



THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

COMMUNICATION CONCERNING THE APPROVAL GRANTED <sup>(1)</sup> / ~~APPROVAL EXTENDED <sup>(1)</sup> /~~  
~~APPROVAL REFUSED <sup>(1)</sup> / APPROVAL WITHDRAWN <sup>(1)</sup> / PRODUCTION DEFINITELY~~  
~~DISCONTINUED <sup>(1)</sup>~~ OF A TYPE OF PROTECTIVE HELMET WITHOUT / WITH <sup>(1)</sup> ~~ONE / MORE <sup>(1)</sup>~~  
VISOR TYPE(S) WITHOUT / WITH <sup>(1)</sup> ~~ONE / MORE <sup>(1)</sup>~~ SPECIFIC ACCESSORY TYPE(S)  
PURSUANT TO UN REGULATION NO. 22.06

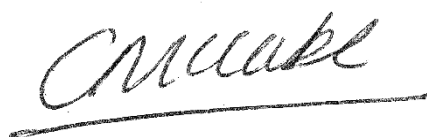


Approval No: E11\*22R06/03\*2206\*00

Reason(s) for extension: Not applicable

1. Trade mark: SENA
2. Type: PHANTOM UNPLUGGED
3. Sizes: XXL, XL, L, M, S
4. Manufacturer's name: SENA Technologies Co., Ltd.
5. Address:  
  
19, Heolleung-ro 569-gil  
Gangnam-gu, Seoul  
Republic of Korea
6. If applicable, name of manufacturer's representative: SENA Europe GmbH
7. Address:  
  
Paul-Henri-Spaak-Str. 22  
51069 Koln  
Germany
8. Brief description of helmet: See manufacturer's documentation

9. Helmet ~~without lower face cover (J)~~ / with protective lower face cover (P) / ~~with non protective lower face cover (NP)~~ / ~~with detachable or movable lower face cover (P/J)~~ <sup>(1)</sup>
10. Type of visor or visors: SENA-FF-01 (E11 062006), SENA-FF-01 SMOKE (E11 062162)
11. Brief description of visor or visors and inner visor if any: See manufacturer's documentation
12. ~~Helmet ready for specific accessory (SA)~~ / ~~ready for universal accessories (UA)~~ <sup>(1)</sup>
13. Accessories included in the helmet homologation and functionality: Not Applicable
14. ~~If UA helmet, speakers (S or S45) / Microphone (M) / Front mounting (F) / Side mounting (L), Rear mounting (R)~~ <sup>(1)</sup>: Not applicable
- 14.1. ~~If S40 or S45, speaker dummy used for the homologation test deformable / rigid~~ <sup>(1)</sup>: Not applicable
15. Submitted for approval on: 25 June 2025
16. Technical service responsible for conducting approval tests: Vehicle Certification Agency
17. Date of report issued by that service: 26 June 2025
18. Number of report issued by that service: VCA026075-1
19. Comments: None
20. Approval GRANTED / ~~EXTENDED~~ / ~~REFUSED~~ / ~~WITHDRAWN~~ <sup>(1)</sup>
21. Place: BRISTOL
22. Date: 20 July 2025
23. Signature:



C McCABE  
Chief Technical and Statutory Operations Officer

21. The following documents, bearing the approval number shown above, are available on request:

(1) Strike out what does not apply



Vehicle  
Certification  
Agency

THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

APPROVAL NUMBER: E11\*22R06/03\*2206\*00

### INFORMATION PACKAGE CONTENTS

INDEX REVISION NUMBER: 00

Conformity of Production (COP) Declaration    COP Confirmed

Assessment Method    COP Audit


Date of Initial Clearance    August    2023

Date of Last Clearance    August    2024

Total number of sheets: 17 (Seven-teen)

Reasons for Revision:    Not applicable

Revision Date  
&  
Office Stamp


	<b>Protective Helmets</b> UN Regulation 22.06	
	Type	: PHANTOM UNPLUGGED
	Document No.	: PHANTOM UNPLUGGED_22R_00
	Date	: 01 JUL 2025
	Type-approval No.	: E11*22R06/03*2206*00
	Job No.	: VCA026075-1

## Protective Helmets

UN Regulation 22.06

Type : PHANTOM UNPLUGGED

Total number of sheets : 17 (Seventeen)

	<b>Protective Helmets</b>	
	<i>UN Regulation 22.06</i>	
	Type	: PHANTOM UNPLUGGED
	Document No.	: PHANTOM UNPLUGGED_22R_00
	Date	: 01 JUL 2025
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	Job No.	: VCA026075-1

**0. GENERAL**

- 0.1. Make (trade name of manufacturer)  
: SENA
- 0.2. Type : PHANTOM UNPLUGGED
- 0.2.1. Commercial name(s) (if available)  
: PHANTOM UNPLUGGED, PHANTOM U
- 0.2.2. Variant(s) / Version(s) (if available) : NA
- 0.3. Location of E-mark : On the label sewn to the retention system
- 0.4. Company name and address of manufacturer  
: SENA Technologies Co., Ltd.  
19, Heolleung-ro 569-gil, Gangnam-gu, Seoul  
Republic of Korea
- 0.5. Name(s) and address(es) of assembly plant(s)  
: Qingyuan SENA Smart Helmets, LLC.  
Plant No.61, Hongrugu Science and Technology  
Industrial Park, No.21, 253 Provincial Road  
Longtang Town, Qingcheng District, Qingyuan City  
Guangdong Province  
China
- 0.6. Name and address of the manufacturer's representative (if any)  
: SENA Europe GmbH  
Paul-Henri-Spaak-Str. 22, 51069 Koln  
Germany
- 0.7. Number of visor types which can be fitted  
: 2

<b>SENA</b>	<b>Protective Helmets</b> <i>UN Regulation 22.06</i>	
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## 1. DISRIPTION OF THE HELMET

- 1.1. Style of helmet : Full face
- 1.2. Category of helmet : "P" with protective lower face cover
- 1.3. Sizes
- Large Shell : XXL (63-64), XL (61-62)
- Medium Shell : L (59-60),
- Small Shell : M (57-58), S (55-56)

### 1.4. Weight

SIZE	XXL	XL	L	M	S
WEIGHT	1650g±50		1600g±50	1550g±50	

- 1.5. Helmet ready for : Specific Accessory (SA)

- 1.6. Helmet prepared for (if UA helmet)
- : NA

## 2. SHELL

- 2.1. Material : Fiberglass with kevlar Composite
- 2.2. Composition of the border joint on the shell
- : PVC Gasket
- 2.3. Ventilation system
- 2.3.1. Number of ventilations : 3
- 2.3.2. Positioning on the shell : Front of Crown (Crown), Rear of Crown, Chin guard (Center)

## 3. RETENTION SYSTEM

- 3.1. Chin strap
- 3.1.1. Material : Nylon webbing
- 3.1.2. Width : 22mm
- 3.2. Comfort padding of retention system
- : Polyester
- 3.3. Strap retainer : Quick-release mechanism (SQRM-1)
- 3.4. Anchorages : Secured to shell by means of a single rivet to each side of helmet shell

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#### 4. PROTECTIVE PADDING

##### 4.1. Composition

	S-M Density (g/cm <sup>3</sup> )	L Density (g/cm <sup>3</sup> )	XL-XXL Density (g/cm <sup>3</sup> )
TOP	38±5		
HEAD	33±5		
Chin	55±5		
Mouth	65±5		

#### 5. COMFORT PADDING

##### 5.1. Composition and material

Comfort padding	: Sponge
Comfort tissue	: Polyester
Neck curtain	: Polyurethane

#### 6. VISOR

##### 6.1. Make (trade name of manufacturer)

: SENA

##### 6.2. Type

: SENA-FF-01, SENA-FF-01 SMOKE

##### 6.3. ECE type-approval mark

: SENA-FF-01: E11 062006-XXXXXXX  
: SENA-FF-01 SMOKE: E11 062162-XXXXXXX

##### 6.4. Company name and address of manufacturer

: SENA Technologies Co., Ltd.  
19, Heolleung-ro 569-gil, Gangnam-gu, Seoul,  
Republic of Korea

##### 6.5. Material

: Polycarbonate

##### 6.6. Surface treatment

: Anti-scratch

##### 6.7. Thickness

: 2.4mm

##### 6.8. Colour

: SENA-FF-01: Clear  
SENA-FF-01 SMOKE: SMOKE

##### 6.9. Manufacturing method

: Injection moulding

##### 6.10. Transmittance

: SENA-FF-01: Clear ≥80%  
SENA-FF-01 SMOKE: SMOKE ≥35%



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7. SUN SHIELD

7.1. Make (trade name of manufacturer)

: SENA

7.2. Type : SENA-IV-01

7.2.1. Commercial name(s) (if available)

: NA

7.3. Company name and address of manufacturer

: SENA Technologies Co., Ltd.  
19, Heolleung-ro 569-gil, Gangnam-gu, Seoul,  
Republic of Korea

7.4. Material : Polycarbonate

7.5. Surface treatment : Anti-scratch coating

7.6. Thickness : 1.6mm

7.7. Colour : Smoke

7.8. Manufacturing method : Injection moulding

7.9. Transmittance : ≥20%

8. SPECIFIC ACCESSORY

8.1. Make (trade name of manufacturer)

:

8.2. Type :

8.3. ECE type-approval mark

: NA

8.4. Company name and address of manufacturer

:

8.5. Material :

8.6. Weight :

8.7. Means of attachment :

8.8. Composition :

9. ADDITIONAL FEATURES

9.1. Detachable peak : NA

9.1.1. Material : NA

9.2. Information for wearers : Placed in helmet retail box

<b>SENA</b>	<b>Protective Helmets</b> <i>UN Regulation 22.06</i>	
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## LIST OF DRAWINGS

Drawing No.	Descriptions	Page
PHANTOM UNPLUGGED/22R-01	General view of the helmet	1
PHANTOM UNPLUGGED /22R-02	Drawing of the shell (Large size)	1
PHANTOM UNPLUGGED /22R-03	Drawing of the shell (Medium size)	1
PHANTOM UNPLUGGED /22R-04	Drawing of the shell (Small size)	1
PHANTOM UNPLUGGED /22R-05	Drawing of the visor (SENA-FF-01)	1
PHANTOM UNPLUGGED /22R-06	Drawing of the visor (SENA-FF-01 SMOKE)	1
PHANTOM UNPLUGGED /22R-07	Drawing of the sun shield (SENA-IV-01)	1
PHANTOM UNPLUGGED /22R-08	Drawing of the protective padding (XL~XXL)size	1
PHANTOM UNPLUGGED /22R-09	Drawing of the protective padding (L)size	1
PHANTOM UNPLUGGED /22R-10	Drawing of the protective padding (S~M)size	1
PHANTOM UNPLUGGED /22R-11	Drawing of the retention system (SQRM-1)	1

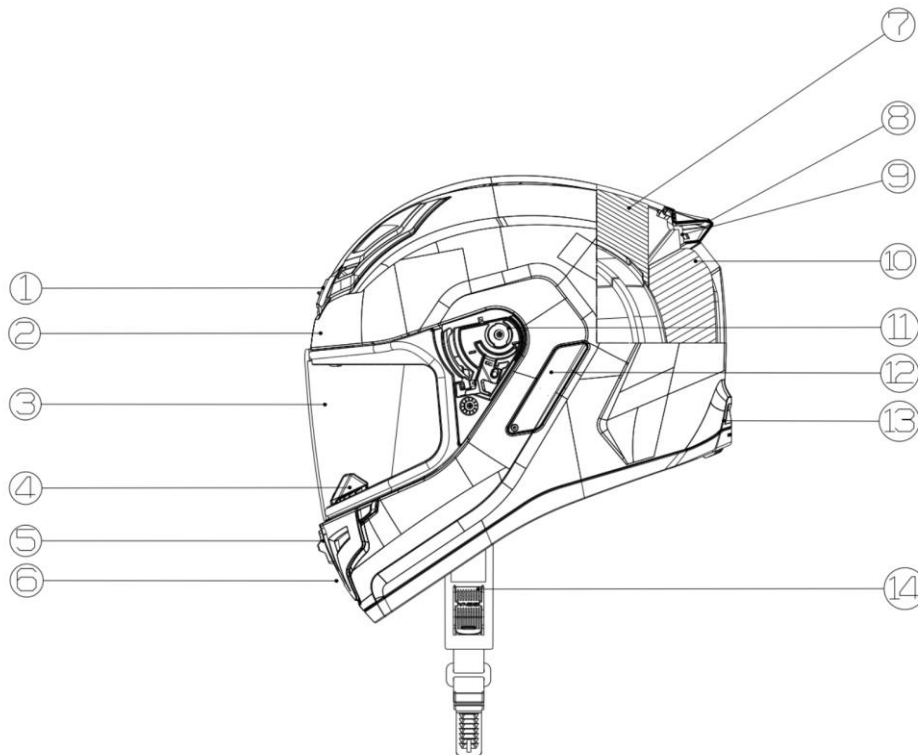
**SENA**

**Protective Helmets**  
UN Regulation 22.06


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Drawing no. PHANTOM UNPLUGGED/22R-01

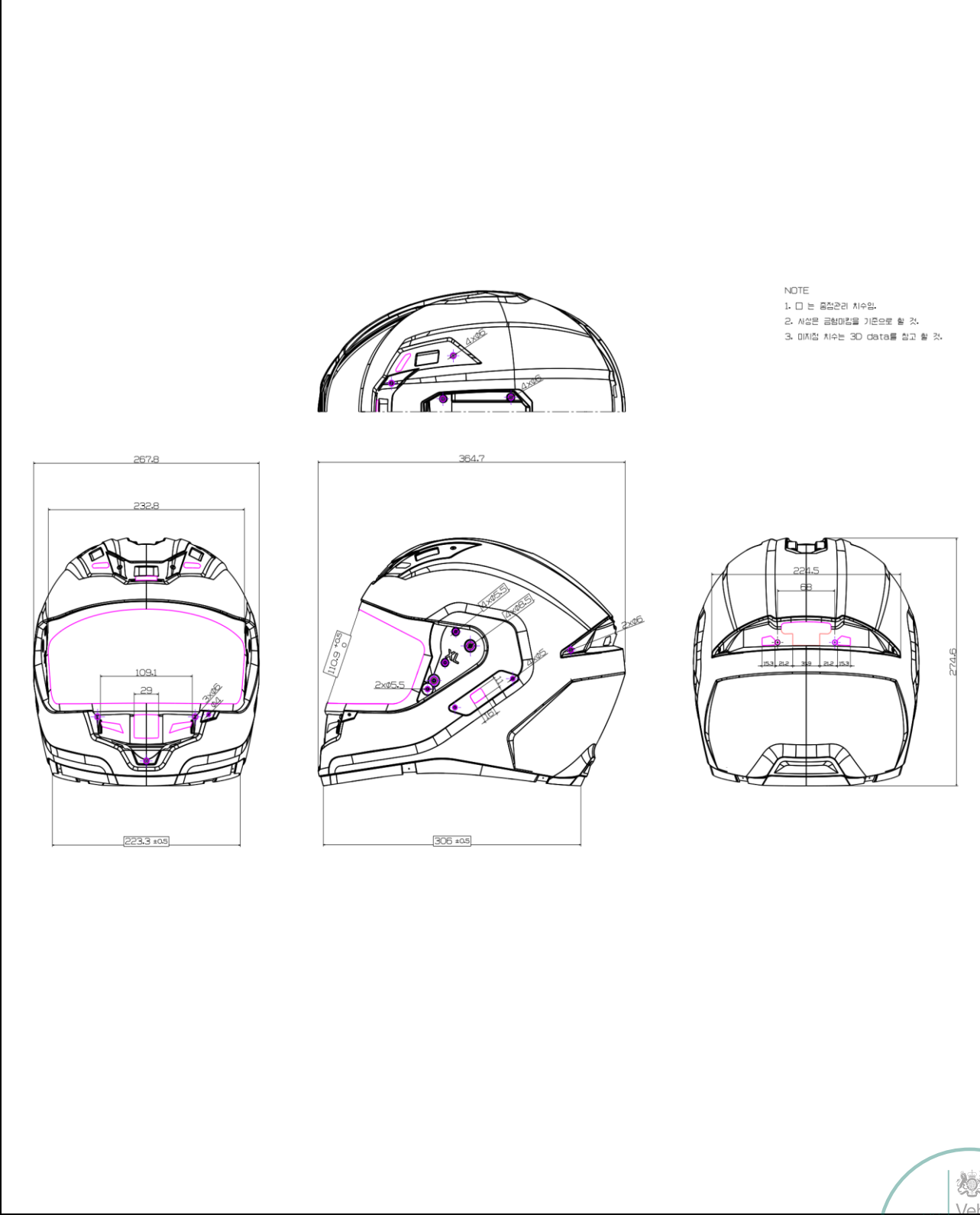
Description General view of the helmet



NO	PART NAME	MATERIAL	PART NO.	Q'TY	REMARKS
14	CHINSTRAP L/R	—		1set	
13	BODY CASE SET	—		1set	
12	UI DUMMY COVER SET	—		1set	
11	RATCHET	PC & POM		1set	
10	HEAD EPS	EPS		1	
9	TAIL LIGHT L/R	—		1set	
8	SPOILER VENT	PC/ABS		1	
7	TOP EPS	EPS		1	
6	MOUTH VENT	PC/ABS, POM		1set	
5	FLASH LIGHT	—		1set	
4	NOSEGUARD	TPU		1	
3	VISOR	PC		1	
2	SHELL	FRP		1	
1	TOP VENT	PC/ABS, POM		1set	


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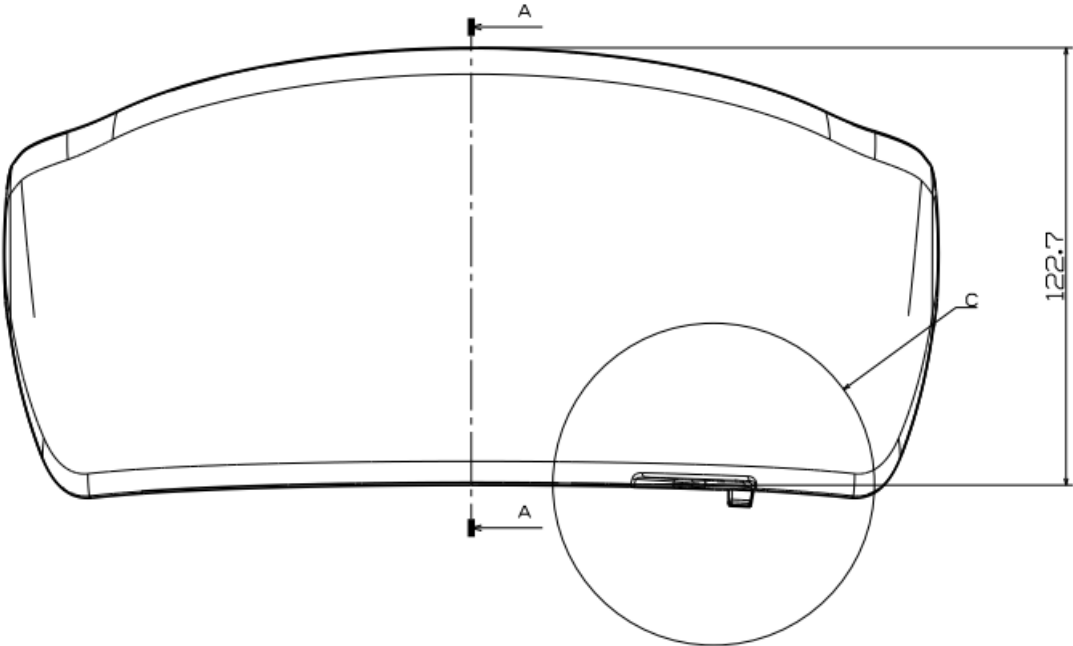
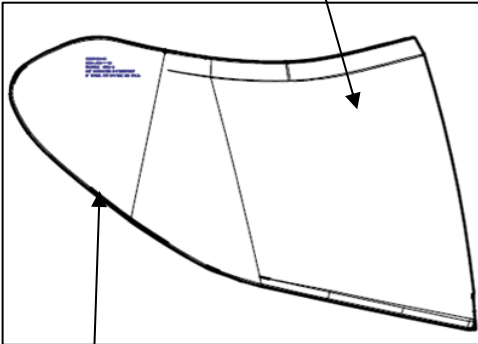
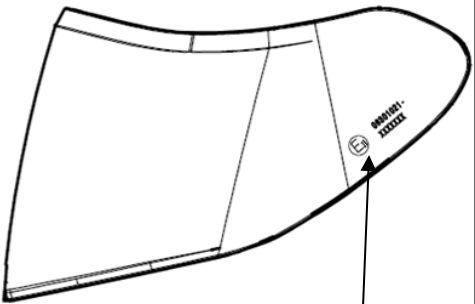
Drawing no.	PHANTOM UNPLUGGED/22R-02
Description	Drawing of the shell (XL~XXL)






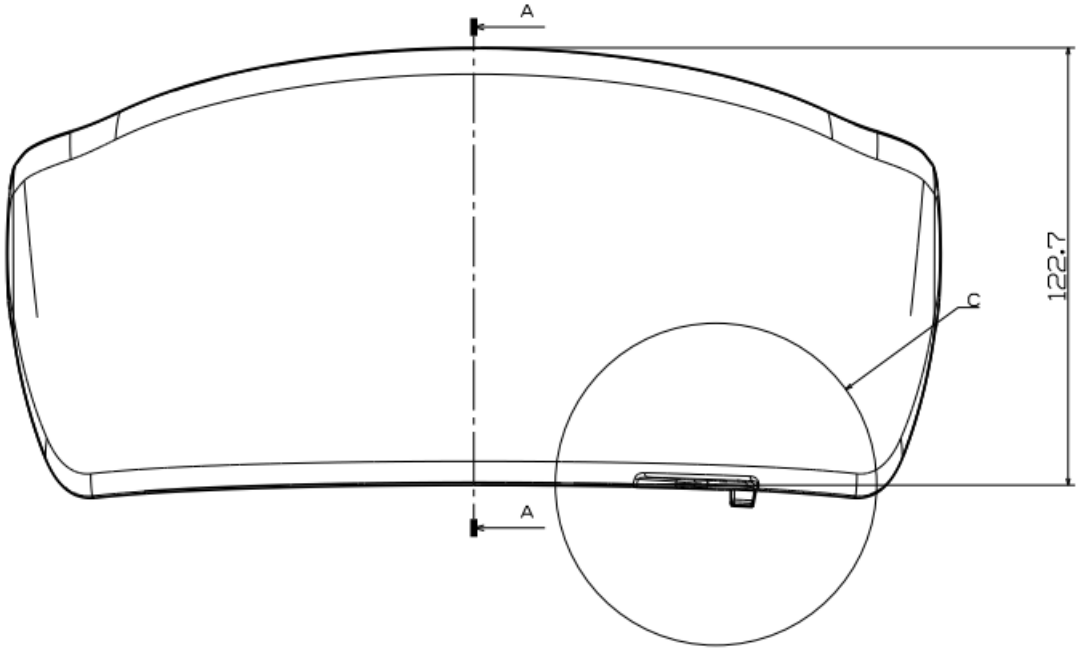


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Drawing no.	PHANTOM UNPLUGGED/22R-05
Description	Drawing of the visor (SENA-FF-01)
<div>  </div> <div> <p>THICKNESS : 2.4mm</p> <div>   </div> <div> <div> <div>MODEL: SENA-FF-01</div> <div>EXCEEDS VESC-8</div> <div>NOT WARRANTED SHATTERPROOF</div> <div>IF TINTED DAYTIME USE ONLY</div> </div> <div> <div>E11 062006-XXXXXXX</div> </div> </div> </div>	

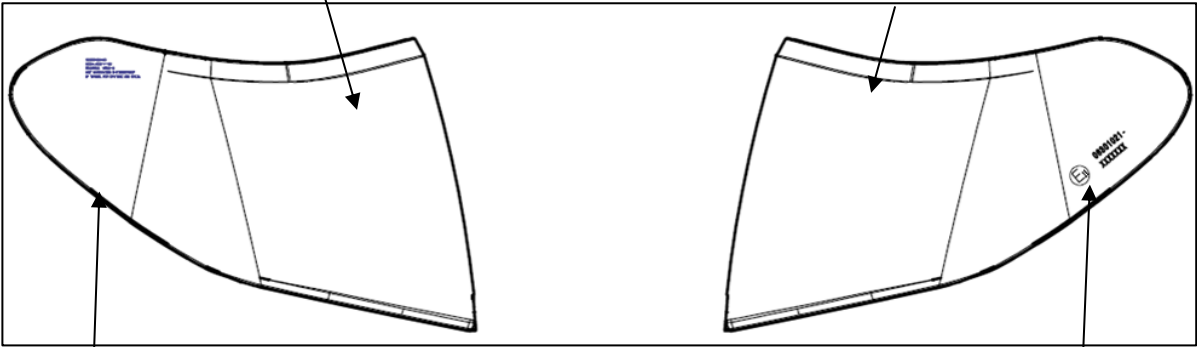
	<b>Protective Helmets</b> UN Regulation 22.06
	Type : PHANTOM UNPLUGGED
	Document No. : PHANTOM UNPLUGGED_22R_00
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Drawing no.	PHANTOM UNPLUGGED/22R-06
Description	Drawing of the visor (SENA-FF-01 SMOKE)



THICKNESS : 2.4mm


COLOR : SMOKE

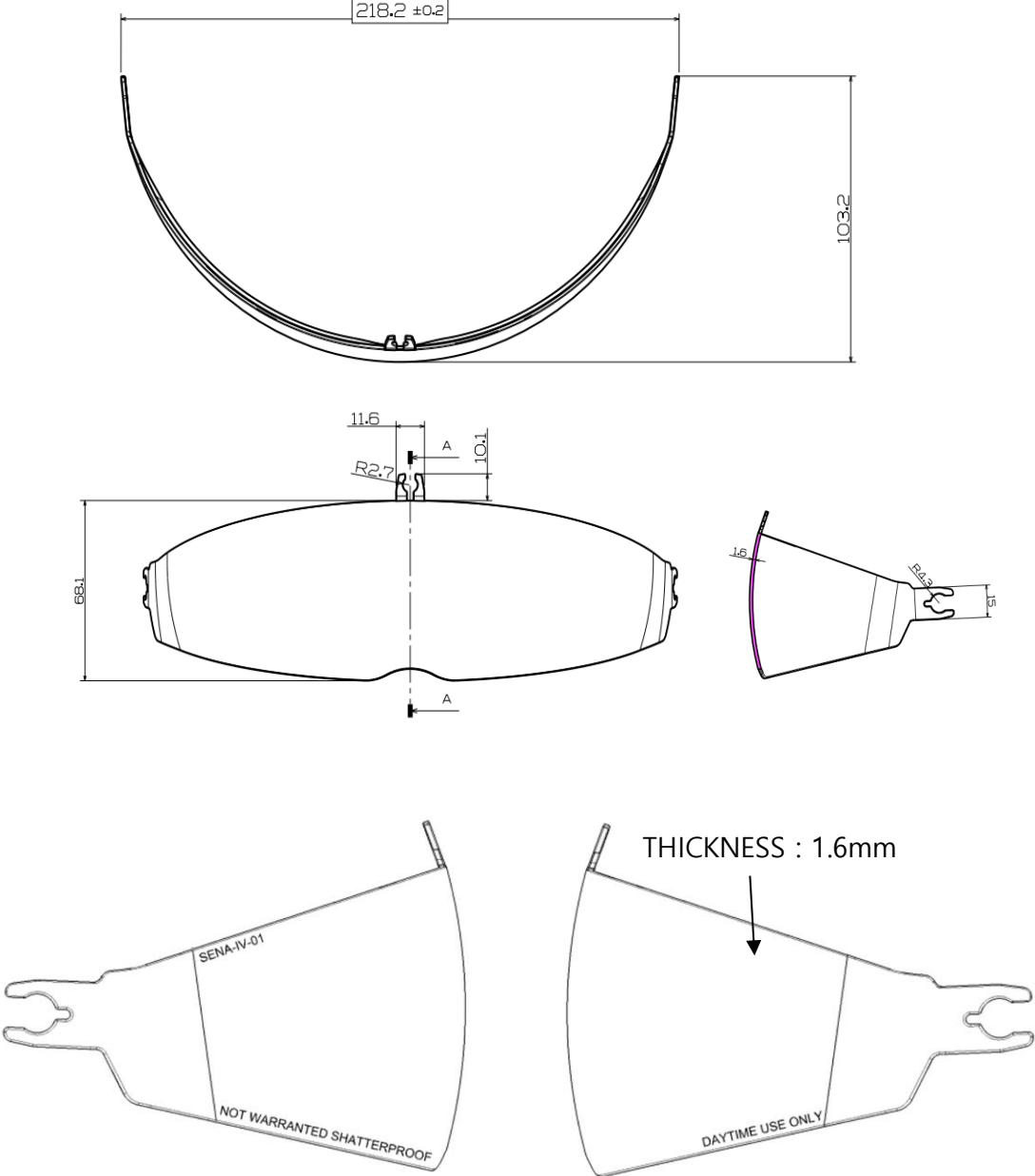


MODEL: SENA-FF-01  
EXCEEDS VESC-8  
NOT WARRANTED SHATTERPROOF  
IF TINTED DAYTIME USE ONLY

E11 062162-XXXXXXX



	<b>Protective Helmets</b>	
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Drawing no.	PHANTOM UNPLUGGED/22R-6
Description	Drawing of the sun shield (SENA-IV-01)
<div>  </div>	

SENA

**Protective Helmets**  
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Document No. : PHANTOM UNPLUGGED\_22R\_00

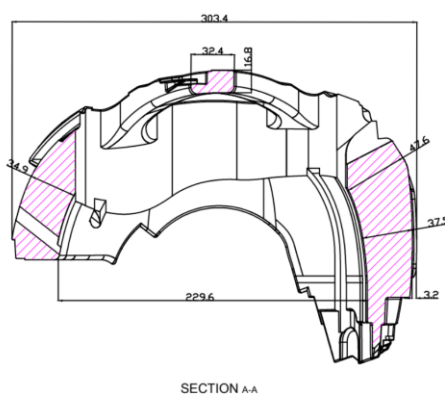
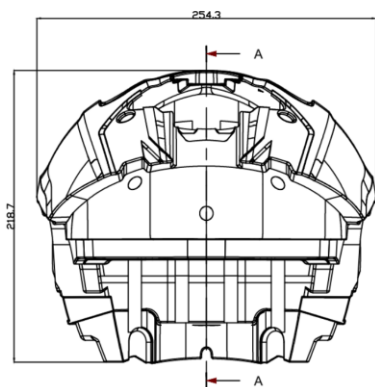
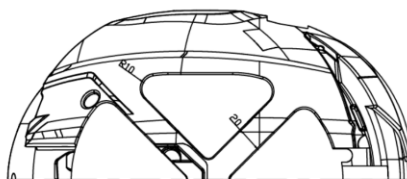
Date : 01 JUL 2025

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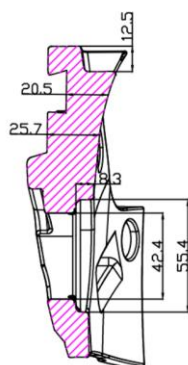
Job No. : VCA026075-1

Drawing no. PHANTOM UNPLUGGED /22R-7

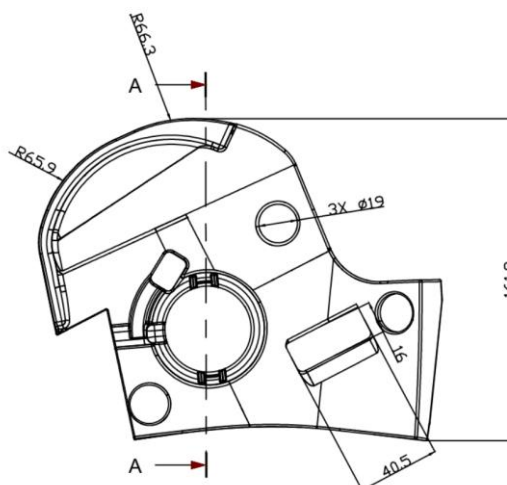
Description Drawing of the protective padding (XL~XXL)



SECTION A-A



SECTION A-A



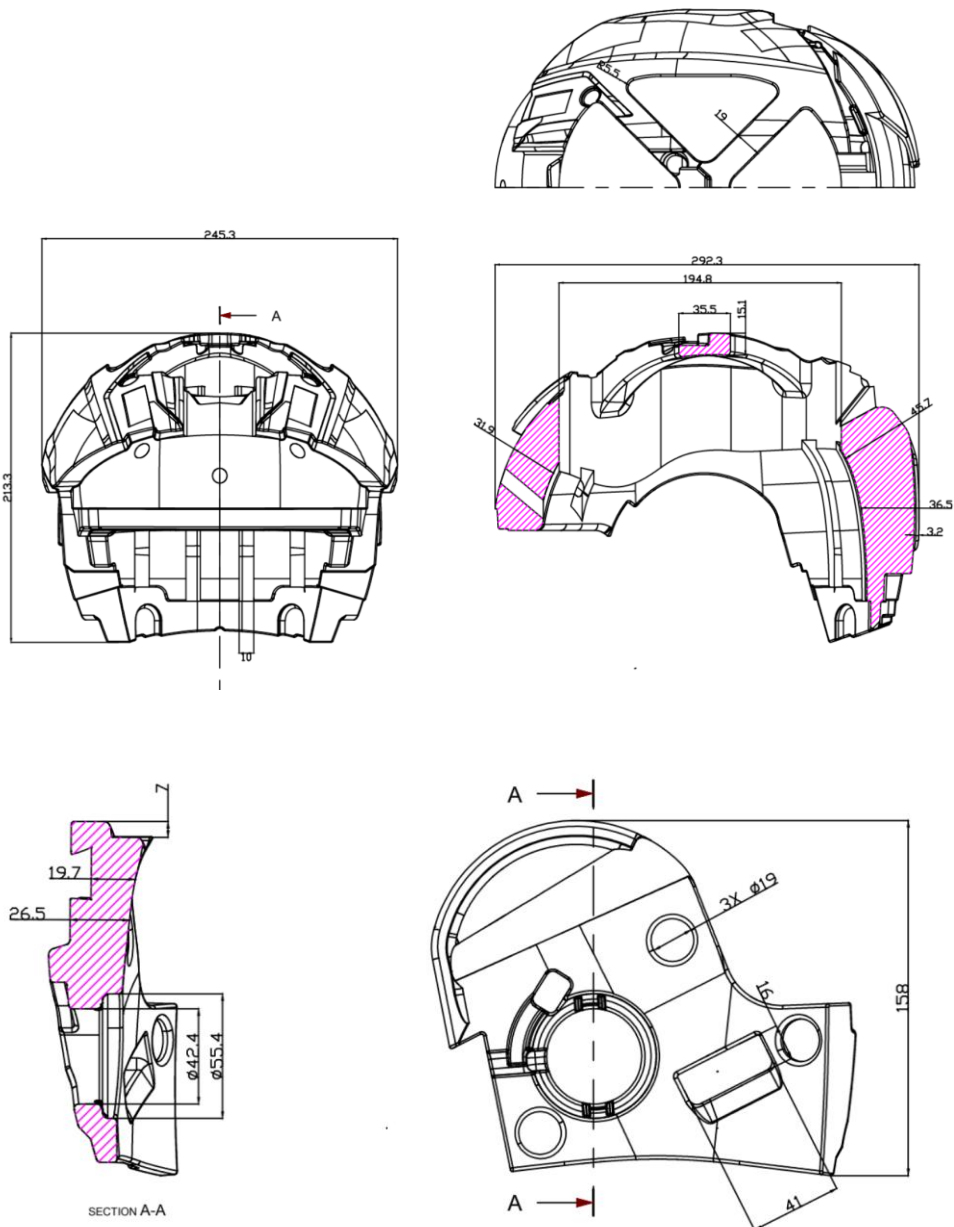
SENA

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Drawing no. PHANTOM UNPLUGGED /22R-8

Description Drawing of the protective padding (L)



SENA

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Document No. : PHANTOM UNPLUGGED\_22R\_00

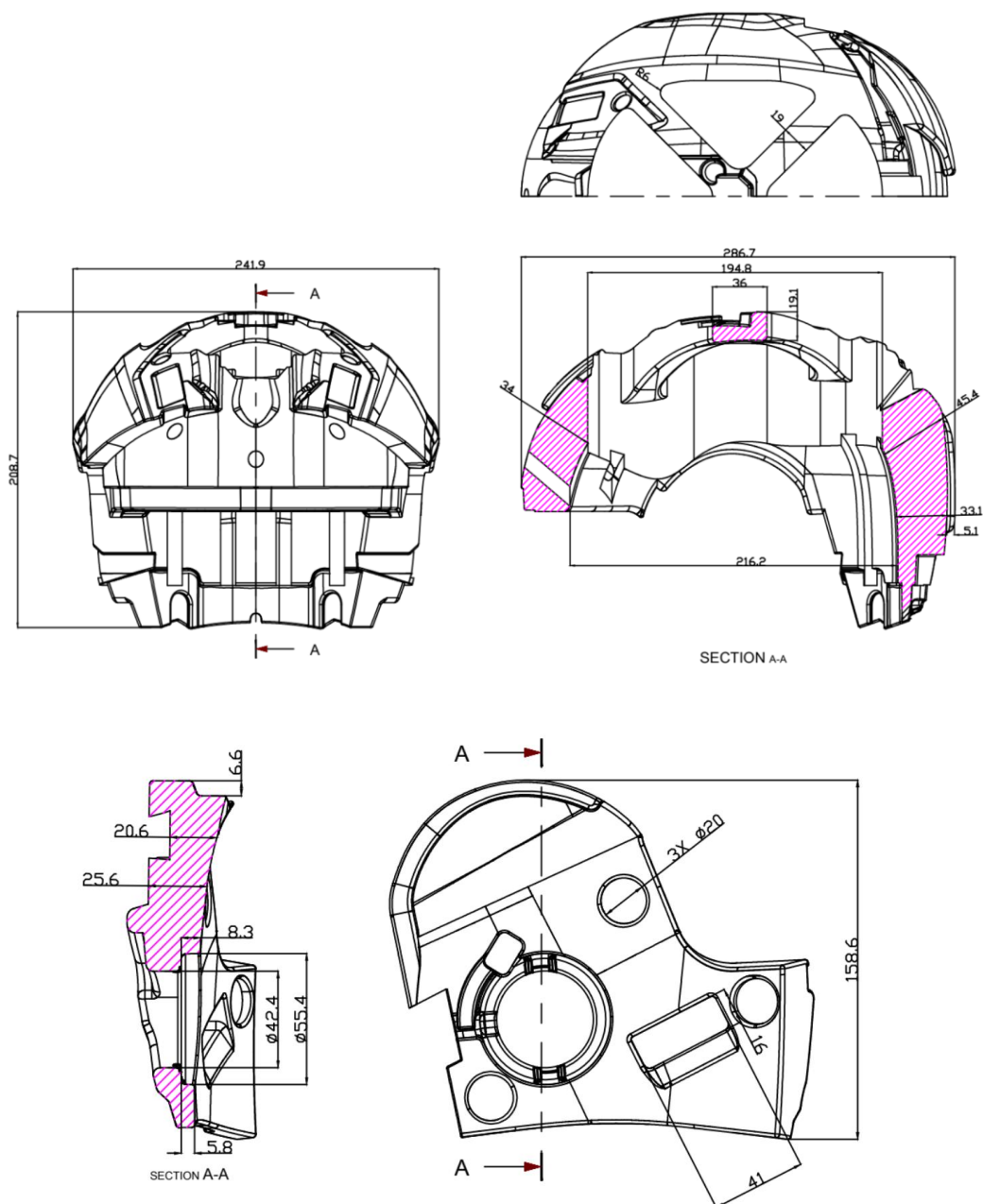
Date : 01 JUL 2025

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Drawing no. PHANTOM UNPLUGGED /22R-9

Description Drawing of the protective padding (S~M)







## Inspection/Test Report: Protective Helmets and their Visors for Drivers and Passengers of Motorcycles and Mopeds

### Legislation

UNECE Regulation 22.06 Consolidated to Supplement 3 (Revision 5 Amendment 3)

### Inspection/Test Details

Location of Inspection/Test: Qingyuan SENA Smart Helmets, LLC.  
Plant No.61, Hongrungu Science and Technology Industrial  
Park, No.21, 253 Provincial Road  
Longtang Town, Qingcheng District, Qingyuan City  
Guangdong Province  
China  
Date(s) of Inspection/Test: 26/06/2025  
VCA Representative(s): Jongduk Lee  
Engineers Home Office Location: VCA Korea  
Manufacturer's Representative(s): Suhan Kim  
Reason for Report: New Approval

### Manufacturer Details

Name and Address: SENA Technologies Co., Ltd.  
19, Heolleung-ro 569-gil, Gangnam-gu, Seoul  
Republic of Korea  
Type: PHANTOM UNPLUGGED  
Commercial Description: PHANTOM UNPLUGGED, PHANTOM U  
Category: "P" with protective lower face cover

### Conclusion

The above-mentioned vehicle / engine / component was tested in accordance with the above mentioned legislation and was found to comply in all respects. This report relates only to the items tested.

Inspection Report Engineer  
Signature:

Name: Jongduk Lee  
Position: Principal Type Approval  
Engineer  
Date: 26 June 2025

### List of Annexes

Annex	No of Pages	Subject
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II  
III  
IV

## Issue Record

Issue	Reason for re issue	Name of competent engineer re issuing	Date of re issue
0	Issue 0 is original report		

## Worst Case Rationale

Full test performed for new type approval.

Test carried out under the condition as follows:

Number of samples tested						
Test	Shell Size	Large		Medium	Small	
	Consumer Size	XXL	XL	L	M	S
	Headform Size	625	625	605	575	535
General Specifications check				1		
Impact Absorption		5	2	5	5	2
Impact Absorption Extra Point		-	2	2	-	2
Hi/Low Energy Impact		-	2	2	-	2
Projection and Surface Friction				1		
Rigidity		1	-	1	1	-
Retention (Dynamic & Detaching)		-	1	1	-	1
Tests for Oblique impact and measurement of rotational acceleration		2	-	2	2	-
Resistance to Abrasion of the Chin Strap:				1		
Retention Systems Relying on Quick Release Mechanism:				1		

*Note: Include information on variants and versions this report covers, as applicable. Supporting documents may be annexed to this report.*

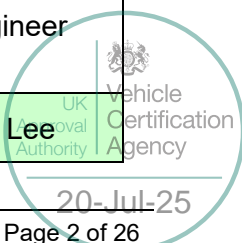
## Significant Interpretations, Alternative Test Methods, New Technologies

None

## Inspection/Tests Required

Markings:

Yes, NA, See Report ... / Approval ... / Annex ...	Test location	Dates	Engineer
Yes	Qingyuan SENA Smart Helmets, LLC.	25/06/2025	JD Lee





General Specifications:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Impact Absorption:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Projection and Surface Friction:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Rigidity:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Retention System (Dynamic):	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Retention (Detaching):	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Micro-slip of the Chin Strap:	NA			
Resistance to Abrasion of the Chin Strap:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Retention Systems Relying on Quick Release Mechanism:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Tests for Oblique impact and measurement of rotational acceleration:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee

## Component Specification Tested

Style of Helmet:	Full face
Size	
Shell Size:	Large Medium Small
Consumer Size:	XXL XL L M S
Weight:	1650g±50 1600g±50 1550g±50
Materials	
Shell:	Fiberglass with Kevlar Composite
Padding:	Polyurethane, Sponge
Liner:	EPS (Expanded Polystyrene type foam)
Chin Strap:	Nylon webbing
Retention System	
Type:	Two section system
Buckle:	One touch type
Strap Retainer:	Quick-release mechanism(SQRM-1)
Anchorage:	Secured to shell by means of a single rivet to each side of Helmet shell
Ventilation System:	Number of ventilations: 3 Positioning on the shell: Front of Crown (Crown), Rear of Crown, Chin guard (Center)
Type of Shell Edging:	PVC Gasket
Accessories:	Visor (model reference): SENA-FF-01, SENA-FF-01 SMOKE Sunshield (model reference): SENA-IV-01





Reflecting Band:  
Conspicuity marking:  
Additional Features:

NA

NA

NA

## Manufacturer's Documentation

Manufacturer's documentation is complete and reflects the agreed specification for the vehicle / engine / component tested and covers all variants and versions agreed in the worst case rationale.

Yes

Information document uploaded to job folder and identified by job number.

Yes

## Facility and Equipment Checks

Facility Appraisal reference number and date:

FAK178 and KXB612469  
30 August 2023

Calibration certificates are traceable to national or international standards of measurement, and stored in job folder:

Yes

Calibration checked and valid, recorded in the below table:

Yes

## Equipment

Description	Make	Model	Serial number	Calibration due date
Head Form #1	CADEX	100_01_HFM	8817	-
Head Form #2	CADEX	100_01_HFM	8795	-
Head Form #3	CADEX	100_01_HFM	8828	-
Head Form #4	CADEX	100_01_HFM	8788	-
Head Form #5	CADEX	100_01_HFM	8815	-
Head Form #6	CADEX	100_01_HFM	8789	-
Accelerometer (Twin Wire Impact Test Machine)	CADEX	1000-01-TWA01	050123-04	03/04/2025 + 1 year
UV Aging chamber	HOTOTECH	HT-6014	HB22430	26/08/2024 + 1 year
Heat conditioning unit	HOTOTECH	HT-5012	HB22431	26/08/2024 + 1 year
Low temperature conditioning unit	HOTOTECH	HT-5013	HB22432	26/08/2024 + 1 year
Projection & Surface Friction test apparatus	CADEX	1000-04-PSF01	050123-10	03/04/2025 + 1 year
Rigidity test apparatus	CADEX	1000-09-RTCSM	050123-09	03/04/2025 + 1 year
Retention System (Dynamic) test apparatus	CADEX	1001_03_RSM2 2	040323-09	03/04/2025 + 1 year
Retention (Detaching) test apparatus	CADEX	1000-02-ROESV	050123-03	03/04/2025 + 1 year
Field of Vision Gauge Kit	CADEX	1588	051523-01	29/08/2024 + 1 year



Chinstrap Multipurpose Machine	CADEX	1000-01-CMM01	050123-08	03/04/2025 + 1 year
Angle protractor	WESTWARD	1000-02-ROESV	855292	29/08/2024 + 1 year

\*Specify calibrated date + (interval) or calibration due date.

### Equipment Remarks

None

Note: VCA apply measurement uncertainty to calibrated items and require pass results including equipment uncertainty.

### Software used in Testing

Description	Make	Version	Validation method
Impact test apparatus	CADEX	200_04_CSOF V8.68	Covered in FA
UV Aging chamber	HOTOTECH	TK8072iP	Validation by equipment manufacturer
Heat conditioning unit	HOTOTECH	SW Ver. X1TK8070IHLTYC10MV103.05A X2WP1M20RTHLYC10CV103.05G	Validation by equipment manufacturer
Low temperature conditioning unit	HOTOTECH	SW Ver. X1TK8070IHLTYC10MV103.05A X2WP1M20RTHLYC10CV103.05G	Validation by equipment manufacturer




Inspection/Test Requirements	Complies Yes / NA
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## Markings

4.1.1.	On the helmet, it bears the applicant's trade name or mark, and an indication of the size and, if appropriate, an indication of the unsuitability of the lower face cover to offer any protection against impacts to the chin.	Yes
4.3.	Marking is not placed within the main visibility area.	Yes
4.4.	Marking is indelible, clearly legible and in a readily accessible place.	Yes
8.2	Raw data of test paragraph 7.13. stored by the technical service and available to the approval authority. (for the purpose of improvement of the Regulation at a later stage.)	Yes

## General Specifications

6.1.	Basic construction of the helmet is in the form of a hard outer shell, containing additional means of absorbing impact energy and a retention system.	Yes
6.2.	Protective helmet may be fitted with ear flaps and a neck curtain. It may also have a detachable peak, a visor, additional sun shield, electronic equipment or accessories and a lower face cover. If fitted with a non-protective lower face cover, the outer surface of the cover is marked 'Does not protect chin from impacts' and/or with the symbol shown in Figure 1 below, indicating the unsuitability of the lower face cover to offer any protection against impacts to the chin. 	Yes
6.3.	No component or device is fitted to or incorporated in the protective helmet, unless it is designed in such a way that it will not cause injury and that, when it is fitted to or incorporated in the protective helmet, the helmet still complies with the requirements of this regulation.	Yes

Note: this symbol or indication must be visible and extend over at least 2 cm<sup>2</sup>



	Accessories are fitted in accordance with the helmet manufacturer's instructions and, if it is the case, also in accordance with the accessory manufacturer's instructions. Only approved helmets and approved accessories according to this Regulation can guarantee the performance of the combination of them.	
6.3.1.1	<p>Helmets may be prepared for fitting universal accessories:</p> <p>Helmet has markings on the exterior of the helmet shell or any visible component as a reference for the installation of the universal accessories main external components.</p> <p>Area where the universal accessories are fitted is at least 30 mm of distance from any point of any impact affected area to the lower edge of the helmet shell (the lower rubber rim is considered to be helmet shell for this purpose).</p>	NA
6.3.1.2	<p>Installation of exterior accessories is done in such a way that no part of a universal accessory, whose maximum main unit(s) dimensions are as defined in Annex 20, are located in an impact affected area.</p> <p>Helmet designed to be fitted with universal accessory has either appropriate space for attaching the device or clamp fixation system as foreseen in Annex 20. A space or clamp fixation has been provided on both sides of the helmet for each declared position symmetrically located with respect to the longitudinal vertical plane.</p> <p>At least one position for accessories fixation has been declared.</p>	NA
6.3.1.3	<p>If the helmet fulfils the requirements of 6.3.1.1. and 6.3.1.2. it has been marked as ready for Universal Accessories "UA".</p> <p>Helmets marked as "UA" have also fulfilled the additional requirements and tests prescribed by this Regulation.</p>	NA
6.3.1.4	<p>If the helmet is prepared for speakers, the helmet has a dedicated space of at least 41 mm diameter and a depth of at least 8 mm. Optionally, the helmet may be prepared for bigger speakers and, in this case, the related diameter shall be increased to at least 46 mm diameter.</p> <p>Helmet has been prepared to accommodate the wires for the speakers, if there is no special arrangement for the wires, the above-mentioned diameters have been increased by 2 mm.</p> <p>Helmet has been tested to assess that the appropriate speaker simulators, as defined in Annex 20, have no adverse effect and that in any case the helmet still complies with all the requirements as set forth in Chapter 7.3.</p>	NA



	In this case, the helmet shall be marked as "S" or "S45" depending on the assessment done.	
6.3.1.5	For helmets designed for fitting speakers, minimum distance between the speakers allows a headform of the appropriate size to pass through them. This requirement has to be met for a speaker of 12mm thickness and the maximum declared diameter.	NA
6.3.1.6	If the helmet is prepared to fit microphone and the helmet is of type P or P/J, the helmet has been tested to assess that the microphone simulator defined in Annex 20, located in a specific location foreseen on the helmet for the microphone or, if there is not such a specific location perfectly marked, the worst case position at the discretion of the Technical Service, has no adverse effect and that in any case the protective helmet still complies with all the requirements as set forth in Chapter 7.3.  In this case, the helmet is marked as "M". Any helmet ready for universal accessories of type J or NP shall be marked as "M".	NA
6.3.1.7	If the helmet has the accessory space or clamping fixation in the front-side position, the helmet is marked as "F".	NA
6.3.1.8	If the helmet has the accessory space or clamping fixation in the side position, the helmet is marked as "L".	NA
6.3.1.9	If the helmet is prepared to fit a rear mounted accessory, the helmet is marked as "R".	NA
6.3.1.10	If the helmet has different declared positions to fit accessories, they are positioned in such a way that universal accessories can be fitted in all declared positions at the same time.	NA
6.3.1.11	When all the accessory positions declared by the helmet manufacturer are in use, the accessories do not prevent the use of any helmet mechanism.	NA
6.3.2.1	Helmets that can be placed on the market with specific accessories, or for which specific accessories will exist, have been tested to assess that the supplementary equipment has no adverse effect and that in any case the protective helmet and/or visor still complies with all the requirements as set forth in Chapter 7. The evaluation has been done with and without the accessory and their support.	NA



6.3.2.2

Helmets declared as ready to fit specific accessories and has been evaluated as per the previous paragraph, are marked as "SA".

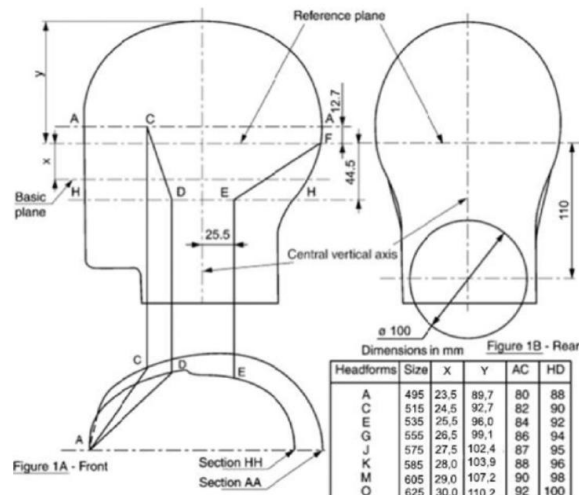
NA

6.4.1.

Shell covers all areas above plane AA' and extends downwards at least as far as the lines 'CDEF' on both sides of the headform.

Note: See Annex 4, Figure 1A.

Yes



6.4.2.

At the rear, the rigid parts and, in particular, the shell, are not within a cylinder, defined as follows:

- Diameter: 100 mm;
- Axis situated at the intersection of the medium plane of symmetry of the headform and of a plane parallel to and 110 mm below the reference plane.

Note: See Annex 4, Figure 1B.

Yes

6.4.3.

Protective padding covers all the areas defined in paragraph 6.4.1, with account being taken of the requirements of paragraph 6.5.

Yes

6.5.

Helmet does not dangerously affect the wearer's ability to hear.

Yes

6.5.

Temperature in the space between the head and the shell does not rise inordinately.

Note: To prevent this, ventilation holes may be provided in the shell.

Yes

6.5.

Where means for attaching a visor are not provided, the profile at the front edge does not prevent the wearing of goggles.

Yes

6.6.

All projections from, or irregularities in the outer surface of the shell greater than 2 mm, are tested for shear assessment according to paragraphs 7.4.1 or 7.4.2. The outer surface of the helmet is tested for friction assessment, according to paragraphs 7.4.1 or 7.4.2. This applies in particular to a movable lower face cover in all positions intended by the manufacturer.

Yes

6.7.

All external projections are radiused and any external projections other than press-fasteners are smooth and adequately faired.

Yes



6.7.1.	All external projections not more than 2 mm above the outer surface of the shell (e.g. rivet heads) have a radius of a minimum of 1 mm.		Yes
6.7.2.	All external projections more than 2 mm above the outer surface of the shell have a radius of a minimum of 2 mm. <i>Note: Latter specific requirements do not apply if a projection satisfies the requirements in paragraphs 7.4.1 or 7.4.2 below.</i>		Yes
6.8.	There are no inward-facing sharp edges on the inside of the helmet; rigid, projecting internal parts are covered with padding so that any stresses transmitted to the head are not highly concentrated.		Yes
6.9.	Various components of the protective helmet are so assembled that they are not liable to become easily detached as a result of an impact.		Yes
6.9	In the case of visor and movable or detachable lower face cover, only when in not protective position, the detachment is acceptable provided that it is complete and not to cause possible injuries to the user		Yes
6.10.	Retention systems are protected from abrasion.		Yes
6.11.	Helmet is held in place on the wearer's head by means of a retention system, which is secured under the lower jaw. All parts of the retention system are permanently attached to the system or to the helmet.		Yes
6.11.1.	If the retention system includes a chin-strap, the strap is not less than 20 mm wide under a load of 150 N $\pm$ 5 N, applied under the condition prescribed in paragraph 7.6.2:	22 mm	Yes
6.11.2.	Chin strap does not include a chin cup.		Yes
6.11.3.	Chin straps are fitted with a device to adjust and maintain tension in the strap.		Yes
6.11.4.	Chin strap fastening and tensioning devices are positioned on the straps so that: - There are no rigid parts extending more than 130 mm vertically below the headform reference plane, with the helmet mounted on the appropriate sized headform* <del>— The whole of the device is between the bony projections of the underside of the lower jaw*</del> <i>*Strikethrough, as appropriate.</i>		Yes
6.11.5.	If the retention system includes either a double-D ring or sliding bar fastening device ("roller buckle"), then means are provided to prevent the retention system being completely undone and also to		NA





	retain the free end of the strap when the retention system is adjusted. (If the retaining system can be opened completely, it must be possible only with voluntary action. To prevent any possible misuse, the helmet must be provided with detailed instructions on the use of the buckle if required.)	
6.11.6.	Sliding bar and double-D ring fastening devices are fitted with a pulling flap to be used for releasing the retention system. Its colour is red and its minimum dimensions are 10 x 20 mm.	NA
6.11.7.	If a retention system includes a quick-release mechanism, then the method of release of this mechanism is self-evident. Any levers, tabs, buttons or other components that need to be operated to release the mechanism are coloured red; those parts of the rest of the system that are visible when closed are not similarly coloured, and the mode of operation is permanently indicated.	Yes
6.11.8.	Retention system remains closed when the tests described in paragraphs 7.3, 7.6 and 7.7 are carried out.	Yes
6.11.9.	Buckle of the retention system is designed so as to preclude any possibility of incorrect manipulation. This means inter alia (among other things) that it is not possible for the buckle to be left in a partially closed position.	Yes
6.12.	If the lower face cover is detachable or movable, the lower face cover is fitted with a device that maintains the intended position even during the complete series of impacts and retention (detaching) test. The device is such that incorrect handling is impossible. The control/actuating device must be of red colour. The helmet must comply with the requirements for helmet categories "J", "P" or both.	NA
6.13.	Characteristics of the materials used in the manufacture of helmets are known not to undergo appreciable alteration under the influence of ageing or of the circumstances of use to which the helmet is normally subjected, such as exposure to sun, extremes of temperature and rain. For those parts of the helmet coming into contact with the skin, the materials used are known not to undergo appreciable alteration through the effect of perspiration or of toilet preparations. The manufacturer does not use materials known to cause skin troubles. The suitability of a proposed new material is established by the manufacturer.	Yes
6.14.	After the performance of one of the prescribed tests, the protective helmet does not exhibit any breakage or deformation dangerous to the wearer. Note: As example visor sunshield and shell significant cracks or any part partially detached (spoiler, lower face cover, accessories) that can hurt the user while he's rolling on the road.	Yes

### Peripheral Vision





- 6.15.1 The technical service has selected from among the existing sizes of  
6.15.2 a helmet type the size it considers likely to yield the least favourable  
result and helmet placed on the headform corresponding to its size  
by the procedure set out in Annex 5 to this Regulation;
- 6.15.3. There is no occultation in the field of vision bounded by:  
- Horizontally: Two segments of dihedral angles symmetrical in  
relation to the median longitudinal vertical plane of the headform  
and situated between the reference and the basic planes. Each of  
6.15.3.1. these dihedral angles is defined by the median longitudinal vertical  
plane of the headform and the vertical plane forming an angle of  
not less than 105° with the median longitudinal vertical plane and  
whose edge is the straight line LK;  
- Upwards: Dihedral angle defined by the reference plane of the  
headform and a plane forming an angle of not less than 7° with the  
6.15.3.2. reference plane and whose edge is the straight line L<sub>1</sub> L<sub>2</sub>, the  
points L<sub>1</sub> and L<sub>2</sub> representing the eyes;  
- Downwards: Dihedral angle defined by the basic plane of the  
6.15.3.3. headform and a plane forming an angle of not less than 45° with  
the basic plane, and whose edge is the straight line K<sub>1</sub> K<sub>2</sub>.

Yes

Yes

### Visors

- 6.16.1. Systems of attachment of a visor to a helmet is such that the visor is  
removable. It is possible to manoeuvre the visor out of the field of  
vision with a simple movement of one hand. (However, the latter  
prescription may not be required for helmets which do not provide  
chin protection provided that a label is attached to the helmet to the  
effect of warning the purchaser that the visor cannot be  
manoeuvred.)
- 6.16.2. Angle opening (see annex 9)  $\geq 5^\circ$ :

Yes

Yes

### Sun Shield

- 6.17.1 Sun shield does not restrain or prevent the movement of the visor.  
On opening the visor, the sun shield can pivot in the working  
position.  
By means of a simple movement the sun shield is able to be moved  
separately from the visor out of the visual field.
- 6.17.2.1 Sun shield does not restrict the field of vision given in paragraph  
6.15. in the working or parking position. If the sun shield is fixed  
outside of the visor, the surface may include fixings or devices to  
make movement possible. The total surface of the fixings or devices  
does not exceed 2cm<sup>2</sup>; they can be distributed on both sides of the  
field of vision.

Yes

Yes



## Conspicuity Marking

6.18.1. In order to comply with national requirements for use, the helmet may be required by individual Contracting Parties to contribute to the conspicuity of the user both during the daytime and at night from the front, rear, right and left, by means of parts made of reflective materials that conform to the specifications laid down in paragraphs 6.16.2 to 6.16.6 of this regulation.

NA

6.18.1. It is allowed that the helmet is equipped with reflective materials in the box, with proper indications to the user on where and how to apply them on the helmet.

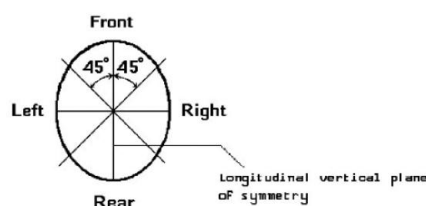
NA

*Note: Mandating of conspicuity marks is left to the discretion of individual Contracting Parties. Article 3 of the Agreement to which this regulation is annexed does not prevent the Contracting Parties from prohibiting the use of helmets not meeting the conspicuity requirements.*

## 6.18.2 Reflective Parts

6.18.2.1. Total surface area and shape of the reflective part used is such that in each direction, corresponding to one of the areas defined in the figure below, visibility is ensured by a surface area of at least 18 cm<sup>2</sup> of simple shape and measured by application on a plane.

NA



6.18.2.1. In each surface area of minimum 18 cm<sup>2</sup>, it is possible to mark either a:

NA

- Circle of 40 mm diameter\*
- Rectangle of at least 12.5 cm<sup>2</sup> in surface area and at least 20 mm in width\*

6.18.2.1. Each of these surfaces are situated as near as possible to the point of contact with the shell of a vertical plane parallel to the longitudinal vertical plane of symmetry, to the right and to the left, and as near as possible to the point of contact with the shell of a vertical plane perpendicular to the longitudinal plane of symmetry, to the front and to the rear.

NA

6.18.3. Each of the retro-reflective areas emit white light when it is illuminated with standard illuminant A, with an observation angle of 1/3° and an illumination angle  $\beta_1 = \beta_2 = 0^\circ$  (or  $\beta_1 = \pm 5^\circ$ ,  $\beta_2 = 0^\circ$ ).

NA

6.18.4. Minimum value of the luminous intensity coefficient of a surface area of 18 cm<sup>2</sup> of material, when revolved, is not less than the values specified in the table below, expressed in millicandelas per lux.

NA



Angle of Divergence (')	Angle of Illumination (°)		
	0	20	40
20	100	60	25

6.18.5. After each conditioning as described in paragraph 7.2, the helmet is visually inspected. There are no signs of cracking or appreciable distortion of the retro-reflective material.

NA

6.18.6. Neither the adhesive nor the retro-reflective material affects the mechanical performance of the helmet according to the related tests in this regulation.

NA

## Tests

Each helmet type, fitted with its visor if placed on the market with a visor, conditioned as shown below.

Test	Number of helmets to be conditioned				Total
	ambient-temperature and hygrometry conditioning	Heat conditioning	low-temperature conditioning	ultra- violet radiation conditioning and moisture conditioning	
Impact absorption	2	1	1	1	5
Imp. Abs. extra point	2				2
Hi/Low energy impact	2				2
Rotational	2				2
Projection and surface friction	1				1
Rigidity	2				2
Retention system	1				1
					15

Yes

## Testing Notes:

The largest size of each combination shell size and protective padding of each helmet type shall be tested for impact absorption, rotational and rigidity. For impact absorption on extra point, Hi and Low energy impacts and tests of the retention system, helmet sizes shall be chosen such that the helmet to be tested shall be that offering the likely least favorable conditions (such as thickest padding, etc).

7.1 All the types of retention systems available for the helmet must be tested. Supplementary samples could be necessary. Additionally, for each smaller headform size within the size range of the helmet type two helmets shall undergo the impact absorption test. One helmet shall be heat conditioned, and the other low temperature conditioned. The conditioned helmets shall be impacted against either anvil, in equal numbers if possible, at the choice of the laboratory.

## Types of Conditioning

7.2 Prior to any type of further conditioning for mechanical tests, as specified in paragraph 7.1., each helmet shall be subject:

Yes



7.2.1.	Ambient-temperature and hygrometry conditioning: The helmet shall be exposed to a temperature of $25\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ and a relative humidity of 50 per cent $\pm 10$ per cent for at least 4 hours.	Yes
7.2.2.	Heat conditioning: The helmet shall be exposed to a temperature of $50\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for not less than 4 hours and not more than 8 hours.	Yes
7.2.3.	Low-temperature conditioning: The helmet shall be exposed to a temperature of $-10\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for not less than 4 hours.	Yes
7.2.4.	Ultraviolet-radiation conditioning and moisture conditioning. The outer surface of the protective helmet shall be exposed successively to: ultraviolet irradiation by a 150-watt xenon-filled quartz lamp for 48 hours at a range of 25 cm; spraying for 4 to 8 hours with water at ambient temperature at the rate of 1 litre per minute.	Yes

## Test Results

### Impact Absorption Tests

7.3.1.4.	The tests completed not more than five minutes after the helmet is taken from the conditioning chamber.	Yes
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7.3. Helmet size: XXL

Helmet ID Number	H.F. Size Number	Impact Point	Anvil*	Cond. ( $^{\circ}\text{C}$ )	Speed (m/s)	HIC ( $\leq 2,400$ )	Deceleration ( $\leq 275\text{ g}$ )
1	O	B	F	AMB	7.54	1257	161
		X	F		7.56	1479	186
		P	F		7.56	1764	199
		R	F		7.51	1354	164
2	O	B	K	AMB	7.52	723	128
		X	K		7.56	1238	199
		P	K		7.56	1106	165
		R	K		7.52	967	139
3	O	B	F	-10	7.58	1125	157
		X	F		7.61	1842	233
		P	F		7.59	1818	193
		R	F		7.56	1273	159
		S	F		6.00	948	245



4	O	B	K	+50	7.54	712	118
		X	K		7.59	1364	214
		P	K		7.55	1011	152
		R	K		7.57	1094	170
5	O	B	F	UV + H2O	7.52	1236	161
		X	F		7.57	1731	211
		P	F		7.51	1751	196
		R	F		7.56	1322	168

\*F = Flat; K = Kerbstone

7.3. Helmet size: XL

Helmet ID Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC (≤ 2,400)	Deceleration (≤ 275 g)
6	O	B	F	-10	7.58	1207	167
		X	F		7.59	1692	215
		P	F		7.50	1829	197
		R	F		7.56	1219	166
		S	F		6.00	700	152
7	O	B	K	+50	7.54	757	123
		X	K		7.60	1460	243
		P	K		7.54	1016	159
		R	K		7.56	835	124

\*F = Flat; K = Kerbstone

7.3. Helmet size: L

Helmet ID Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC (≤ 2,400)	Deceleration (≤ 275 g)
8	M	B	F	AMB	7.50	1340	179
		X	F		7.52	1939	232
		P	F		7.54	1747	218
		R	F		7.50	1181	170
9	M	B	K	AMB	7.50	882	135
		X	K		7.53	1374	188
		P	K		7.50	1179	186
		R	K		7.51	794	130
10	M	B	F	-10	7.50	972	157
		X	F		7.55	2058	220
		P	F		7.58	1327	182
		R	F		7.61	1167	159
		S	F		6.00	889	187
11	M	B	K	+50	7.52	991	145
		X	K		7.53	1484	204
		P	K		7.52	1138	186
		R	K		7.51	892	138
12	M	B	F	UV + H2O	7.55	1072	150



		X	F		7.60	1800	218
		P	F		7.50	1739	188
		R	F		7.56	999	149

\*F = Flat; K = Kerbstone

7.3. Helmet size: M

Helmet ID Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC ( $\leq 2,400$ )	Deceleration ( $\leq 275$ g)
13	J	B	F	AMB	7.50	1315	178
		X	F		7.58	1960	226
		P	F		7.53	1941	219
		R	F		7.52	1035	151
14	J	B	K	AMB	7.56	989	157
		X	K		7.55	1295	173
		P	K		7.53	1434	203
		R	K		7.53	943	139
15	J	B	F	-10	7.58	1413	180
		X	F		7.60	1596	209
		P	F		7.58	1940	213
		R	F		7.57	1633	178
		S	F		6.00	797	160
16	J	B	K	+50	7.50	996	146
		X	K		7.53	1029	165
		P	K		7.55	1186	187
		R	K		7.52	807	126
17	J	B	K	UV + H2O	7.51	940	145
		X	K		7.57	1334	177
		P	K		7.52	1465	205
		R	K		7.52	962	142

\*F = Flat; K = Kerbstone

7.3. Helmet size: S

Helmet ID Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC ( $\leq 2,400$ )	Deceleration ( $\leq 275$ g)
18	E	B	F	-10	7.52	1201	160
		X	F		7.55	1851	222
		P	F		7.52	1907	216
		R	F		7.54	1071	164
		S	F		6.00	1184	257
19	E	B	K	+50	7.52	910	137
		X	K		7.55	1329	176
		P	K		7.55	1208	179
		R	K		7.51	933	145

\*F = Flat; K = Kerbstone



7.3.

Helmet size:

XL

Extra Impact points (Worst Case Size Selected):

Helmet ID Number	H.F. Size Number	Impact Point	Anvil <sup>1</sup>	Cond. (°C)	Required Speed (m/s)	Measured Speed (m/s)	HIC requirement	Measured HIC	Decel requirement	Measured Decel
20	O	(Extra point): BXL <sup>2</sup>	F	AMB	7.5	7.52	≤ 2,400	967	≤ 275 g	156
		(Extra point): XPR <sup>2</sup>	F		7.5	7.54	≤ 2,400	1482	≤ 275 g	187
		(Extra point): RXL <sup>2</sup>	F		7.5	7.54	≤ 2,400	1257	≤ 275 g	156
21	O	(Extra point): BXR <sup>2</sup>	K		7.5	7.56	≤ 2,400	817	≤ 275 g	154
		(Extra point): XPL <sup>2</sup>	K		7.5	7.54	≤ 2,400	1190	≤ 275 g	157
		(Extra point): RXR <sup>2</sup>	K		7.5	7.56	≤ 2,400	1403	≤ 275 g	174

<sup>1</sup> : F = Flat; K = Kerbstone

<sup>2</sup> : Extra test locations to be selected from the 12 listed in section 7.3.4.2.1

7.3.

Helmet size:

L

Extra Impact points (Worst Case Size Selected):

Helmet ID Number	H.F. Size Number	Impact Point	Anvil <sup>1</sup>	Cond. (°C)	Required Speed (m/s)	Measured Speed (m/s)	HIC requirement	Measured HIC	Decel requirement	Measured Decel
22	M	(Extra point): BXL <sup>2</sup>	F	AMB	7.5	7.53	≤ 2,400	1602	≤ 275 g	202
		(Extra point): XPR <sup>2</sup>	F		7.5	7.50	≤ 2,400	1842	≤ 275 g	200
		(Extra point): RXL <sup>2</sup>	F		7.5	7.51	≤ 2,400	1171	≤ 275 g	163
23	M	(Extra point): BXR <sup>2</sup>	K		7.5	7.61	≤ 2,400	1069	≤ 275 g	167
		(Extra point): XPL <sup>2</sup>	K		7.5	7.60	≤ 2,400	1113	≤ 275 g	168
		(Extra point): RXR <sup>2</sup>	K		7.5	7.57	≤ 2,400	839	≤ 275 g	130

<sup>1</sup> : F = Flat; K = Kerbstone

<sup>2</sup> : Extra test locations to be selected from the 12 listed in section 7.3.4.2.1



7.3.

Helmet size:

S

**Extra Impact points:**

Helmet ID Number	H.F. Size Number	Impact Point	Anvil <sup>1</sup>	Cond. (°C)	Required Speed (m/s)	Measured Speed (m/s)	HIC requirement	Measured HIC	Decel requirement	Measured Decel
24	E	(Extra point): BXL <sup>2</sup>	F	AMB	7.5	7.54	≤ 2,400	1432	≤ 275 g	186
		(Extra point): XPR <sup>2</sup>	F		7.5	7.52	≤ 2,400	1674	≤ 275 g	192
		(Extra point): RXL <sup>2</sup>	F		7.5	7.54	≤ 2,400	1557	≤ 275 g	185
25	E	(Extra point): BXR <sup>2</sup>	K		7.5	7.56	≤ 2,400	838	≤ 275 g	146
		(Extra point): XPL <sup>2</sup>	K		7.5	7.56	≤ 2,400	922	≤ 275 g	139
		(Extra point): RXR <sup>2</sup>	K		7.5	7.54	≤ 2,400	760	≤ 275 g	143

<sup>1</sup> : F = Flat; K = Kerbstone

<sup>2</sup> : Extra test locations to be selected from the 12 listed in section 7.3.4.2.1

7.3.

Helmet size:

XL

**Hi/Low Energy Impact points:**

Helmet ID Number	H.F. Size Number	Impact Point	Anvil <sup>1</sup>	Cond. (°C)	Required Speed (m/s)	Measured Speed (m/s)	HIC requirement	Measured HIC	Decel requirement	Measured Decel
26	O	(Hi Energy): B	F	AMB	8.2	8.20	≤ 2,880	1557	≤ 275 g	172
		(Hi Energy): X	F		8.2	8.20	≤ 2,880	2023	≤ 275 g	213
		(Hi Energy): P	F		8.2	8.21	≤ 2,880	2238	≤ 275 g	217
		(Hi Energy): R	F		8.2	8.23	≤ 2,880	1300	≤ 275 g	155
27	O	(Low Energy): B	K		6.0	6.03	≤ 1,300	420	≤ 180 g	102
		(Low Energy): X	K		6.0	6.02	≤ 1,300	552	≤ 180 g	119
		(Low Energy): P	K		6.0	6.00	≤ 1,300	594	≤ 180 g	121
		(Low Energy): R	K		6.0	6.01	≤ 1,300	423	≤ 180 g	100

<sup>1</sup> F = Flat; K = Kerbstone





7.3.

Helmet size:

L

Hi/Low Energy Impact points:

Helmet ID Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Required Speed (m/s)	Measured Speed (m/s)	HIC requirement	Measured HIC	Decel requirement	Measured Decel
28	M	(Hi Energy): B	F	AMB	8.2	8.20	≤ 2,880	1472	≤ 275 g	186
		(Hi Energy): X	F		8.2	8.24	≤ 2,880	2097	≤ 275 g	229
		(Hi Energy): P	F		8.2	8.21	≤ 2,880	2249	≤ 275 g	218
		(Hi Energy): R	F		8.2	8.22	≤ 2,880	1179	≤ 275 g	155
29	M	(Low Energy): B	K		6.0	6.01	≤ 1,300	517	≤ 180 g	110
		(Low Energy): X	K		6.0	6.00	≤ 1,300	512	≤ 180 g	114
		(Low Energy): P	K		6.0	6.00	≤ 1,300	583	≤ 180 g	139
		(Low Energy): R	K		6.0	6.03	≤ 1,300	436	≤ 180 g	104

\* F = Flat; K = Kerbstone

7.3.

Helmet size:

S

Hi/Low Energy Impact points:

Helmet ID Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Required Speed (m/s)	Measured Speed (m/s)	HIC requirement	Measured HIC	Decel requirement	Measured Decel
30	E	(Hi Energy): B	F	AMB	8.2	8.22	≤ 2,880	1696	≤ 275 g	191
		(Hi Energy): X	F		8.2	8.22	≤ 2,880	2328	≤ 275 g	223
		(Hi Energy): P	F		8.2	8.20	≤ 2,880	2394	≤ 275 g	231
		(Hi Energy): R	F		8.2	8.20	≤ 2,880	1752	≤ 275 g	193
31	E	(Low Energy): B	K		6.0	6.00	≤ 1,300	652	≤ 180 g	122
		(Low Energy): X	K		6.0	6.02	≤ 1,300	728	≤ 180 g	140
		(Low Energy): P	K		6.0	6.00	≤ 1,300	853	≤ 180 g	166
		(Low Energy): R	K		6.0	6.01	≤ 1,300	515	≤ 180 g	106

\* F = Flat; K = Kerbstone



## Test for Projection and Surface Friction (Method B)

	Helmet ID Number	Test	Tested Point	Results
7.4.2.1.3.1.	32	Projection	Top vent	Pass
7.4.2.1.3.2.	32	Surface	Rear edge	Pass

## Test for projections of the category P/J with movable lower face cover

7.4.3.1	Strength assessment of the movable face cover in the position "J", the helmet placed on the appropriate test head form selected from Annex 4 in compliance with paragraph 7.3.1.3.1.	NA
7.4.3.2	Falling mass of 4 kg $\pm$ 0.01 kg released in guided free fall from a height of 600 $\pm$ 5 mm hooked on to the front part of the chin section in the position "J" in the median vertical plane of the helmet.	NA
7.4.3.3	<p>Test apparatus used to apply a shock load to a helmet secured to the headform by its own retention system. Headform secured in a test fixture with its vertical axis pointing upward at 45° to the direction of gravity.</p> <p>Equipment allows drop weight to slide in a guided free fall to impact a rigid stop anvil.</p> <p>Mass of the guide is 1.0 -0.0 +0.2 kg.</p> <p>Impact speed not less than 95 per cent of the theoretical speed.</p>	NA
7.4.3.4	Movement such to avoid any possible interference of the chin guard with 100 mm cylinder as defined in paragraph 6.4.2. (Partial detachment is not acceptable.)	NA

## Rigidity Tests

7.5.1.	The test helmets have undergone ambient-temperature and hygrometry conditioning.	Yes
--------	--	-----

Helmet ID Number	Helmet Size	Load Direction	Deformation (mm)		
			Initial (load 30 N)	Max (load 630 N) ( $\leq$ 40 mm)	Final (load 30 N) ( $\leq$ 15 mm)
33	XXL	Longitudinal	1	25.0	9.0
33	XXL	Transversal	1	9.0	3.0
34	L	Longitudinal	1	20.0	7.0
34	L	Transversal	1	10.0	4.0
35	M	Longitudinal	1	23.0	5.0
35	M	Transversal	1	10.0	3.0



## Dynamic Test of the Retention System

7.6.1	Helmet is positioned as prescribed in paragraph 7.3.1.3.1.	Yes
7.6.2	Set up is as per 7.6.2 and Annex 8, Figure 2	Yes
7.6.3	Falling mass of 10 kg $\pm$ 0.1 kg released drops in guided free fall from a height of 750 $\pm$ 5 mm.	Yes
7.6.4	During the test, the dynamic displacement of the point of application of the force shall not exceed 35 mm	Yes
7.6.5	After two minutes, the residual displacement of the point of application of the force, as measured under a mass of 15 kg $\pm$ 0.5 kg, does not exceed 25 mm.	Yes

Helmet ID Number	Helmet Size	Chin Strap	Extension Dynamic ( $\leq 35$ mm)	Extension Residual ( $\leq 25$ mm)
36	XL	QRM	30.17	11.5
37	L	QRM	32.58	12.4
38	S	QRM	32.16	10.7

## Retention (Detaching) Test

7.7.1.	The test helmets have undergone ambient-temperature and hygrometry conditioning.	Yes
7.7.6.	Modular helmets tested in J and P configuration.	NA

Helmet ID Number	Helmet Size	Chin Strap	After the Test ( $\text{Angle} \leq 30^\circ$ )
36	XL	QRM	15
37	L	QRM	12
38	S	QRM	13

## Micro-slip Test of the Chin Strap

Note: See Annex 8, Figure 4)

Chin strap	Total Slip ( $\leq 10$ mm)
NA	NA



## Test for Resistance to Abrasion of the Chin Strap

Note: See Annex 8, Figure 5.

7.11.5	Strap tested to a tension of 3 kN without breaking.	Yes
--------	---	-----

Chin Strap	Tension of 3 kN
SQRM-1	Yes

## Tests for Retention Systems Relying on Quick Release Mechanism

7.12.2	Tests carried out as per the procedures of 7.12.2 in the order given.	Yes
--------	---	-----

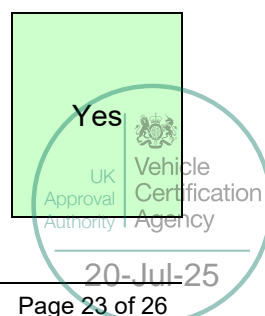
	Helmet ID Number	Test	Results
7.12.1.	-	Inadvertent release by pressure	NA
7.12.2.	-	Ease of release (Max. load $\leq 30\text{ N}$ or $\leq 60\text{ N}$ )	Yes
7.12.3.2.	-	Durability of quick release mechanisms (Release after 5,000 cycles)	Yes
7.12.3.3.	-	Durability of quick release mechanisms (Saline spray)	Yes
7.12.3.4.	-	Durability of quick release mechanisms (Traction $2\text{ kN} \pm 50\text{ N}$ )	Yes

## Tests for Oblique impact and measurement of rotational acceleration

7.13	The test helmets have undergone ambient-temperature and hygrometry conditioning.	Yes
------	--	-----

Annex 7, 2.4.	Coefficient of friction (m) $0.3 \pm 0.05$ between the outer surface of the head form and the common fabric used in the comfort padding of the helmet.	Yes
---------------	--	-----

Annex 7, 2.5.	Chin strap force controller "Tightened as for normal use".  (This means that the helmet must be tightened before each test after having applied below the chin a rigid cylinder 10 mm diameter at least 30 mm long that will be removed before the test. According paragraph 7.3.1.3. )	Yes
---------------	---	-----





Annex 7, 2.6. Instrumentation for measuring the head kinematics during impact calibrated in line with Annex 7, 2.6. Yes

Annex 7, 2.7. Headform coefficient of friction calibrated in line with Annex 7, 2.7. Yes

Annex 7, 3.1. Helmet placed on a headform of appropriate size in accordance with the requirements of Annex 5. Helmet positioned in accordance to the HPI (helmet positioning index) provided by the manufacturer. Yes

If it is not available, the helmet shall be tipped towards the rear so that the front edge of the helmet in the median plane is displaced by 25 mm.

Annex 7, 3.2.2 Anvil (A) as per Annex 7, 3.2.2 and figure 2 Yes

Annex 7, 3. Test method in accordance with Annex 7, 3. Yes

Helmet ID Number	H.F. Size Number	Impact Point	Cond. (°C)	Speed (8.0m/s)	Peak Resultant Acceleration (PRA) $\leq 10,400 \text{ rad/s}^2$	Brain Injury Criterion (BrIC) $\leq 0.78$
39	O	Front lateral right (45°)	AMB	8.02	2899	0.35
		Rear (180°)		8.00	2607	0.07
		Lateral left (270°)		8.01	3115	0.04
40	O	Front (0°)	AMB	8.00	2198	0.30
		Rear-lateral right (135°)		8.01	3972	0.30

41	M	Front lateral right (45°)	AMB	8.04	3146	0.42
		Rear (180°)		8.00	2655	0.04
		Lateral left (270°)		8.02	2993	0.05
42	M	Front (0°)	AMB	8.01	2619	0.34



		Rear-lateral right (135°)		8.03	3901	0.34
43	J	Front lateral right (45°)	AMB	8.05	2942	0.43
		Rear (180°)		8.00	3042	0.05
		Lateral left (270°)		8.04	4187	0.07
44	J	Front (0°)	AMB	8.00	2697	0.35
		Rear-lateral right (135°)		8.04	4329	0.31

## Photographs



## Notes

*[Notes can be provided at the bottom if it is useful to provide additional information that is not covered by a compliance statement, for example glazing markings.]*

## Remarks

None



Vehicle  
Certification  
Agency

VCA, 1 Eastgate Office Centre,  
Eastgate Road, Bristol, BS5 6XX, United Kingdom  
enquiries@vca.gov.uk |  
www.vehicle-certification-agency.gov.uk

Report Number: VCA026075-1  
Issue: 0

This test report shall not be reproduced except in full, without  
written approval of the technical service.

## **Annex I - Test Photos**

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[Annexes can be used if additional information should be recorded that would be inappropriate in the main body of the report. Annex numbering should use roman numerals.]







## Inspection/Test Report: Protective Helmets and their Visors for Drivers and Passengers of Motorcycles and Mopeds (Product Qualification)

### Legislation

UNECE Regulation 22.06 Consolidated to Supplement 3 (Revision 5 Amendment 3)

### Inspection/Test Details

Location of Inspection/Test: Qingyuan SENA Smart Helmets, LLC.  
Plant No.61, Hongrugu Science and Technology Industrial  
Park, No.21, 253 Provincial Road  
Longtang Town, Qingcheng District, Qingyuan City  
Guangdong Province  
China  
Date(s) of Inspection/Test: 26/06/2025  
VCA Representative(s): Jongduk Lee  
Engineers Home Office Location: VCA Korea  
Manufacturer's Representative(s): Suhan Kim  
Reason for Report: Report Only

### Manufacturer Details

Name and Address: SENA Technologies Co., Ltd.  
19, Heolleung-ro 569-gil, Gangnam-gu, Seoul  
Republic of Korea  
Type: PHANTOM UNPLUGGED  
Commercial Description: PHANTOM UNPLUGGED, PHANTOM U  
Category: "P" with protective lower face cover

### Conclusion

The above-mentioned vehicle / engine / component was tested in accordance with the above mentioned legislation and was found to comply in all respects. This report relates only to the items tested.

Test Report Engineer  
Signature:

Name: Jongduk Lee  
Position: Principal Type Approval  
Engineer  
Date: 26 June 2025

### List of Annexes





Annex	No of Pages	Subject
I		Test photos (EU/GB and UN when needed)
II		
III		
IV		

## Issue Record

	Issue 0 is original report
Reason for re issue	
Name of competent engineer re issuing	
Date of re issue	

## Worst Case Rationale

This test is considered Batch Test No. 1.  
Test carried out under the conditions as follows:

Number of samples tested						
Test	Shell Size	Large		Medium	Small	
	Consumer Size	XXL	XL	L	M	S
	Headform Size	625	625	605	575	535
Impact Absorption		20	-	20	20	-
Retention (Dynamic)		-	10	10	-	10

Note: Include information on variants and versions this report covers, as applicable. Supporting documents may be annexed to this report.

## Significant Interpretations, Alternative Test Methods, New Technologies

NA

## Inspection/Tests Required

	Yes, NA, See Report ... / Approval ... / Annex ...	Test location	Dates	Engineer
Information for wearers:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Impact Absorption Tests:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee
Dynamic Test of the Retention System:	Yes	Qingyuan SENA Smart Helmets, LLC.	26/06/2025	JD Lee



## Specification

### Number of Samples

Shell Size:

Consumer Size:

Sample Quantity:

Production Batch Quantity:

Production Batch Serial Number

### Materials

Shell:

Padding:

Liner:

Chin Strap:

### Retention System

Type:

Buckle:

Strap Retainer:

Anchorage:

Large		Medium	Small	
XXL	XL	L	M	S
20	10	30	20	10
3200				
1 – 3200				
Fiberglass with Kevlar Composite				
Polyurethane, Sponge				
EPS (Expanded Polystyrene type foam)				
Nylon webbing				
Two section system				
One touch buckle				
Quick-release mechanism(SQRM-1)				
Secured to shell by means of a single rivet to each side of Helmet shell				

Ventilation System:

Type of Shell Edging:

Accessories:

Reflecting Band:

Additional Feature:

Number of ventilations: 3									
Positioning on the shell: Front of Crown (Crown), Rear of Crown, Chin guard (Center)									
PVC Gasket									
Visor (model reference): SENA-FF-01, SENA-FF-01 SMOKE									
Sunshield (model reference): SENA-IV-01									
NA									
NA									

## Manufacturer's Documentation

Manufacturer's documentation is complete and reflects the agreed specification for the vehicle / engine / component tested and covers all variants and versions agreed in the worst case rationale.

Yes

Information document uploaded to job folder and identified by job number.

Yes

## Facility and Equipment Checks

Facility Appraisal reference number and date:

FAK178 and KXB612469  
30 August 2023

Calibration certificates are traceable to national or international standards of measurement, and stored in job folder:

Yes

Calibration checked and valid, recorded in the below table:

Yes

## Equipment



Description	Make	Model	Serial number	Calibration due date
Head Form #1	CADEX	100_01_HFM	8817	-
Head Form #2	CADEX	100_01_HFM	8795	-
Head Form #3	CADEX	100_01_HFM	8828	-
Head Form #4	CADEX	100_01_HFM	8788	-
Head Form #5	CADEX	100_01_HFM	8815	-
Head Form #6	CADEX	100_01_HFM	8789	-
Accelerometer (Twin Wire Impact Test Machine)	CADEX	1000-01-TWA01	050123-04	03/04/2025 + 1 year
Heat conditioning unit	HOTOTECH	HT-5012	HB22431	26/08/2024 + 1 year
Low temperature conditioning unit	HOTOTECH	HT-5013	HB22432	26/08/2024 + 1 year

\*Specify calibrated date + (interval) or calibration due date.

#### Equipment Remarks

None

Note: VCA apply measurement uncertainty to calibrated items and require pass results including equipment uncertainty.

#### Software used in Testing

Description	Make	Version	Validation method
Impact test apparatus	CADEX	200_04_CSOF V8.68	Covered in FA
UV Aging chamber	HOTOTECH	TK8072iP	Validation by equipment manufacturer
Heat conditioning unit	HOTOTECH	SW Ver. X1TK8070IHLTYC10MV103.05A X2WP1M20RTHLYC10CV103.05G	Validation by equipment manufacturer
Low temperature conditioning unit	HOTOTECH	SW Ver. X1TK8070IHLTYC10MV103.05A X2WP1M20RTHLYC10CV103.05G	Validation by equipment manufacturer

#### Inspection/Test Requirements



## Qualifying the Production of Helmets

	The production of each new approved type of helmet must be subjected to production qualification tests.	
9.2	The first batch is considered to be the production of the first tranche containing a minimum of 200 helmets and a maximum of 3,200 helmets.	
-	Random sample of helmets taken from the first batch, divided into homogenous lots of 10, choosing the biggest helmet sizes for each shell size.	Yes
-	At least two lots among those subjected to the shock-absorption test shall consist of maximum size helmets.	Yes
9.2.1.	Test on the system of retention	
9.2.1.1.	The 10 helmets of the smallest size of each shell subjected to the test of the retention system described in paragraph 7.6.	Yes
-	All the types of retention system available for the helmet checked.	Yes
9.2.2.	Shock absorption test	
-	From every shell size of helmet type take two groups each with 10 helmets of the largest size.	Yes
9.2.2.2.	All of the helmets in a group subjected to the same conditioning treatment and then subjected to the shock absorption test described in paragraph 7.3. at the same point of impact.	Yes
-	The conditioning and the anvil for each group chosen by the technical service which conducted the approval tests.	Yes
-	The location of the points must be the same for all the helmets of the same batch.	Yes
-	The helmets of the same batch can be submitted to test up to three different impact point.	Yes
9.2.2.3.	All the shell sizes of a type of helmet submitted to standard linear impact test on the BXPR and S points if present.	Yes

## Information for wearers



14.1.	<p>Every protective helmet placed on the market shall bear a clearly visible label with the following inscription in the national language, or at least one of the national languages of the country of destination.</p> <p>This information shall contain: "For adequate protection, this helmet must fit closely and be securely attached. Any helmet that has sustained a violent impact should be replaced"</p> <p>and, if fitted with a non-protective lower face cover: "Does not protect chin from impacts" together with the symbol indicating the unsuitability of the lower face cover to offer any protection against impacts to the chin.</p>	Yes
14.2.	<p>Additionally where hydrocarbons, cleaning fluids, paints, transfers or other extraneous additions affect the shell material adversely a separate and specific warning shall be emphasized in the above-mentioned label and worded as follows: " 'Warning' - Do not apply paint, stickers, petrol or other solvents to this helmet".</p>	Yes
14.3.	<p>Every protective helmet shall be clearly marked with its size and its maximum weight, to the nearest 50 grams, as placed on the market. The maximum weight quoted should include all the accessories that are supplied with the helmets, within the packaging, as it is placed on the market, whether or not those accessories have actually been fitted to the helmet.</p>	Yes
14.4.	<p>Every protective helmet offered for sale shall bear a label showing the type or types of visor that have been approved at the manufacturer's request.</p>	Yes



## Inspection/Test Results

### Impact Absorption Tests

7.3.

Helmet size:

XXL

Group	Sample Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC (≤ 2,640)	Deceleration (≤ 302.5 g)
1	XXL-1	O	B	F	-10	7.50	1277	165
	XXL-2		B	F		7.52	1160	151
	XXL-3		B	F		7.56	1264	162
	XXL-4		B	F		7.57	1266	166
	XXL-5		B	F		7.51	1345	168
	XXL-6		B	F		7.52	1369	173
	XXL-7		B	F		7.53	1321	168
	XXL-8		B	F		7.53	1326	173
	XXL-9		B	F		7.51	1265	167
	XXL-10		B	F		7.52	1224	160
2	XXL-11	O	X	K	+50	7.59	1283	208
	XXL-12		X	K		7.62	1151	179
	XXL-13		X	K		7.58	1084	162
	XXL-14		X	K		7.55	1249	201
	XXL-15		X	K		7.57	1044	160
	XXL-16		X	K		7.58	1214	194
	XXL-17		X	K		7.60	1252	193
	XXL-18		X	K		7.52	1205	179
	XXL-19		X	K		7.58	1109	172
	XXL-20		X	K		7.61	1241	190
1	XXL-1	O	P	F	-10	7.56	1969	207
	XXL-2		P	F		7.59	1756	207
	XXL-3		P	F		7.59	1790	209
	XXL-4		P	F		7.56	1837	203
	XXL-5		P	F		7.58	1747	202
	XXL-6		P	F		7.59	1794	205
	XXL-7		P	F		7.51	1690	205
	XXL-8		P	F		7.53	1863	204
	XXL-9		P	F		7.59	1752	203
	XXL-10		P	F		7.57	1602	189

\*F = Flat; K = Kerbstone



Helmet size:

XXL

Group	Sample Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC ( $\leq 2,640$ )	Deceleration ( $\leq 302.5\text{ g}$ )
2	XXL-11	O	R	K	+50	7.57	881	137
	XXL-12		R	K		7.57	816	136
	XXL-13		R	K		7.57	863	147
	XXL-14		R	K		7.58	1060	154
	XXL-15		R	K		7.50	811	134
	XXL-16		R	K		7.53	847	135
	XXL-17		R	K		7.51	827	141
	XXL-18		R	K		7.54	918	140
	XXL-19		R	K		7.54	823	150
	XXL-20		R	K		7.53	820	135
1	XXL-1	O	S	F	-10	6.02	1346	210
	XXL-2		S	F		6.00	1061	202
	XXL-3		S	F		6.00	1091	207
	XXL-4		S	F		6.00	1080	235
	XXL-5		S	F		6.00	1033	188
	XXL-6		S	F		6.00	845	156
	XXL-7		S	F		6.00	980	188
	XXL-8		S	F		6.00	984	172
	XXL-9		S	F		6.01	1165	212
	XXL-10		S	F		6.01	955	166

\*F = Flat; K = Kerbstone

### Statistical Analysis

Group	Sample Number	Impact Point	S (Standard deviation of the values)	2.4 S	X (Mean of the values)	X + 2.4 S
1	XXL-1 – 10	B	6.5	15.6	165.2	180.7
2	XXL-11 – 20	X	16.0	38.4	183.8	222.2
1	XXL-1 – 10	P	5.4	13.0	203.3	216.4
2	XXL-11 – 20	R	7.0	16.9	140.9	157.7
1	XXL-1 – 10	S	24.1	57.8	193.5	251.3



7.3.

Helmet size:

L

Group	Sample Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC ( $\leq 2,640$ )	Deceleration ( $\leq 302.5\text{ g}$ )
1	L-1	M	B	F	-10	7.50	1343	168
	L-2		B	F		7.52	837	124
	L-3		B	F		7.50	1374	180
	L-4		B	F		7.50	1239	163
	L-5		B	F		7.54	990	145
	L-6		B	F		7.57	1274	162
	L-7		B	F		7.58	1259	164
	L-8		B	F		7.57	1149	159
	L-9		B	F		7.58	1226	159
	L-10		B	F		7.53	1280	163
2	L-11	M	X	K	+50	7.53	1128	187
	L-12		X	K		7.54	1189	194
	L-13		X	K		7.53	1029	173
	L-14		X	K		7.54	1026	178
	L-15		X	K		7.52	930	148
	L-16		X	K		7.60	1076	176
	L-17		X	K		7.62	1156	200
	L-18		X	K		7.57	1203	197
	L-19		X	K		7.63	906	173
	L-20		X	K		7.58	1158	202
1	L-1	M	P	F	-10	7.51	1600	188
	L-2		P	F		7.51	1090	170
	L-3		P	F		7.50	1765	193
	L-4		P	F		7.51	1650	195
	L-5		P	F		7.55	1836	197
	L-6		P	F		7.54	1655	194
	L-7		P	F		7.55	1722	188
	L-8		P	F		7.53	1838	196
	L-9		P	F		7.58	1970	211
	L-10		P	F		7.56	1761	192

\*F = Flat; K = Kerbstone





Helmet size:

L

Group	Sample Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC ( $\leq 2,640$ )	Deceleration ( $\leq 302.5\text{ g}$ )
2	L-11	M	R	K	+50	7.51	721	131
	L-12		R	K		7.51	767	115
	L-13		R	K		7.52	730	132
	L-14		R	K		7.53	675	122
	L-15		R	K		7.50	669	120
	L-16		R	K		7.55	652	113
	L-17		R	K		7.58	672	123
	L-18		R	K		7.54	673	105
	L-19		R	K		7.57	710	126
	L-20		R	K		7.59	836	135
1	L-1	M	S	F	-10	6.01	1183	230
	L-2		S	F		6.01	1297	209
	L-3		S	F		6.02	1120	197
	L-4		S	F		6.00	945	185
	L-5		S	F		6.00	1455	219
	L-6		S	F		6.00	1105	188
	L-7		S	F		6.00	1035	245
	L-8		S	F		6.01	1428	223
	L-9		S	F		6.01	1552	248
	L-10		S	F		6.01	1217	232

\*F = Flat; K = Kerbstone

### Statistical Analysis

Group	Sample Number	Impact Point	S (Standard deviation of the values)	2.4 S	X (Mean of the values)	X + 2.4 S
1	L-1 – 10	B	15.0	35.9	158.8	194.7
2	L-11 – 20	X	16.8	40.2	182.9	223.1
1	L-1 – 10	P	10.2	24.4	192.3	216.7
2	L-11 – 20	R	9.3	22.3	122.3	144.6
1	L-1 – 10	S	22.3	53.5	217.5	270.9



7.3.

Helmet size:

M

Group	Sample Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC (≤ 2,640)	Deceleration (≤ 302.5 g)
1	M-1	J	B	F	-10	7.52	1204	159
	M-2		B	F		7.54	1236	169
	M-3		B	F		7.56	1186	163
	M-4		B	F		7.51	1212	161
	M-5		B	F		7.50	1200	161
	M-6		B	F		7.50	1194	158
	M-7		B	F		7.50	1195	164
	M-8		B	F		7.50	1250	164
	M-9		B	F		7.51	1251	162
	M-10		B	F		7.50	1327	181
2	M-11	J	X	K	+50	7.57	989	159
	M-12		X	K		7.53	996	154
	M-13		X	K		7.56	907	142
	M-14		X	K		7.56	939	139
	M-15		X	K		7.51	929	135
	M-16		X	K		7.53	944	152
	M-17		X	K		7.57	836	141
	M-18		X	K		7.56	1015	163
	M-19		X	K		7.57	810	141
	M-20		X	K		7.54	1078	174
1	M-1	J	P	F	-10	7.56	1655	193
	M-2		P	F		7.52	1850	193
	M-3		P	F		7.54	1689	183
	M-4		P	F		7.50	1779	194
	M-5		P	F		7.51	1831	193
	M-6		P	F		7.52	1793	194
	M-7		P	F		7.52	1666	188
	M-8		P	F		7.50	1647	185
	M-9		P	F		7.50	1745	187
	M-10		P	F		7.52	1761	199

\*F = Flat; K = Kerbstone



Helmet size:

M

Group	Sample Number	H.F. Size Number	Impact Point	Anvil*	Cond. (°C)	Speed (m/s)	HIC ( $\leq 2,640$ )	Deceleration ( $\leq 302.5\text{ g}$ )
2	M-11	J	R	K	+50	7.56	1034	140
	M-12		R	K		7.57	1056	145
	M-13		R	K		7.53	1139	152
	M-14		R	K		7.55	1045	143
	M-15		R	K		7.53	1135	158
	M-16		R	K		7.55	1103	151
	M-17		R	K		7.52	1078	165
	M-18		R	K		7.52	1011	137
	M-19		R	K		7.56	911	135
	M-20		R	K		7.54	1099	146
1	M-1	J	S	F	-10	6.00	711	125
	M-2		S	F		6.00	836	139
	M-3		S	F		6.01	580	113
	M-4		S	F		6.03	811	134
	M-5		S	F		6.04	799	141
	M-6		S	F		6.04	765	142
	M-7		S	F		6.02	828	142
	M-8		S	F		6.02	776	139
	M-9		S	F		6.04	825	143
	M-10		S	F		6.02	824	148

\*F = Flat; K = Kerbstone

### Statistical Analysis

Group	Sample Number	Impact Point	S (Standard deviation of the values)	2.4 S	X (Mean of the values)	X + 2.4 S
1	M-1 – 10	B	6.7	16.0	164.2	180.2
2	M-11 – 20	X	12.6	30.1	150.0	180.1
1	M-1 – 10	P	4.9	11.7	190.9	202.6
2	M-11 – 20	R	9.3	22.4	147.3	169.6
1	M-1 – 10	S	10.2	24.5	136.8	161.3



## Dynamic Test of the Retention System

Note: See Annex 8, Figure 2.

7.6.

Helmet size:

XL

Sample Number	Extension Dynamic ( $\leq 38.5$ mm)	Extension Residual ( $\leq 27.5$ mm)	Note
XL-1	31.1	13.8	
XL-2	30.0	12.5	
XL-3	32.2	14.5	
XL-4	30.4	14.1	
XL-5	28.7	9.0	
XL-6	31.2	12.2	
XL-7	32.1	13.3	
XL-8	31.2	13.3	
XL-9	31.2	12.6	
XL-10	31.4	12.2	

### Statistical Analysis

Sample Number	Displacement	S (Standard deviation of the values)	2.4 S	X (Mean of the values)	X + 2.4 S Extension dynamic ( $\leq 35$ mm) Extension residual ( $\leq 25$ mm)
XL-1 – 10	Extension dynamic	1.1	2.5	31.0	33.5
XL-1 – 10	Extension residual	1.5	3.7	12.8	16.4

7.6.

Helmet size:

L

Sample Number	Extension Dynamic ( $\leq 38.5$ mm)	Extension Residual ( $\leq 27.5$ mm)	Note
L-1	28.9	12.5	
L-2	27.7	10.0	
L-3	28.9	12.6	
L-4	29.1	12.7	
L-5	27.9	11.5	
L-6	31.8	10.3	
L-7	30.2	13.5	
L-8	29.6	13.4	
L-9	28.1	11.5	
L-10	28.0	11.8	

### Statistical Analysis



Sample Number	Displacement	S (Standard deviation of the values)	2.4 S	X (Mean of the values)	X + 2.4 S Extension dynamic ( $\leq 35$ mm) Extension residual ( $\leq 25$ mm)
L-1 – 10	Extension dynamic	1.3	3.0	29.0	32.0
L-1 – 10	Extension residual	1.2	2.9	12.0	14.8

7.6. Helmet size:

S

Sample Number	Extension Dynamic ( $\leq 38.5$ mm)	Extension Residual ( $\leq 27.5$ mm)	Note
S-1	28.3	14.4	
S-2	33.5	18.4	
S-3	27.7	13.2	
S-4	30.7	15.2	
S-5	28.7	14.5	
S-6	27.2	15.5	
S-7	29.2	14.7	
S-8	29.9	15.7	
S-9	29.0	13.2	
S-10	30.6	15.5	

### Statistical Analysis

Sample Number	Displacement	S (Standard deviation of the values)	2.4 S	X (Mean of the values)	X + 2.4 S Extension dynamic ( $\leq 35$ mm) Extension residual ( $\leq 25$ mm)
S-1 – 10	Extension dynamic	1.8	4.4	29.5	33.8
S-1 – 10	Extension residual	1.5	3.6	15.0	18.6

### Notes

[Notes can be provided at the bottom if it is useful to provide additional information that is not covered by a compliance statement, for example glazing markings.]

### Remarks

None



## Annex I

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[Annexes can be used if additional information should be recorded that would be inappropriate in the main body of the report. Annex numbering should use roman numerals.]