



GRAND-DUCHÉ DE LUXEMBOURG

Ministère du Développement durable
et des Infrastructures

Département des Transports

L-2938 Luxembourg

SOCIÉTÉ NATIONALE DE
CERTIFICATION ET D'HOMOLOGATION

s.à r.l.

Registre de Commerce: B 27180

L-5201 Sandweiler



Référence: E13*112R00*112R00*34478*00

Annexes: - Rapport technique
- Fiche de renseignements du constructeur

Sandweiler, le 16 novembre 2015

COMMUNICATION



concernant 2/: - **DELIVRANCE D'UNE HOMOLOGATION**
concerning 2/: APPROVAL GRANTED
- **EXTENSION D'HOMOLOGATION**
APPROVAL EXTENDED
- **REFUS D'HOMOLOGATION**
APPROVAL REFUSED
- **RETRAIT D'HOMOLOGATION**
APPROVAL WITHDRAWN
- **ARRET DEFINITIF DE LA PRODUCTION**
PRODUCTION DEFINITELY DISCONTINUED

d'un type de projecteur en application du Règlement N° 112
of a type of headlamp pursuant to Regulation N° 112

Numéro d'homologation: E13*112R00*112R00*34478*00
Approval number:

Marque d'homologation: refer to the manufacturer's information document
Approval mark:

- 1. Marque de fabrique ou de commerce du dispositif:** TUFF PLUS
Trade name or mark of the device:
- 2. Désignation du type de dispositif par le fabricant:** A0103
Manufacturer's name for the type of device:
- 3. Nom et adresse du fabricant:** Foshan Tuff Plus Auto Lighting Co. Ltd.
Manufacturer's name and address: No. A02, (Zhongzhuanlun), Ritian Technology Co., Ltd., Ritian, Road, Songxia Industrial City, Songgang Town, Nanhai District, Foshan City, Guangdong Province, P.R. China
- 4. Nom et adresse du mandataire du fabricant (le cas échéant):** not applicable
If applicable, name and address of the manufacturer's representative:
- 5. Soumis à l'homologation le:** 28.- 30.10.2015
Submitted for approval on:

6. **Autorité déléguée:**
Assigned authority: *Société Nationale de Certification et d'Homologation L-5201 Sandweiler*
- Service technique chargé des essais:**
Technical service responsible for conducting approval tests: ATE EL s.à r.l.
14, op Huefdreich
L-6871 Wecker
7. **Date du procès-verbal d'essai:**
Date of report issued by that service: 02.11.2015
8. **Numéro du procès-verbal d'essai:**
Number of report issued by that service: 65TFA0001A
9. **Description sommaire:**
Brief description:
- **Catégorie indiquée par le marquage pertinent 3/:**
Category as described by the relevant marking 3/: Driving beam and passing beam: HC/R PL
 - **Nombre et catégorie(s) de la (des) lampe(s) à incandescence:**
Number and category(ies) of filament lamp(s): Driving beam: LEDs*4
Passing beam: LEDs*2
 - **Mesures au titre du paragraphe 5.8 du présent Règlement:**
Measures according to paragraph 5.8 of this Regulation: Downward movement of the beam,
Horizontal movement is allowed
 - **Nombre de modules DEL et code(s) d'identification propre(s) à ce(s) module(s):**
Number and specific identification code(s) of LED module(s): not applicable
 - **Nombre de dispositifs de régulation électronique de source lumineuse et code(s) d'identification propre(s) à ce(s) dispositif(s):**
Number and specific identification code(s) of electronic light source control gear(s): not applicable
 - **Le flux lumineux normal total tel qu'il est décrit au paragraphe 5.9 est supérieur à 2 000 lumens 2/:**
Total objective luminous flux as described in paragraph 5.9 exceeds 2,000 lumen 2/: ~~oui~~ / non
~~yes~~ / no
 - **La détermination du réglage de la ligne de coupure a été effectuée à 2/:**
The adjustment of the cut-off has been determined at 2/: ~~10 m~~ / 25 m
 - **La détermination de la netteté minimale de la ligne de coupure a été effectuée à 2/:**
The determination of the minimum sharpness of the "cut-off" has been carried out at 2/: ~~10 m~~ / 25 m

10. **Emplacement de la marque d'homologation:** on the lens
Approval mark position:
11. **Motif(s) de l'extension d'homologation:** not applicable
Reason(s) for extension of approval:
12. **Homologation 2/:** accordée / ~~étendue~~ / ~~refusée~~ / ~~retirée~~
Approval 2/: granted / ~~extended~~ / ~~refused~~ / ~~withdrawn~~
13. **Lieu:** Sandweiler
Place:
14. **Date:** 16 novembre 2015
Date:
15. **Signature:**
Signature:

Pour le Département des Transports

Pour la SNCH



Marco Feltes

Claude Liesch



Marco FELTES
Inspecteur Principal 1^{er} en rang

Claude LIESCH
Directeur



16. **La liste des pièces constituant le dossier d'homologation déposé au Service administratif ayant délivré l'homologation est jointe en annexe et peut être obtenue sur demande.**

The list of documents deposited with the Administrative Service which has granted approval is annexed to this communication and may be obtained on request.

voir "INDEX DU DOSSIER D'HOMOLOGATION" ci-joint / see "INDEX TO TYPE-APPROVAL REPORT"

2/ **Biffer les mentions inutiles/** Strike out what does not apply

3/ **Indiquer le marquage adéquat choisi dans la liste ci-dessous /** Indicate the adequate marking chosen in the list in the bottom

C, C, C, R, R PL, CR, CR, CR, C/R, C/R, C/R, C/, C/, C/, C PL, C PL, C PL, CR PL, CR PL, CR PL,
→ ↔ → ↔ → ↔ → ↔ → ↔ → ↔

C/R PL, C/R PL, C/R PL, C/PL, C/PL
→ ↔ → ↔

HC, HC, HC, HR, HR PL, HCR, HCR, HCR, HC/R, HC/R, HC/R, HC/, HC/, HC/, HC PL, HC PL, HC PL, HCR PL, HCR PL, HCR PL,
→ ↔ → ↔ → ↔ → ↔ → ↔ → ↔ → ↔

HC/R PL, HC/R PL, HC/R PL, HC/PL, HC/PL, HC/PL
→ ↔ → ↔



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Référence: E13*112R00*112R00*34478*00

Annexes: - Rapport technique
- Fiche de renseignements du constructeur

Sandweiler, le 16 novembre 2015

Index du dossier d'homologation Index to type-approval report

	Numéro d'homologation: Approval number:	E13*112R00*112R00*34478*00
	Révision: Revision:	00
	Marque de fabrication ou de commerce: Trade name or mark:	TUFF PLUS
	Type: Type:	A0103
1.	Procès-verbal d'essai: Test report:	N° 65TFA0001A
	- Technical report:	Page(s) 1, 2
	- Index:	Annex(es) II - Page(s) 1
	- General test report:	Annex(es) T - Page(s) 1 to 7
	- General information:	Annex(es) GI1 - Page(s) 1, 2
2.	Dossier du constructeur: Report of the manufacturer:	N° A0103-00
	- Information folder:	Page(s) 1
	- Drawings of the device:	Page(s) 2, 3
3.	Autres documents annexés: Other documents annexed:	not applicable
4.	Date de délivrance de l'homologation initiale: Date of issue of initial type approval:	16.11.2015
5.	Date de la dernière délivrance de pages révisées: Date of last issue of revised pages:	not applicable
6.	Date de la dernière délivrance d'une homologation révisée: Date of last extension:	not applicable



Tests and inspection concerning

Motor vehicle headlamps emitting an asymmetrical passing beam or a driving beam or both and equipped with filament lamps and/or LED modules

according to the ECE Regulation No. 112 including all amendments up to Series 00, Supplement 12 of 19.08.2010

Manufacturer: Foshan Tuff Plus Auto Lighting Co. Ltd.
No. A02, (Zhongzhuanlun), Ritian
Technology Co., Ltd., Ritian Road,
Songxia Industrial City, Songgang Town,
Nanhai District, Foshan City,
Guangdong Province, P.R.China

Type: A0103

Type of Approval: ECE	Type Approval No.: E13*112R00*112R00*....*00	Manufacturer: Foshan Tuff Plus Auto Lighting Co. Ltd.
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Conclusion: The tests and checks carried out have shown the compliance of the type described in this report and the attached annexes with the Regulation mentioned above.

Wecker, 02.11.2015

p.o. Mengting Xu
Ingénieur Inspecteur

Index: see Annex I1



1 Tests and inspection results

Refer to Annex T

2 Type and variants

The tests and inspections carried out and described in this technical report have been selected in order to include the following variants and versions of the type and its equipments, as far as these are relevant for the topic of this report, into the judgement:

As stated in Annex MID (Manufacturer's Information Document):	Item
None.	

3 Remark

3.1 General

This report describes test results of the driving beam and passing beam headlamp.



Compilation of Dossier No.: 65TFA0001

Extension 00

Technical Report no.: 65TFA0001A

page 1 and 2

Composition of Annex:

I1:	Index	page 1
T:	General Test Report	page 1 to 7
GI1:	General Information	page 1 to 2
MID:	Manufacturer's Information Document	page 1 to 3
	Index of the Manufacturer's Information Document:	
	Information Document	page 1
	Drawings	page 2 to 3



General Test Report

The data in this section refer only to the items submitted to testing or inspection.

0 Abstract

0.1 Denomination A0103

1 Dates and resources

1.1 Date of receipt of test item 28.10.2015

1.2 Date of test 28.10.2015 - 30.10.2015

1.3 Place of test SHANGHAI MOTOR VEHICLE INSPECTION CENTER(SMVIC);
Anting, Jiading District, Shanghai, China

1.4 Testing site and testing equipment:

All measuring and test equipment used to carry out the inspections are in accordance with ISO 17025 and the regulatory act(s) applied.

2 Test object

The tests were conducted with a test component which is representative of the component type to be approved.

Type: A0103

Description: Driving beam and passing beam headlamp/Class B
ID: Sample 1, Sample 2, Sample 3

3 Tests and inspections

3.1 General specifications

Markings: The trade name is marked clearly legible and indelible on the lens of the lamp.
The rated voltage and wattage is marked clearly legible and indelible on the housing of the lamp.
Space for the approval mark and for additional symbols is provided on the lens of the lamp.

Vibration endurance: The lamp is designed and constructed that in normal use despite the vibrations to which they may be subjected, their satisfactory operation is assured and they retain the required characteristics.

Adjusting device: Requirement fulfilled.



General Test Report

Replaceable filament lamp(s): Not applicable. The headlamps is equipped with LEDs. Annex 10 of the Regulation are fulfilled.

Only two different and clearly distinct settings(Right-hand, left-hand traffic): Not applicable.

Illumination requirements for different traffic conditions: Requirement fulfilled.

Design requirement of headlamp provide alternately a driving beam and a passing beam headlamp: Not applicable.

3.2 Test and performance requirements

3.2.1 LED or LED MODULES test

3.2.1.1 Red content of LED or LED MODULES

	Required illumination	Sample 1
Red content k_{red}	≥ 0.05	0.11

3.2.1.2 UV-radiation of LED or LED MODULES

	Required illumination	Sample 1
UV-radiation k_{uv}	$\leq 10^{-5}$ W/lm	0.67×10^{-7}

3.2.1.3 Temperature stability test of LED or LED MODULES

Passing beam

Photometric test result (lux)			
	Value after 1 minute $E_{1 \text{ minute}}$	Value after Photometric stability $E_{\text{stabilization}}$	Ratio $E_{1 \text{ minute}}/E_{\text{stabilization}}$
50V	11.23	10.47	1.07

Driving beam

Photometric test result (lux)			
	Value after 1 minute $E_{1 \text{ minute}}$	Value after Photometric stability $E_{\text{stabilization}}$	Ratio $E_{1 \text{ minute}}/E_{\text{stabilization}}$
HV	72.43	69.23	1.05

3.2.1.4 Colormetric test of LED or LED MODULES

Trichromatic coordinates-reference axis	Value after 1 minute	Value after Photometric stability
x	0.428	0.427
y	0.408	0.407

The samples tested fulfil with the colorimetric specifications in regulation.

3.2.1.5 Measurement of objective luminous flux of LED module(s) producing the principal passing beam

Measurement of objective luminous flux	Luminous flux(Lumen)
Average of the measurements of the three samples	1730



General Test Report

3.2.2 Bending lighting design requirement
Not applicable.

3.2.3 Colormetric test

Trichromatic coordinates-reference axis	Sample 1	Sample 2
x	0.426	0.427
y	0.406	0.407

The samples tested fulfil with the colorimetric specifications in regulation.

3.2.4 Photometric test

3.2.4.1 Passing beam(Class B)

Cut-off aiming	Result
For right hand traffic beams: The "cut-off" shall provide: a straight "horizontal part" towards the left and a raised "elbow - shoulder" part towards the right. The "cut-off" enables the headlamp to be adjusted correctly for the photometric measurements and for the aiming on the vehicle.	Fulfilled

Principal and additional light sources	Result
Only ONE PRINCIPAL light source or one or more LED module(s) is permitted for the principal passing beam headlamp	Fulfilled
A maximum of TWO ADDITIONAL light sources (ECE R37) or one or more additional LED modules may be used inside the passing beam headlamp are permitted	Not applicable

3.2.4.1.3 Passing beam illuminance values measured after photometric stabilization

Illumination measured on screen(lux)			
Test point	Required illumination	Sample 1	Sample 2
Point HV	≤ 0.7	0.62	0.57
Point B50L	≤ 0.4	0.30	0.34
Point 75R	≥ 12.0	16.35	15.47
Point 75L	≤ 12.0	9.24	8.36
Point 50L	≤ 15.0	12.54	10.47
Point 50R	≥ 12.0	16.98	15.36
Point 50V	≥ 6.0	10.47	14.27
Point 25L	≥ 2.0	5.98	8.34
Point 25R	≥ 2.0	6.32	5.39
Any point in Zone III	≤ 0.7	0.64	0.62
Any point in Zone IV	≥ 3.0	4.35	5.79
Any point in Zone I	$\leq 2 \times E_{50R}$	15.64	18.24

Requirement	Result
There shall be no lateral variations detrimental to good visibility in any of the zones I, II, III and IV	Fulfilled



General Test Report

Illumination measured on screen(lux)			
Test point	Required illumination	Sample 1	Sample 2
Point 1	≤ 0.7	0.45	0.53
Point 2	≤ 0.7	0.36	0.34
Point 3	≤ 0.7	0.47	0.26
Point 4	≤ 0.7	0.33	0.54
Point 5	≤ 0.7	0.25	0.28
Point 6	≤ 0.7	0.51	0.44
Point 7	$0.1 \leq \text{Point 7} \leq 0.7$	0.38	0.36
Point 8	$0.2 \leq \text{Point 8} \leq 0.7$	0.47	0.41
Point 1+2+3	≥ 0.3	1.28	1.13
Point 4+5+6	≥ 0.6	1.09	1.26

3.2.4.1.4 Passing beam illuminance values measured after one minute(LED or LED MODULES)

Illumination measured on screen(lux)			
Test point	Required illumination	Sample 1	Sample 2
Point HV	≤ 0.7	0.67	0.62
Point B50L	≤ 0.4	0.32	0.37
Point 75R	≥ 12.0	17.54	16.85
Point 75L	≤ 12.0	9.91	9.10
Point 50L	≤ 15.0	13.45	11.40
Point 50R	≥ 12.0	18.21	16.73
Point 50V	≥ 6.0	11.23	15.54
Point 25L	≥ 2.0	6.41	9.08
Point 25R	≥ 2.0	6.78	5.87
Any point in Zone III	≤ 0.7	0.69	0.68
Any point in Zone IV	≥ 3.0	4.67	6.31
Any point in Zone I	$\leq 2 \times E_{50R}$	16.78	19.86

Illumination measured on screen(lux)			
Test point	Required illumination	Sample 1	Sample 2
Point 1	≤ 0.7	0.48	0.58
Point 2	≤ 0.7	0.39	0.37
Point 3	≤ 0.7	0.50	0.28
Point 4	≤ 0.7	0.35	0.59
Point 5	≤ 0.7	0.27	0.30
Point 6	≤ 0.7	0.55	0.48
Point 7	$0.1 \leq \text{Point 7} \leq 0.7$	0.41	0.39
Point 8	$0.2 \leq \text{Point 8} \leq 0.7$	0.50	0.45
Point 1+2+3	≥ 0.3	1.37	1.23
Point 4+5+6	≥ 0.6	1.17	1.37

3.2.4.2 Bending lighting
Not applicable.



General Test Report

3.2.4.3 Driving beam(Class B)

3.2.4.3.1 Driving beam illuminance values measured after photometric stabilization

Illumination measured on screen(lux)			
	Required illumination	Sample 1	Sample 2
Maximum Luminance (E_M)	$48 \leq E_M \leq 240$	75.24	75.02
	$*E_M \leq 16 \times E_{75R}$		
Luminance at the point HV	$\geq 0.8 \times E_M$	69.23	70.32
Minimum Luminance on line 1125L-1125R	≥ 24	39.36	42.51
Minimum Luminance on line 2250L-2250R	≥ 6	15.02	18.95

* In the case of a combined passing and driving headlamp.

Reference mark

	Calculation the formula	Sample 1	Sample 2
I'_M shall be rounded off to the value 7.5-10-12.5-17.5-20-25-27.5-30-37.5-40-45-50	$I'_M = 0.208 \times E_M$	15.65	15.60
Reference mark 17.5			

Illuminance values measured after one minute(LED or LED MODULES)

Illumination measured on screen(lux)			
	Required illumination	Sample 1	Sample 2
Maximum Luminance (E_M)	$48 \leq E_M \leq 240$	78.72	77.69
	$*E_M \leq 16 \times E_{75R}$		
Luminance at the point HV	$\geq 0.8 \times E_M$	72.43	72.82
Minimum Luminance on line 1125L-1125R	≥ 24	41.18	44.02
Minimum Luminance on line 2250L-2250R	≥ 6	15.71	19.62

* In the case of a combined passing and driving headlamp.

3.2.4.4 Additional tests in the case of headlamps with an adjustable reflector
Not applicable.

3.2.5 Tests for stability of photometric performance of headlamps in operation

3.2.5.1 Clean headlamp

The headlamp has been operated for 12 hours in accordance with item 1.1.1 of Annex 4.

3.2.5.1.1 Test results

The visual inspection after the test did not show any distortion, deformation, cracking or change in colour of either the headlamp lens or the external lens.

Passing beam

Photometric test result (lux)				
Test point	Initial of test	End of test	Difference(%)	Allowable difference(%)
B 50L	0.30	0.29	3.33	10
50R	16.98	16.35	3.71	10
HV	0.62	0.60	3.23	10



General Test Report

Driving beam

Photometric test result (lux)				
Test point	Initial of test	End of test	Difference(%)	Allowable difference(%)
E _M	75.24	73.12	2.82	10

3.2.5.2 Dirty headlamp

The headlamp has been prepared in accordance with item 1.2.1 of Annex 4.

3.2.5.2.1 Test results

The visual inspection after the test did not show any distortion, deformation, cracking or change in colour of either the headlamp lens or the external lens.

Passing beam

Photometric test result (lux)				
Test point	Initial of test	End of test	Difference(%)	Allowable difference(%)
B 50L	0.29	0.27	6.90	10
50R	16.35	15.18	7.16	10
HV	0.60	0.55	8.33	10

Driving beam

Photometric test result (lux)				
Test point	Initial of test	End of test	Difference(%)	Allowable difference(%)
E _M	73.12	67.22	8.07	10

3.2.5.3 Test for change in vertical position of the "cut-off" line under the influence of heat

The test procedure is in accordance with item 2.1 of Annex 4

3.2.5.3.1 Test results (Unit mrad)

	Sample 1	Sample 2	Maximum permissible
$\Delta r_1 = r_3 - r_{60} $	0.76	---	$\Delta r_1 \leq 1.0 \text{ mrad}$

3.2.6 Requirements for lamps incorporating lenses of plastic material - Testing of lens or material samples and of complete lamps

The lamp manufacturer can prove that the product has already passed the tests prescribed in item 2.1. to 2.5. of annex 6, those tests need not be repeated; only the tests prescribed in Appendix 1, table B, shall be mandatory.

3.2.6.1 Resistance to mechanical deterioration of the lens surface

The lens of lamp sample No. 1 shall be subjected to the test described in item 2.4.1. of Annex 6



General Test Report

3.2.6.1.1 Test results

Illumination measured on screen(lux)		
Test point	Sample 1	Required illumination
B 50L	0.32	≤ 0.52
HV	0.53	≤ 0.91
75R	13.02	≥ 10.8

3.2.6.2 Test of adherence of coatings, if any
The lens of lamp sample No. 2 shall be subjected to the test described in item 2.5.of Annex 6.

3.2.6.2.1 Test results
After the test, there is no appreciable impairment of the gridded area.
Impairments at the intersections between squares or at the edges of the cuts does not exceed 15 per cent of the gridded surface.



General Information

[] **Numbering according to annex 1 of the ECE Regulation No.112**

[1.]	Trade name or mark of device:	TUFF PLUS
[2.]	Manufacturer's name for the type of device:	A0103
[3.]	Manufacturer's name and address:	Foshan Tuff Plus Auto Lighting Co. Ltd. No. A02, (Zhongzhuanlun), Ritian Technology Co., Ltd., Ritian Road, Songxia Industrial City, Songgang Town, Nanhai District, Foshan City, Guangdong Province, P.R.China
[4.]	If applicable, name and address of the manufacturer's representative:	Not applicable
[5.]	Submitted for approval on:	28.10.2015 - 30.10.2015
[6.]	Technical service responsible for conducting approval tests:	ATE EL s.à r.l. 14, op Huefdreich L-6871 Wecker
[7.]	Date of report issued by that service:	02.11.2015
[8.]	Number of report issued by that service:	65TFA0001A
[9.]	Brief description:	
	Category as described by the relevant marking:	Driving beam and passing beam: HC/R PL
	Number and category(ies) of filament lamp(s):	Driving beam: LEDs*4 Passing beam: LEDs*2
	Measures according to paragraph 5.8. of this Regulation:	Downward movement of the beam, Horizontal movement is allowed
	Number and specific identification code(s) of LED module(s)	Not applicable
	Number and specific identification code(s) of electronic light source control gear(s)	Not applicable
	Total objective luminous flux as described in paragraph 5.9. exceeds 2,000 lumen: yes/no	No
	The adjustment of the cut-off has been determined at: 10 m/25 m	25 m



General Information

	The determination of the minimum sharpness of the "cut-off" has been carried out at: 10 m/25 m	25 m
[10.]	Approval mark position:	On the lens
[11.]	Reason(s) for extension of approval:	Not applicable
[12.]		
[13.]		
[14.]		
[15.]		
[16.]		

Foshan Tuff Plus Auto Lighting Co., Ltd.

First application date : October 28, 2015

Page 1 of 3

Information folder No. : A0103-00

1. Specification data

Type		A0103	
Function		Headlamp	
		Passing beam	Driving beam
Rated	Voltage	12V	12V
	Wattage	20W	40W
Applicable Regulation (ECE)		R112.00 class B	
Location of marking	Light source category	2LEDs, non-replaceable light source	4LEDs, non-replaceable light source
		Marked on Housing	
	Trade mark	TUFF PLUS	
		Marked on Lens	

2. Construction and material

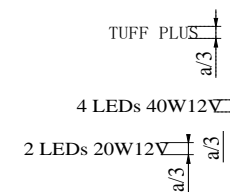
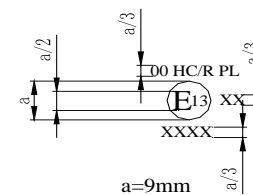
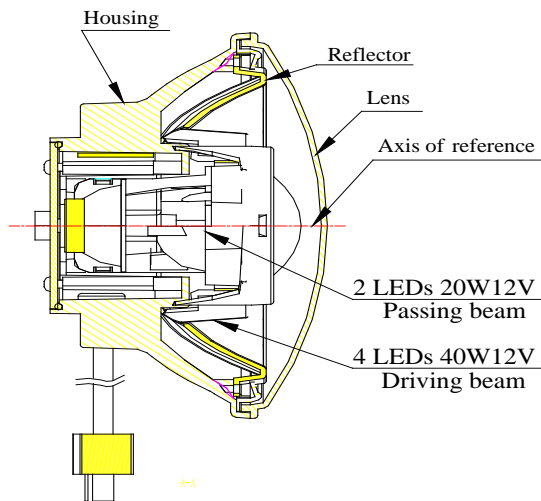
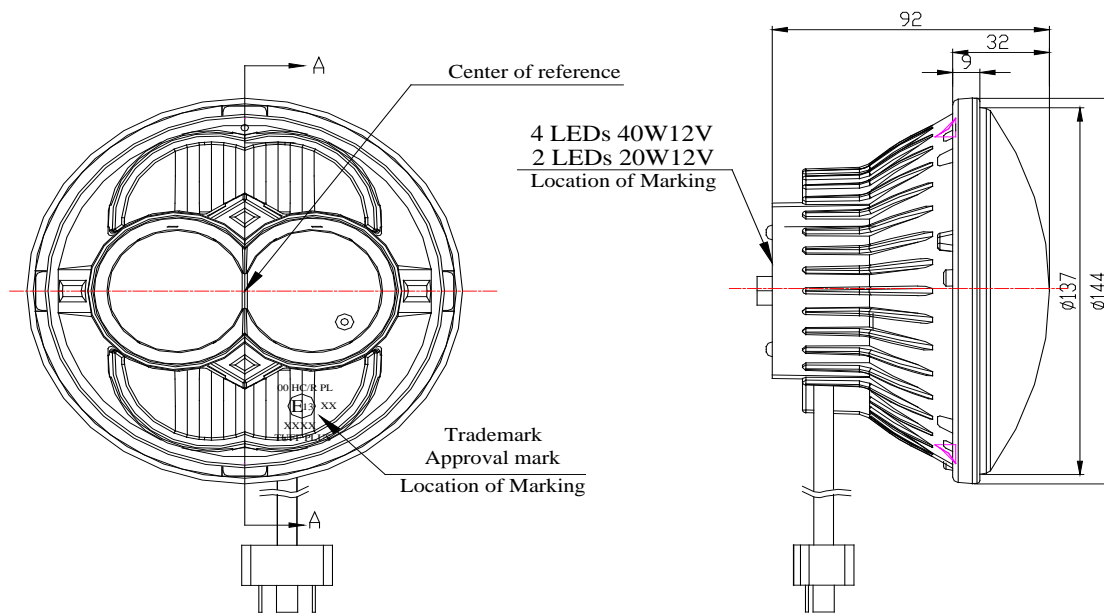
Construction	Material	Remarks
Lens	Plastic(PC) Trade name: Makrolon AL2647 Manufacturer: Bayer Material Science Ltd.	Color: Clear Coating: Trade name: UVT 200 Q1 Manufacturer: Red Spot Paint & Varnish Co., Inc
Reflector	Plastic(PC)	---
Housing	Aluminum alloy	---

3. Name and address of manufacturer : Foshan Tuff Plus Auto Lighting Co. Ltd.
: No. A02, (Zhongzhuanlun), Ritian Technology Co., Ltd., Ritian Road,
Songxia Industrial City, Songgang Town, Nanhai District, Foshan City,
Guangdong Province, P.R.China

4. Name and address of representative of manufacturer : Not applicable

This information document consists of 3 pages

Foshan Tuff Plus Auto Lighting Co., Ltd.



Assemble Drawing		Foshan Tuff Plus Auto Lighting Co., Ltd.	
		Head lamp	
Design	Examine	A0103	
WELL	WELL		

The LED Circuit Diagram

