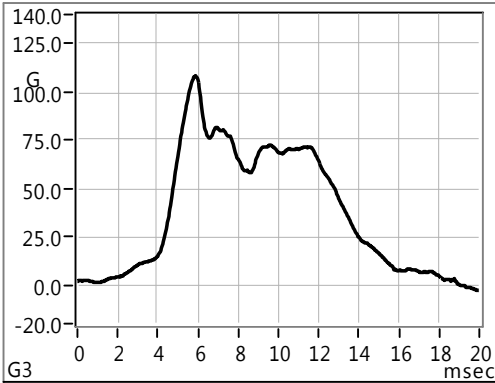
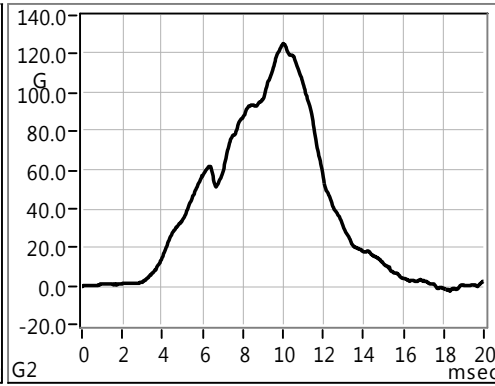
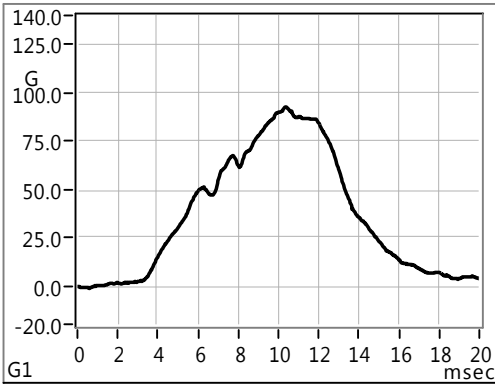
Address : No.605 Shanghai Road, Ludu Town,
Taicang City, Suzhou, Jiangsu
Province, China 215412

Helmet Manufacturer : KOV
Address :

Laboratory Technician name : Wille

Batch Number :

Ref. P.O. Number :



Model : ESTELAR
Color : Black
Size : L(59-60CM)
Weight : 1500.00 g
Manufacturing Date : 02 Nov 2023
Standard Request : FMVSS 218
Identification Code : 711.15746.002-D
Headform Model : D.O.T.
Headform Size : C D.O.T
Conditioning : Wet
Laboratory Temperature : 22 deg C
Laboratory Humidity : 57 %
Selected Filter Frequency : 1650 Hz
Maximum Peak G's authorized : 400 G
Maximum Peak m/s² authorized : 3923 m/s²
Drop mass assembly : 5.028 kg
Time gate flag height : 25.55 mm
Acc. sensibility (axis Z) : 10.59

Impact #	Peak Acc.(G)	HIC	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	92.7	331	5.3162	145.0	HEMI	0.00	0.00	LF FRONT	2023-11-02	09:53:11	0.3	Pass
6	125.4	456	5.2988	145.0	HEMI	0.00	0.00	LF FRONT	2023-11-02	09:53:18	0.6	Pass
7	108.4	357	5.3363	145.0	HEMI	0.00	0.00	RT REAR	2023-11-02	09:55:02	-0.1	Pass
8	94.5	324	5.2949	145.0	HEMI	0.00	0.00	RT REAR	2023-11-02	09:55:08	0.7	Pass

DOT Auto – Test results

Laboratory

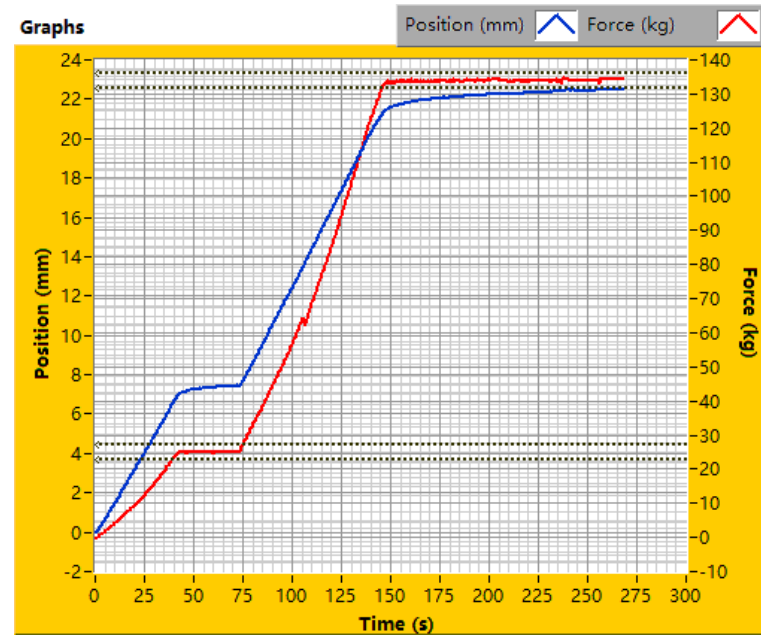
Laboratory ACT Lab
 Technician Terry
 Temperature 22
 Humidity 57

Sample

Model ESTELAR
 Color BLACK
 Size L(59-60CM)
 Weight 1505
 Manufacturer KOV
 Manuf. Date 10/23

Infos

Standard FMVSS No.218
 Comment 711.15746.002-A



Results

Test	Time Data D/M/Y h:ms	DL ?	Status	Tar1 (Kg)	Tar1 (S)	Tar2 (Kg)	Tar2 (S)	Delta(Del.1 to Del2 (mm)	Pass/Fail
Test#43	01/01/01 00:00:00	NO	Valid	22.7	30.0	136.0	120.0	14.8	Pass

DOT Auto – Test results

Laboratory

Laboratory ACT Lab
Technician Terry
Temperature 22
Humidity 57

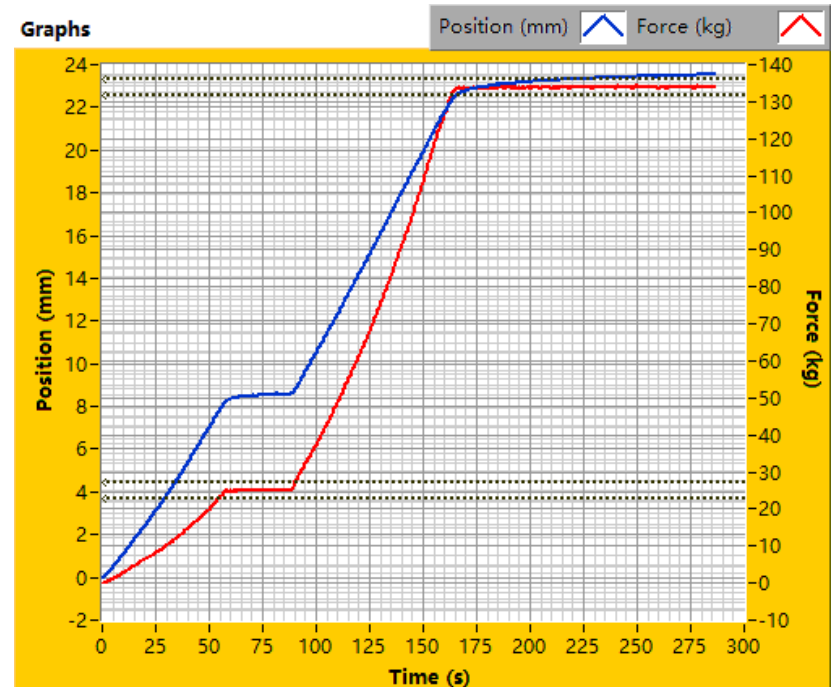
Sample

Model ESTELAR
Color BLACK
Size L(59-60CM)
Weight 1503
Manufacturer KOV
Manuf. Date 10/23

Infos

Standard FMVSS No.218
Comment 711.15746.002-B

Graphs



Results

Test	Time Data D/M/Y h:m:s	DL ?	Status	Tar1 (Kg)	Tar1 (S)	Tar2 (Kg)	Tar2 (S)	Delta(Del.1 to Del2) (mm)	Pass/Fail
Test#44	[01/01/01 00:00:01	NO	Valid	22.7	30.0	136.0	120.0	14.6	Pass

DOT Auto – Test results

Laboratory

Laboratory ACT Lab
Technician Terry
Temperature 22
Humidity 57

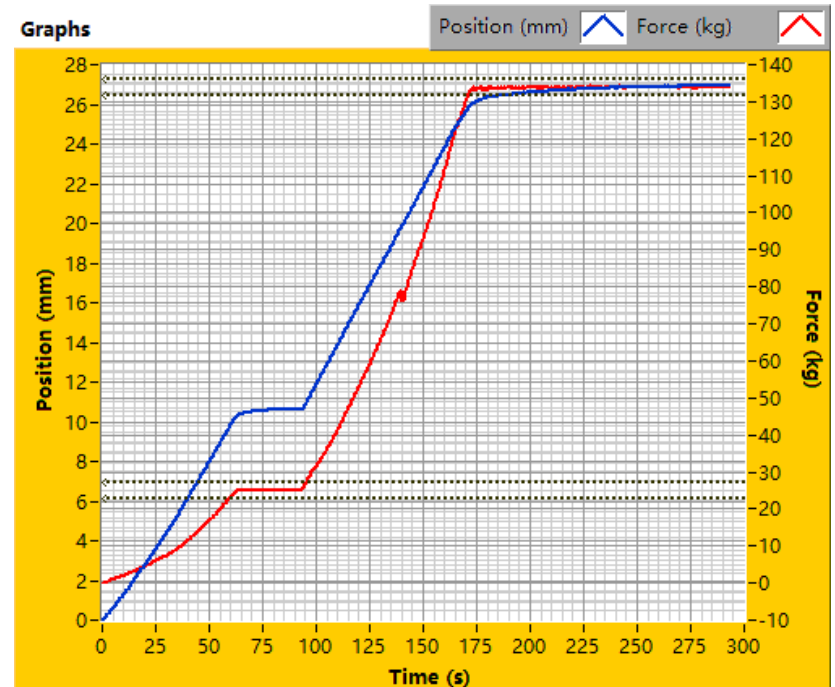
Sample

Model ESTELAR
Color BLACK
Size L(59-60CM)
Weight 1506
Manufacturer KOV
Manuf. Date 10/23

Infos

Standard FMVSS No.218
Comment 711.15746.002-C

Graphs



Results

Test	Time Data D/M/Y h:m:s	DL ?	Status	Tar1 (Kg)	Tar1 (S)	Tar2 (Kg)	Tar2 (S)	Delta(Del.1 to Del2) (mm)	Pass/Fail
Test#47	[01/01/01 00:00:01	NO	Valid	22.7	30.0	136.0	120.0	16.0	Pass

DOT Auto – Test results

Laboratory

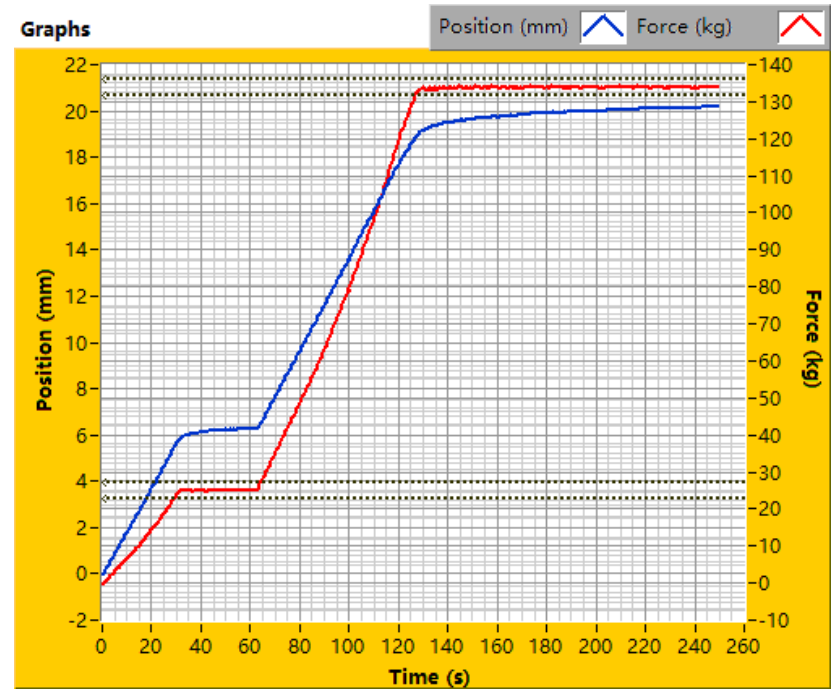
Laboratory ACT Lab
Technician Terry
Temperature 22
Humidity 57

Sample

Model ESTELAR
Color BLACK
Size L(59-60CM)
Weight 1500
Manufacturer KOV
Manuf. Date 10/23

Infos

Standard FMVSS No.218
Comment 711.15746.002-D



Results

Test	Time Data D/M/Y h:m:s	DL ?	Status	Tar1 (Kg)	Tar1 (S)	Tar2 (Kg)	Tar2 (S)	Delta(Del.1 to Del2) (mm)	Pass/Fail
Test#48	[01/01/01 00:00:01	NO	Valid	22.7	30.0	136.0	120.0	13.6	Pass

APPENDIX A

INTERPRETATIONS OR DEVIATIONS FROM FMVSS 218

1. S5.6 Labeling: *Client has supplied digital artwork for section 5.6.1 and 5.6.2, ACT has only evaluated that the required content is present.
2. S6.4 Conditioning: Excess water on the water immersed sample was allowed to drip off before testing to prevent water damage to test equipment.

APPENDIX B

Contract File No.: 711.15746

Test File: 002

Control Document: Official ACT FMVSS No.218 Report Template TP-07 CN 04 September 2023 Rev.27

SharePoint/GlobalResourceLibrary/Reporting/ReportTemplates/Helmets/FMVSS No.218

Technician: Wille Wang

Test Date: 02 November 2023



EQUIPMENT LIST AND CALIBRATION SCHEDULES

EQUIPMENT LIST						
Asset Tag	Location	Description of part	Model Number	Serial Number	Verification Interval	Next Verification
H1001	Helmet Room	Fixture	Yellow Tower - 1000_00_MIMAT	NA	NA	NA
H1002	Helmet Room	Fixture	Green Tower - Series 2000	NA	NA	NA
H1011	Helmet Room	Instrument	Impact Machine System DX3000 - Green tower	NA	NA	NA
H1013	Helmet Room	Instrument	CPSC/ASTM Dynamic Strength Charge Amplifier - ATA2001 (Backup)	J72863	Yes	Daily
H1015	Helmet Room	Fixture	CPSC/ASTM Positional Stability Fixture	NA	Yes	4/27/2024
H1017	Helmet Room	Fixture	DOT Retention System Machine - SB033	NA	Yes	4/27/2024
H1034	Helmet Room	Environmental chamber	Water Immersion Container	NA	NA	NA
H1043	Helmet Room	Headform	ISO/EN960 A Partial Headform (Impact)	4272	Yes	5/5/2024
H1044	Helmet Room	Headform	ISO/EN960 C Partial Headform (Impact)	6938	Yes	5/5/2024
H1045	Helmet Room	Headform	ISO/EN960 E Partial Headform (Impact)	4146	Yes	5/5/2024
H1046	Helmet Room	Headform	ISO/EN960 J Partial Headform (Impact)	4148	Yes	5/5/2024
H1047	Helmet Room	Headform	ISO/EN960 M Partial Headform (Impact)	4131	Yes	5/5/2024
H1048	Helmet Room	Headform	ISO/EN960 O Partial Headform (Impact)	4151	Yes	5/5/2024
H1049	Helmet Room	Headform	DOT Small (Impact)	5178	Yes	5/5/2024
H1050	Helmet Room	Headform	DOT Medium (Impact)	5179	Yes	5/5/2024
H1051	Helmet Room	Headform	DOT Large (Impact)	5190	Yes	5/5/2024
H1052	Helmet Room	Drop Mass	CPSC/ASTM Spherical Impactor	NA	Yes	5/5/2024
H1054	Helmet Room	Drop Mass	ASTM/SNELL Chin Bar Impactor	NA	Yes	5/5/2024
H1055	Helmet Room	Anvil	CurbStone - CPSC/ASTM	NA	Yes	5/5/2024
H1056	Helmet Room	Anvil	Cylindrical	NA	Yes	5/5/2024
H1059	Helmet Room	Anvil	Triangular Hazard	NA	Yes	5/5/2024
H1060	Helmet Room	Anvil	Hemispherical - Yellow tower	NA	Yes	5/5/2024
H1062	Helmet Room	Anvil	Flat - Yellow tower	C240812-01	Yes	5/5/2024
H1066	Helmet Room	Fixture	Penetration Magnetic Carriage	NA	Yes	6/25/2024
H1091	Helmet Room	Fixture	40° Up Vision Angle Block	NA	Yes	5/6/2024
H1092	Helmet Room	Clamp	Split Ring Clamp - 119g	NA	Yes	5/6/2024
H1093	Helmet Room	Clamp	Split Ring Clamp - 210g	NA	Yes	5/6/2024
H1094	Helmet Room	Clamp	Split Ring Clamp - 378g	NA	Yes	5/6/2024
H1095	Helmet Room	Clamp	Split Ring Clamp - 451g	NA	Yes	5/6/2024
H1096	Helmet Room	Clamp	Split Ring Clamp - 505g	NA	Yes	5/6/2024
H1097	Helmet Room	Clamp	Split Ring Clamp - 597g	NA	Yes	5/6/2024
H1098	Helmet Room	Clamp	Split Ring Clamp - 1158g	NA	Yes	5/6/2024
H1099	Helmet Room	Anvil	Flat - Green tower	NA	Yes	5/6/2024
H1100	Helmet Room	Anvil	Hemispherical - Green tower	NA	Yes	5/6/2024
H1101	Helmet Room	Headform	DOT Small (Reference)	NA	Yes	4/27/2024
H1102	Helmet Room	Headform	DOT Medium (Reference)	NA	Yes	4/27/2024
H1103	Helmet Room	Headform	DOT Large (Reference)	NA	Yes	4/27/2024
H1105	Helmet Room	Drop Mass	Aluminum Ball Stem - Green tower	NA	Yes	5/6/2024
H1106	Helmet Room	Drop Mass	Steel Ball Stem	NA	Yes	5/6/2024
H1107	Helmet Room	Drop Mass	Magnesium Ball Stem	NA	Yes	5/6/2024
H1123	Helmet Room	Fixture	CPSC/ASTM Roll Off Headform Base Fastened Plate	NA	NA	NA
H1126	Helmet Room	Drop Mass	Complete Pistol Grip - Green tower	NA	Yes	5/6/2024
H1127	Helmet Room	Headform	ISO/EN 960 C Full Headform (Reference)	6947	Yes	4/27/2024
H1128	Helmet Room	Headform	DOT Small (Penetration)	NA	Yes	4/27/2024
H1129	Helmet Room	Headform	DOT Medium (Penetration)	NA	Yes	4/27/2024
H1130	Helmet Room	Headform	DOT Large (Penetration)	NA	Yes	4/27/2024
H1143	Helmet Room	Fixture	DOT Brow Opening 1 Inch Block	NA	Yes	4/28/2024
H1146	Helmet Room	Fixture	DOT Penetration Height Stick	NA	Yes	6/25/2024
H1149	Helmet Room	Mass	Testing Area Preload Ballast	NA	Yes	4/28/2024
H1150	Helmet Room	Drop Mass	10kg Positional Stability Drop Mass	NA	Yes	4/28/2024
H1178	Helmet Room	Drop Mass	Complete Pistol Grip - Yellow tower	NA	Yes	5/6/2024
H1179	Helmet Room	Drop Mass	Aluminum Ball Stem - Yellow tower	NA	Yes	5/6/2024
H1189	Helmet Room	Drop Mass	DOT Penetration Striker Tip	070622-03	Yes	6/25/2024
H1196	Helmet Room	Fixture	DOT Retention Machine Static Load - SB033 (New)	NA	Yes	4/28/2024
H1197	Helmet Room	Fixture	DOT Retention LVDT Calibration Block	NA	Yes	Pending
H1204	Helmet Room	Drop Mass	Complete Pistol Grip - Yellow tower (Backup)	120122-07	Yes	5/6/2024
H1205	Helmet Room	Drop Mass	Ball Stem - Yellow tower (Backup)	NA	Yes	5/6/2024
H1213	Helmet Room	Fixture	CPSC/ASTM Dynamic Retention Strength Fixture	NA	Yes	4/28/2024
H1229	Helmet Room	Fixture	Penetration Tube	NA	Yes	6/25/2024
H1230	Helmet Room	Fixture	Penetration Headform Mount Holder	NA	NA	NA

Contract File No.: 711.15746

Test File: 002

Control Document: Official ACT FMVSS No.218 Report Template TP-07 CN 04 September 2023 Rev.27

SharePoint/GlobalResourceLibrary/Reporting/ReportTemplates/Helmets/FMVSS No.218

Technician: Wille Wang

Test Date: 02 November 2023



CALIBRATED MEASUREMENT DEVICES

Asset Tag	Description of part	Model Number	Measuring Range	Accuracy	Serial Number	Last Calibrated On	Calibration Due On
H1003	Instrument	Velocity Gate - Yellow tower	0-8.5m/s	±0.0001m/s	HVTG120120810-1	10/6/2022	10/5/2023
H1004	Instrument	Velocity Gate - Green tower	0-6.5m/s	±0.0001m/s	HVTG120090331-1	1/26/2023	1/25/2024
H1006	Instrument	Accelerometer PCB 353B18 - Yellow & Green tower	±500g	±0.1%	131607	1/26/2023	1/25/2024
H1007	Instrument	Accelerometer PCB 353B18 - Green tower	±500g	±1%	86079	10/5/2022	10/4/2023
H1009	Fixture	Digital Tape 16' - Yellow tower	0-5.5m	±0.1cm	5027526	11/24/2022	11/23/2023
H1010	Instrument	CCS PC4300 - Green tower	±500g	±0.1%	CCS120090331-1	1/26/2023	1/25/2024
H1012	Instrument	CPSC/ASTM Dynamic Strength LVDT - C20101007753 (Backup)	0-50mm	±0.1mm	C20101007753	11/22/2022	11/21/2023
H1014	Instrument	DOT Retention System LVDT - LWE-200	0-100mm	±0.1mm	2002572	11/22/2022	11/21/2023
H1025	Fixture	Electronic Scale - BT-6	0-6kg	±0.1g	12230126	6/26/2023	6/25/2024
H1026	Fixture	Laser Table - SB005	0-450mm, 0-20°	±1mm, ±1°	TLTV2KB-20090403-1	11/22/2022	11/21/2023
H1030	Conditioning	Oven #1 - 92*9240MBE	0-200°C	±0.1°C	8285	6/26/2023	6/25/2024
H1031	Conditioning	Oven #2 - DHG-9426	0-200°C	±0.1°C	1503338018	11/22/2022	11/21/2023
H1032	Conditioning	Freezer #1 - DW-25W300	-30~-10°C	±0.1°C	BE062100N00B29578VMO	6/26/2023	6/25/2024
H1033	Environmental chamber	Freezer #2 - DW-50W225	-30~-10°C	±0.1°C	F8LMJ	11/22/2022	11/21/2023
H1036	Fixture	Hygrothermograph #1 - TH-602F	-30-60°C, 0-100%	±1°C	3238	6/28/2023	6/27/2024
H1057	Anvil	Edge	NA	NA	NA	10/27/2020	10/26/2023
H1058	Anvil	Equestrian Hazard	NA	NA	NA	10/27/2020	10/26/2023
H1061	Anvil	Skate Blade	NA	NA	NA	10/27/2020	10/26/2023
H1063	Fixture	Digital tape - 5m	0-5m	±0.1mm	78223	11/24/2022	11/23/2023
H1064	Instrument	CCS PC4400 - Yellow tower	±500g	±0.1%	CCS120120810-1	1/26/2023	1/25/2024
H1070	Instrument	DOT Retention System Load Cell - 9363-B10-300-20T1	0-300lb	±0.1kg	80310843	6/26/2023	6/25/2024
H1072	Fixture	Hygrothermograph #4 - TH600B	-20~100°C, 0-100%	±1°C	Q/MDS001-2017-2	6/27/2023	6/26/2024
H1073	Fixture	Height Gauge	0-500mm	±0.01mm	8811213838273610	11/22/2022	11/21/2023
H1074	Fixture	Digital Vernier Caliper - SJ-455615	0-150mm	±0.01mm	455615	11/22/2022	11/21/2023
H1075	Fixture	Digital Level - SPI TRONIC Pro 360	0-360°	±0.1°	31-038-3	11/24/2022	11/23/2023
H1076	Instrument	Calorifier - CN-111	18-35°C	±0.1°C	NA	11/25/2022	11/24/2023
H1077	Fixture	ACT Tape	0-1.5m	±1mm	NA	11/24/2022	11/23/2023
H1117	Fixture	Helmet Internal Circumference Measure Tool	49-62cm	±1mm	NA	11/24/2022	11/23/2023
H1172	Fixture	Height Measurement Rod #6	600±5mm	±1mm	032216-02	6/24/2022	6/23/2025
H1174	Anvil	MEP Pad	NA	NA	021921-01	2022 yearly report	2023 yearly report
H1180	Instrument	CPSC/ASTM LVDT & Sensor Box	2 Inch	±0.1mm	04140748-001	11/22/2022	11/21/2023
H1184	Instrument	Accelerometer PCB 353B18 - Yellow tower	±500g	±1%	LW226664	10/5/2022	10/4/2023
H1190	Environmental chamber	Oven - KH-120A	5-250°C	±0.1°C	2201-020	11/22/2022	11/21/2023
H1193	Fixture	I-square	150*100mm	±1mm	SJT-43008	11/24/2022	11/23/2023
H1194	Fixture	Triangular Ruler	190mm	±1mm	SJT-43111	11/25/2022	11/24/2023
H1198	Instrument	LVDT Volfa LWE-200 (Head) - DOT Retention	0-150mm	±1mm	NA	3/10/2023	3/9/2024
H1199	Instrument	LVDT Volfa LWE-200 - DOT Retention Machine	0-150mm	±1mm	NA	3/10/2023	3/9/2024
H1200	Instrument	VPG load cell - 9363-B10-500-20T1 - DOT Retention Machine	0-500lb	±0.1kg	90139705	3/10/2023	3/9/2024
H1210	Fixture	Peripheral Vision	105° Both sides	105°	NA	4/27/2023	4/26/2026
H1214	Instrument	DOT Retention System LVDT (Head) - LWE-200	0-50mm	±0.1mm	27008-10	4/28/2023	4/27/2024
H1216	Fixture	Digital Vernier Caliper - GLA13S	0-300mm	±0.03mm; ±0.04mm	K23D014332	5/17/2023	5/16/2024

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Technician: Wille Wang

Test Date: 02 November 2023

APPENDIX C PHOTOGRAPHS

Contract File No.: 711.15746

Test File: 002

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Technician: Wille Wang

Test Date: 02 November 2023



Impact attenuation test apparatus and data acquisition equipment



Retention system test apparatus



DOT headforms (S, M, L) with flat and hemispherical anvils



Penetration test apparatus with adjustable base



High temperature conditioning chamber



High temperature conditioning chamber



Water immersion equipment



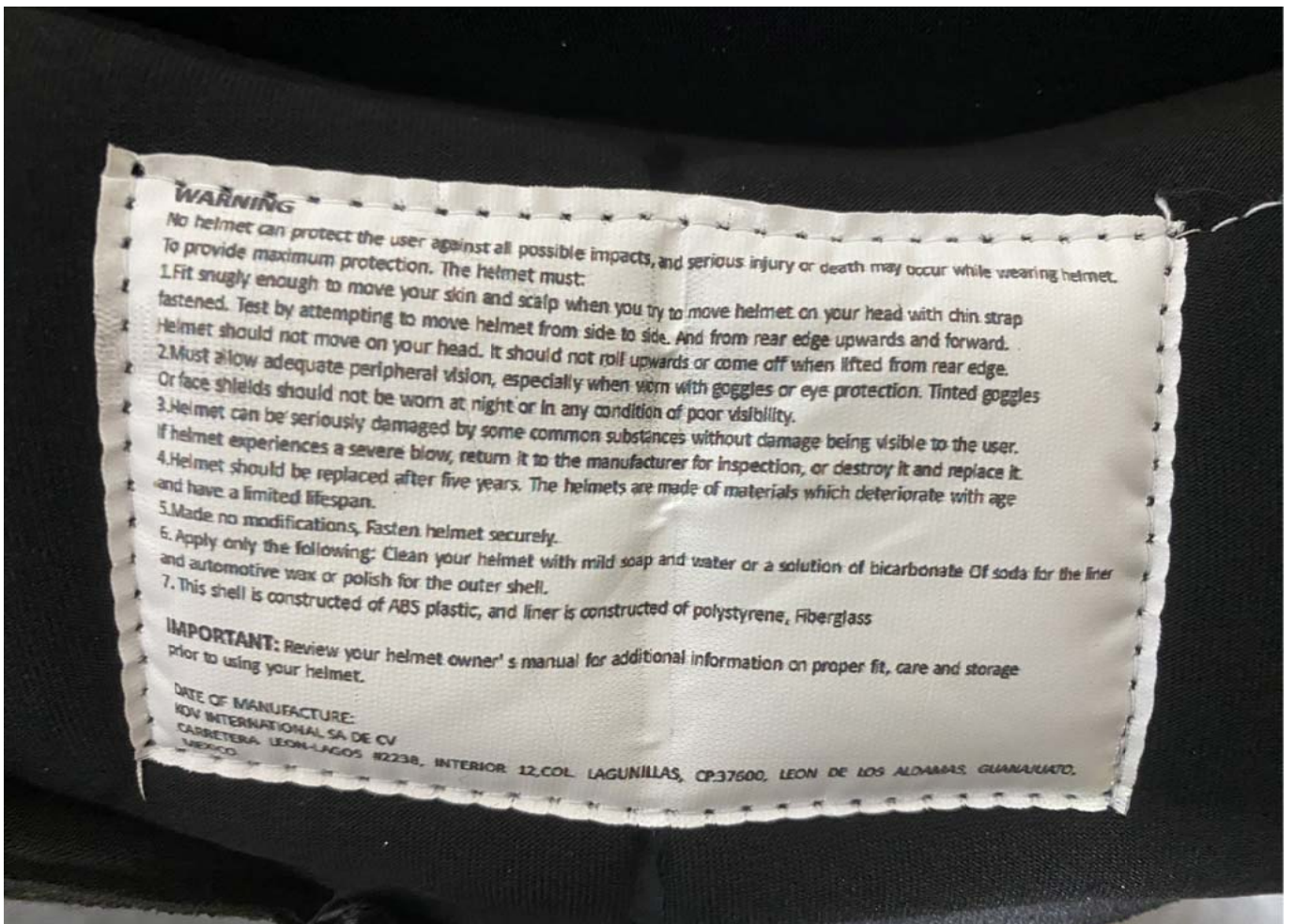
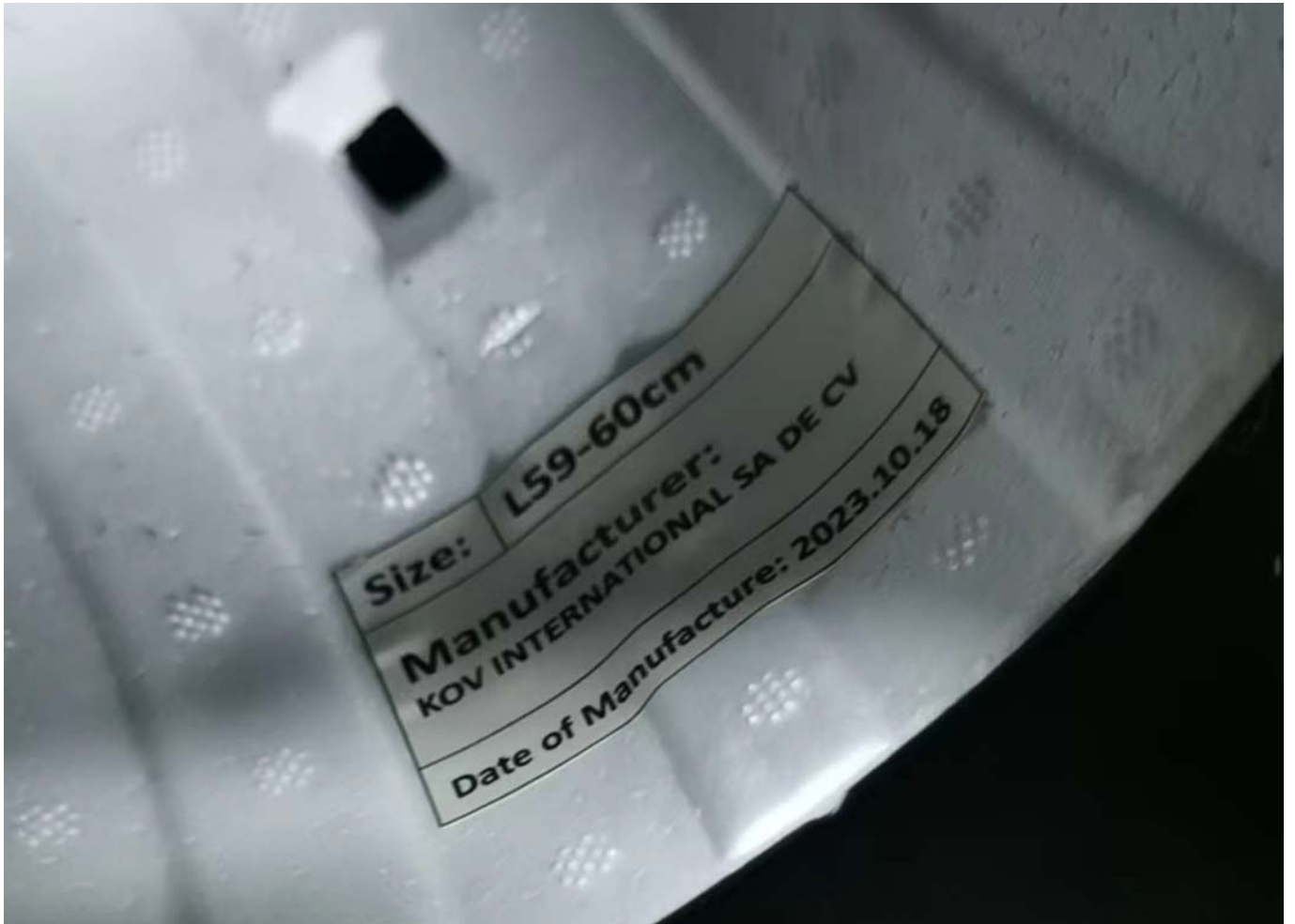
Low temperature conditioning chambers













NOTICE

1. The report is not effective without the signature of the person(s) authorizing the report (ACT Lab's authorized signatory is John A. Bogler (President)).
2. The report is not valid if altered.
3. Claims have to be made within 15 days after receipt of this report.
4. The results of this test report relate only to the items tested.
5. The results apply to the samples as received.
6. For reports that contain results from external test service providers: Results from external test service providers are supplied by the customer and can affect validity of results.
7. The results of this test report apply ASTM E29:2022 - Rounding Method, unless otherwise requested or noted within the report.
8. Decision rule applied according to "ILAC-G8:09/2019 - Guidelines on the Reporting of Compliance with Specification".

END OF REPORT

Contract File No.: 711.15746

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Technician: Wille Wang

Test Date: 02 November 2023