ECE TYPE-APPROVAL CERTIFICATE

E24

Communication concerning:[2]

Approval granted
~~Approval extended~~
~~Approval refused~~
~~Approval withdrawn~~
~~Production definitively discontinued~~

of a type of headlamp pursuant to Regulation No. 113

Approval No: ***E24*113R03/01*0574*00***

1.	Trade name or mark of the lamp:	***LY***
2.	Manufacturer's name for the type of lamp:	***LY-BMR1200-001***
3.	Manufacturer's name and address:	***Guangzhou Loyo Electronic Technology Co., Ltd.*** ***102, Building A, No.1 Yiheng Road,*** ***Qinghu Caitian North Street, Junhe Street,*** ***Baiyun District, Guangzhou,*** ***Guangdong 510000P.R.China***
4.	If applicable, name and address of manufacturer's representative:	***N/A***
5.	Submitted for approval on:	***20.04.2021***
6.	Technical service responsible for conducting approval tests:	***TÜV SÜD Auto Service GmbH,*** ***Westendstraße 199,*** ***D-80686 München*** ***Germany***
7.	Date of test report issued by that service:	***14.04.2021***
8.	Number of report issued by that service:	***21-00669-CX-SHA-00***

NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (+353+1) 807 3800, Facsimile: 01-807 3844

Approval No: ***E24*113R03/01*0574*00***

9. Brief description:

Category as described by the relevant marking[3]:	***WCR-CS PL***
Number and category(ies) of filament lamp(s), if any	***N/A***
Number and category (ies) of gas-discharge light source, if any	***N/A***
Number and specific identification code(s) of LED modules and for each LED module a statement whether it is replaceable or not: ~~yes~~/no[2]	***Non-replaceable, 2*LEDs for passing beam, 1*LED for driving beam***
Number and specific identification code(s) of electronic light source control gear(s), if any:	***N/A***
Number and specific identification code(s) of additional lighting unit(s) and for each LED module a statement whether it is replaceable or not, if any:	***N/A***
The determination of "cut-off" sharpness: yes/~~no~~[2]	***Yes***
If yes, it was carried out at ~~10 m~~ / 25 m^2:	***25 m***
Trade name and identification number of separate ballast(s) or part(s) of ballast(s):	***N/A***
The passing beam light source may/~~may not~~[2] be lit simultaneously with the driving beam light source and/or another reciprocally incorporated headlamp:	***May***
The minimum bank angle(s) to satisfy the requirement of paragraph 6.2.8.1, if any:	***N/A***
9.1 Primary driving beam: yes/~~no~~[2]	***Yes***
Secondary driving beam: ~~yes~~/no[2]	***No***

The secondary driving beam shall only be operated together with a passing beam or ~~a primary driving beam~~.

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Approval No: ***E24*113R03/01*0574*00***

10.	Approval mark position:	***On the outer lens***
11.	Reason(s) for extension (if applicable):	***N/A***
12.	Approval granted/~~extended/refused/withdrawn~~[2]:	***Granted***
13.	Place:	***Dublin***
14.	Date:	***12th May, 2021***
15.	Signature:	

NATIONAL STANDARDS AUTHORITY OF IRELAND
NSAI Certification
TRANSPORT DEPARTMENT

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

[3]Indicate the appropriate marking selected from the list below:

C-AS,	C- BS,	R- BS,	CR- BS,	C/ -BS,	C/R-BS,
	C-BS PL,	R-BS PL,	CR-BS PL,	C/ -BS PL,	C/R-BS PL,
WC-CS,	WC-DS,	WR-CS	WR-DS,	WCR-CS,	WCR-DS,
WC/-CS,	WC/-DS,	WC/R-CS,	WC/R-DS,	WC-CS PL,	
WC-DS PL,	WR-CS PL,	WR-DS PL,	WCR-CS PL,	WCR-DS PL,	
WC/CS PL,	WC/-DS PL,	WC/R-CS PL,	WC/R-DS PL,		
WC+-CS,	WC+-DS,	WC+R-CS,	WC+R-DS,	C+-BS,	C+R-BS,
WC+-CS PL,	WC+-DS PL,	WC+R-CS PL,	WC+R-DS PL,	C+-BS PL,	C+R-BS PL
WC-ES,	WR-ES,	WCR-ES,	WC/-ES,	WC/R-ES,	WC-ES PL,
WR-ES PL,	WCR-ES PL,	WC/-ES PL,	WC/R-ES PL		
WC+-ES,	WC+R-ES,	WC+-ES PL,	WC+R-ES PL		

NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (+353+1) 807 3800, Facsimile: 01-807 3844

Approval No: ***E24*113R03/01*0574*00***

Index to the Information Package

Date of issue:	***12th May, 2021***
Date of latest amendment:	***N/A***
Reason for extension/revision:	***N/A***

1. Additional conditions, and advisory notes on legal alternatives.

2. Test report(s)

- numbers(s):	***21-00669-CX-SHA-00***
- date of issue:	***14.04.2021***
- date of latest amendment:	***N/A***

3. Information document

- number(s):	***LY-BMR1200-001-00***
- date of issue:	***09.04.2021***
- date of latest amendment:	***N/A***
Documentation:	***35 pages***

NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (+353+1) 807 3800, Facsimile: 01-807 3844

Approval No: ***E24*113R03/01*0574*00***

Appendix: **Additional conditions, and advisory notes on legal alternatives.**

A: Additional conditions:

1. The device, type LY-BMR1200-001, shall be marked as prescribed in the regulation.
2. The attached technical report, with any of its attachments, forms part of this Type Approval certificate.
3. Each individual product from series production shall be to the measurements specified in the attached drawings, and shall be manufactured only from the materials specified in the Approval documents.
4. Changes in the product are permitted only with the explicit permission of NSAI. Breaches of this requirement will lead to a withdrawal of the Type Approval, and in addition may be subject to criminal prosecution.
5. This Type Approval will expire when it is surrendered by the holder, or withdrawn by NSAI, or when the approved type of product no longer conforms to legal requirements. The recall of the Type Approval can be issued by NSAI when the conditions required for the issuing or continuation of the Type Approval are no longer current, or when the Approval holder is in breach of the duties attached to the Type Approval, or when it is established that the approved type no longer meets the requirements of traffic safety.
6. NSAI may at any time check the correct performance of the duties imposed by the grant of this Type Approval, and in order to do so, may make tests, or have tests made.
7. Changes in the company name, address or manufacturing site, as well as in any of the sales or other agents specified in the issuing of the approval must immediately be notified to the NSAI.
8. The duties imposed by the issuing of this certificate are not transferable. The legal protection of third parties is not affected by this certificate.
9. When the manufacture or sale of the vehicle, system, component or separate technical unit has not been started within one year of the date of issue of this certificate, then NSAI is to be informed. This requirement also applies when the manufacture or sale has been halted for more than one year, or when it ought to have been halted for more than one year.The initial commencement of manufacture or sale, or the resumption of manufacture or sale, shall then be notified to NSAI within one month of commencement or resumption.

B : Legal Options

Any objection to the requirements set out in this certificate shall be made within one month of the date of issue. The objection shall be made, in writing, to NSAI in Dublin.

NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (+353+1) 807 3800, Facsimile: 01-807 3844

T e s t R e p o r t

No.: 21-00669-CX-SHA-00

Test of a type of component
with regard to

UN/ECE Regulation No. 113

including all amendments up to
supplement 01 to the 03 series of amendments

Approval subject:
Headlamps emitting a symmetrical passing beam or a driving beam

Approval status		
☒	Granting of a type approval	
☐	Extension/correction to type approval no.	N/A

E24*113R03/01*0574*00

I. General

Make (trade name of manufacturer)	:	LY
Type	:	LY-BMR1200-001
Variants	:	N/A
Means of identification of type	:	By digits and letters
Concise description		
Category as described by the relevant marking	:	WCR-CS PL ⟷
Number and category(ies) of filament lamp(s)	:	N/A
Number and category(ies) of gas-discharge light source, if any	:	N/A
Number and specific identification code(s) of LED modules and for each LED module statement whether it is replaceable or not	:	Yes, non-replaceable 2*LEDs for passing beam, 1*LED for driving beam
Number and specific identification code(s) of electronic light source control gear(s), if any	:	N/A
Number and specific identification code(s) of additional lighting unit(s) and for each LED module a statement whether it is replaceable or not, if any	:	N/A
The determination of 'cut-off' sharpness	:	Yes
If yes, it was carried out at	:	25m
Trade name and identification number of separate ballast(s) or part(s) of ballast(s)	:	N/A

The passing beam light source may be lit simultaneously with the driving beam light source and/or another reciprocally incorporated headlamp.

The minimum bank angle(s) to satisfy the requirement of paragraph 6.2.8.1., if any	:	N/A
Primary Driving Beam	:	Yes
Secondary Driving Beam	:	No
Name and address of manufacturer	:	Guangzhou Loyo Electronic Technology Co.,Ltd. 102,Building A,No.1 Yiheng Road,Qinghu Caitian North Street,Junhe Street,Baiyun District, Guangzhou,Guangdong 510000P.R.China
Address of assembly plant	:	Same as above
Location of the approval mark	:	On the outer lens
If applicable, name and address of the manufacturer's representative	:	N/A

II. Test results

Refer to the Annex II

III. Enclosures

Information folder No. LY-BMR1200-001-00 dated 2021-04-09 (YYYY-MM-DD)

IV. Statement of conformity

The mentioned information folder and the type described therein are in accordance with the test basis mentioned above. The worst-case was selected in accordance with document "Requirements for Test Reports (AS-PB-T-02)".

The test report may be reproduced and published in full and by the client only. It can be reproduced partially with the written permission of the test laboratory only.

TÜV SÜD Auto Service GmbH is designated as Technical Service by:

Approval authority	**Country**	**Registration-number**
Kraftfahrt-Bundesamt (KBA)	Germany	KBA-P 00100-10
Vehicle Certification Agency (VCA)	United Kingdom	VCA-TS-006
Approval Authority of the Netherlands (RDW)	The Netherlands	RDWT-082-xx
National Standards Authority of Ireland (NSAI)	Ireland	Technical Service Number: 49
Société Nationale de Certification et d'Homologation. (SNCH)	Luxembourg	13/B(g)

München, 2021-04-14
(yyyy-mm-dd)

Henry Chen

Annex I Reason of Extension

Correction of : N/A

Modification of : N/A

Addition of : N/A

Deletion of : N/A

Annex II Test results

1. Test conditions

1.1.	Technical data of the test samples	:	Two samples were tested. Sample No. 1 and sample No. 2. For information about the form of the lamp, the position of the reference point and the reference axis, see information document.
1.2.	Test procedures used	:	According to ECE Regulation No. 113.03.
1.3.	Measuring and test equipment	:	Full automatic photometric test system for automobile lamps LMT Lichtmesstechnik GmbH Berlin Type GO H1660

2. Test results

2.1. General Specifications

The headlamps have been made as to retain their prescribed photometric characteristics and to remain in good working order when in normal use, in spite of the vibrations to which they may be subjected.
Headlamps have been give adequate illumination without dazzle when emitting the passing-beam, and good illumination when emitting the driving-beam.

2.2. Test record of the photometric measurements of the passing beam, Class C.

2.2.1. Sample No. 1, test voltage 13.2V.

No.	Point of the measurement	Limits [cd]		Measured values [cd]		Conclusion
		Minimum	Maximum	After stability	1 minute	
1	0.86D-3.5R	2000.00	13750.00	2992.52	4608.52	Complies
2	0.86D-H	2450.00	---	2661.57	4098.85	Complies
3	0.86D-3.5L	2000.00	13750.00	2489.60	3834.01	Complies
4	0.5U-1.5L	---	900.00	177.07	272.69	Complies
5	0.5U-1.5R	---	900.00	179.67	276.69	Complies
6	2D-15L	550.00	---	7018.88	10809.16	Complies
7	2D-15R	550.00	---	5741.08	8841.33	Complies
8	4D-20L	150.00	---	7366.82	11344.99	Complies
9	4D-20R	150.00	---	7275.84	11204.88	Complies
10	HV	---	1700.00	356.84	549.54	Complies
11	Line 1	1350.00	---	6754.12	10401.42	Complies
12	point 8	---	700.00	134.08	206.48	Complies
13	point 9	---	700.00	130.18	200.48	Complies
14	point 10	---	700.00	138.48	213.26	Complies
15	Total(8-10)	150.00	---	402.74	620.22	Complies
16	point 11	---	900.00	146.48	225.58	Complies
17	point 12	---	900.00	149.18	229.74	Complies
18	point 13	---	900.00	152.28	234.51	Complies
19	Total(11-13)	300.00	---	447.93	689.82	Complies
20	V-8L	50.00	---	200.27	308.42	Complies
21	V-8R	50.00	---	475.52	732.31	Complies
22	V-4L	100.00	900.00	282.66	435.30	Complies
23	V-4R	100.00	900.00	396.74	610.98	Complies
24	Zone I	---	900.00	129.38	199.25	Complies
25	Zone II	---	700.00	395.94	609.75	Complies

2.2.2. Sample No. 2, test voltage 13.2V.

No.	Point of the measurement	Limits [cd]		Measured values [cd]		Conclusion
		Minimum	Maximum	After stability	1 minute	
1	0.86D-3.5R	2000.00	13750.00	3101.50	4960.47	Complies
2	0.86D-H	2450.00	---	2690.57	4303.23	Complies
3	0.86D-3.5L	2000.00	13750.00	2506.60	4009.00	Complies
4	0.5U-1.5L	---	900.00	144.88	231.72	Complies
5	0.5U-1.5R	---	900.00	143.08	228.84	Complies
6	2D-15L	550.00	---	7125.86	11396.93	Complies
7	2D-15R	550.00	---	6379.98	10203.99	Complies
8	4D-20L	150.00	---	7790.75	12460.34	Complies
9	4D-20R	150.00	---	7505.80	12004.60	Complies
10	HV	---	1700.00	162.17	259.37	Complies
11	Line 1	1350.00	---	6968.93	11145.94	Complies
12	point 8	---	700.00	116.18	185.82	Complies
13	point 9	---	700.00	110.78	177.18	Complies
14	point 10	---	700.00	111.08	177.66	Complies
15	Total(8-10)	150.00	---	338.05	540.67	Complies
16	point 11	---	900.00	131.28	209.97	Complies
17	point 12	---	900.00	127.18	203.41	Complies
18	point 13	---	900.00	129.58	207.25	Complies
19	Total(11-13)	300.00	---	388.04	620.62	Complies
20	V-8L	50.00	---	167.87	268.49	Complies
21	V-8R	50.00	---	191.07	305.59	Complies
22	V-4L	100.00	900.00	166.47	266.25	Complies
23	V-4R	100.00	900.00	173.47	277.44	Complies
24	Zone I	---	900.00	110.48	176.70	Complies
25	Zone II	---	700.00	173.67	277.76	Complies

2.3. Test record of the photometric measurements of the driving beam.

2.3.1. Sample No. 1, test voltage 13.2V.

No.	Point of the measurement	Limits [cd]		Measured values [cd]		Conclusion
		Minimum	Maximum	After stability	1 minute	
1	HV	20000.00	---	31664.93	40703.48	Complies
2	H-2.5R	10000.00	---	26885.70	34560.05	Complies
3	H-2.5L	10000.00	---	28645.41	36822.06	Complies
4	H-5R	3500.00	---	20426.73	26257.41	Complies
5	H-5L	3500.00	---	21256.60	27324.16	Complies
6	H-9R	2000.00	---	6110.02	7854.09	Complies
7	H-9L	2000.00	---	7137.86	9175.32	Complies
8	H-12R	600.00	---	652.30	838.49	Complies
9	H-12L	600.00	---	680.29	874.47	Complies
10	2U-V	1000.00	---	13043.91	16767.21	Complies
11	I_{max}	25000.00	215000.00	34507.49	44357.43	Complies

2.3.2. Sample No. 2, test voltage 13.2V.

No.	Point of the measurement	Limits [cd]		Measured values [cd]		Conclusion
		Minimum	Maximum	After stability	1 minute	
1	HV	20000.00	---	32124.86	43523.03	Complies
2	H-2.5R	10000.00	---	29375.30	39797.90	Complies
3	H-2.5L	10000.00	---	28185.49	38185.94	Complies
4	H-5R	3500.00	---	21216.60	28744.43	Complies
5	H-5L	3500.00	---	20946.65	28378.70	Complies
6	H-9R	2000.00	---	6943.89	9407.64	Complies
7	H-9L	2000.00	---	7856.74	10644.38	Complies
8	H-12R	600.00	---	630.20	853.80	Complies
9	H-12L	600.00	---	641.40	868.97	Complies
10	2U-V	1000.00	---	19146.94	25940.44	Complies
11	I_{max}	25000.00	215000.00	32990.66	44696.02	Complies

Reference Mark (Imax / 4300): 7.5 *Average of the value for Sample No. 1 and Sample No. 2.

2.4. Stability of photometric performance of headlamp in operation.

2.4.1. Clean headlamp – Sample No. 1.

No.	Point of the measurement	Measured values			
		Value before operating (cd)	Value after operating (cd)	Discrepancy (≤ 10%)	Conclusion
1	Passing beam: 0.86D-3.5R	2992.52	2930.53	2.07%	Complies
2	Passing beam: 0.86D-3.5L	2489.60	2485.60	0.16%	Complies
3	Passing beam: 0.5U-1.5L*	177.07	184.97	7.90cd	Complies
4	Passing beam: 0.5U-1.5R*	179.67	179.87	0.20cd	Complies
5	Driving beam: Imax.	34507.49	34157.29	1.01%	Complies

2.4.2. Dirty headlamp – Sample No. 1.

No.	Point of the measurement	Measured values			
		Value before operating (cd)	Value after operating (cd)	Discrepancy (≤ 10%)	Conclusion
1	Passing beam: 0.86D-3.5R	3101.50	2815.55	9.22%	Complies
2	Passing beam: 0.86D-3.5L	2506.60	2405.62	4.03%	Complies
3	Passing beam: 0.5U-1.5L*	144.88	177.78	32.90cd	Complies
4	Passing beam: 0.5U-1.5R*	143.08	169.58	26.50cd	Complies
5	Driving beam: Imax.	32990.66	34004.77	3.07%	Complies

*The value measured at Point 0.5U-1.5L and 0.5U-1.5R shall not exceed the photometric value measured prior to the test by more than 255cd.

2.4.3. Test record of cut-off line under the influence of heat – Sample No. 1.

No.	Measurement values		
	Change	Limits	Conclusion
1	0.87 mrad	~~Upwards < 1.0 mrad~~ Downwards < 2.0 mrad	Complies

* The result complies with the requirements prescribed in paragraph 2.2.1. of Annex 4 in this Regulation.

2.5. Tests on plastic lens

2.5.1. Test report for plastic material of the lens attached to the manufacturer's information document.

2.5.2. Tests of the complete headlamp incorporating a lens of plastic material.

2.5.2.1. Test of adherence of coatings - Sample No. 1.

- No appreciable impairment of the gridded area – Complies.

2.5.2.2. Resistance to mechanical deterioration of the lens surface - Sample No. 2.

No.	Point of the measurement	Limits [cd]		Measured values [cd]	Conclusion
		Minimum	Maximum		
1	0.86D-3.5R	1800.00	13750.00	2501.60	Complies
2	0.86D-3.5L	1800.00	13750.00	2356.62	Complies
3	HV	---	2210.00	282.66	Complies

* The result complies with the requirements prescribed in paragraph 2.6.1.2 of Annex 6 in this Regulation.

2.6. Test record of the colour

2.6.1.1. Passing beam - White

	Measured values			Limits
	Sample	x	y	W12 green boundary: y = 0.150 + 0.640 x W23 yellowish green boundary: y = 0.440 W34 yellow boundary: x = 0.500 W45 reddish purple boundary: y = 0.382 W56 purple boundary: y = 0.050 + 0.750 x W61 blue boundary: x = 0.310
After 1 minute	No. 1	0.3182	0.3299	Complies
	No. 2	0.3233	0.3338	Complies
After stability	No. 1	0.3136	0.3230	Complies
	No. 2	0.3212	0.3305	Complies

2.6.1.2. Driving beam - White

	Measured values			Limits
	Sample	x	y	W12 green boundary: y = 0.150 + 0.640 x W23 yellowish green boundary: y = 0.440 W34 yellow boundary: x = 0.500 W45 reddish purple boundary: y = 0.382 W56 purple boundary: y = 0.050 + 0.750 x W61 blue boundary: x = 0.310
After 1 minute	No. 1	0.3102	0.3130	Complies
	No. 2	0.3236	0.3312	Complies
After stability	No. 1	0.3129	0.3177	Complies
	No. 2	0.3154	0.3226	Complies

2..7 Test record of LED modules

2.7.1. Test voltage 13.2V.

2.7.1.1. Red Content

	Limit	measured	Conclusion
Passing beam	$K_{red} \geq 0.05$	0.0699	Complies
Driving beam	$K_{red} \geq 0.05$	0.0704	Complies

2.7.1.2. UV-radiation

	Limit	measured	Conclusion
Passing beam	$K_{UV} \leq 10^{-5}$ W/lm	2.28×10^{-10}	Complies
Driving beam	$K_{UV} \leq 10^{-5}$ W/lm	2.42×10^{-10}	Complies

2.7.1.3. Objective Luminous Flux

	Limit		Measured	Conclusion
	Minimum	Maximum		
Passing beam	500	2000	1896.36 lm	Complies

2.8. Apparent surface:
Refer to manufacturer's information document: LY-BMR1200-001-00

3. Specimen submitted to test on : 2021-04-09 (YYYY-MM-DD)

4. Place and date of the test : Dach Science and Technology (Guangzhou) Co. Ltd
2021-04-09 to 2021-04-12 (YYYY-MM-DD)

Guangzhou Loyo Electronic Technology Co.,Ltd.

102,Building A,No.1 Yiheng Road,Qinghu Caitian North Street,Junhe Street,Baiyun District,Guangzhou,Guangdong 510000P.R.China

2021-04-09

Dear Sirs,

We hereby apply for an UN type-approval

concerning	:	of motor vehicle headlamps emitting a symmetrical passing-beam and a driving beam， equipped with LED modules of front position lamps, for vehicles of category L
UN Regulation	:	No. R113.03 and R50.01
Name and address of manufacturer	:	Guangzhou Loyo Electronic Technology Co.,Ltd. 102,Building A,No.1 Yiheng Road,Qinghu Caitian North Street,Junhe Street,Baiyun District, Guangzhou,Guangdong 510000P.R.China

We confirm that the above application has not been submitted to any other Member State of the UN, nor has any Member State of the UN granted a corresponding type approval.

Yours faithfully,

Guangzhou Loyo Electronic Technology Co.,Ltd.

First application date : 2021-04-09

1. Specification data

Type	LY-BMR1200-001		
Function	Headlamp Passing beam	Headlamp Driving beam	Front position lamp
Emitted colour	White	White	White
Rated Voltage	12V	12V	12V
Rated Wattage	18.2W	37.5W	0.75W
Applicable Regulation	No. R113.03 Class C	No. R113.03 Class C	R50.01
Number and category of light source	2*LEDs non-replaceable	1*LED non-replaceable	50*LEDs non-replaceable
Trade mark	"LY" Marked on the outer lens		
Approval mark	Marked on the outer lens		
Remark	The application of an electronic light source control gears: being part of the lamp Input voltage to the electronic light source control gear:12V		

2. Construction and material

Construction	Material	Remarks
Outer Lens	Plastic (PC)	Base material Type: LS2-111 Kind of material:Lexan Manufacturer:GE Bayer Silicones,NL-4600 Bergen op Zoom Coating Type: UVHC3000 Manufacturer:GE Bayer Silicones,NL-4600 Bergen op Zoom
Outer cover	Plastic (PC)	Black
Inner cover	Plastic (PC)	Black
Housing	ADC12 (ALLOY)	Black
Electrical wiring	Copper covered with insulation	---

3.Name and address of manufacturer : Guangzhou Loyo Electronic Technology Co.,Ltd.
102,Building A,No.1 Yiheng Road,Qinghu Caitian North Street,Junhe Street,Baiyun District, Guangzhou,Guangdong 510000P.R.China

4.Name and address of assembly plant : Same as above

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

6. Apparent surface

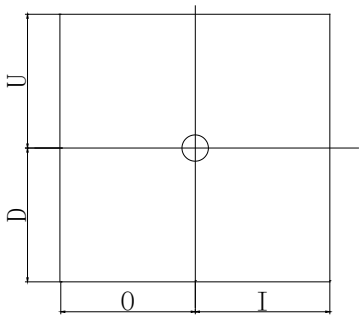
U= Upper limit

D= Down limit

I= Inside limit

O= Outside limit

⊕ :Reference center



Apparent surface based on the

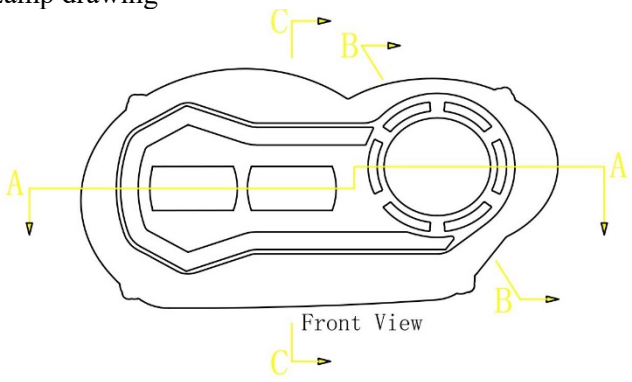
☒ Illuminating surface

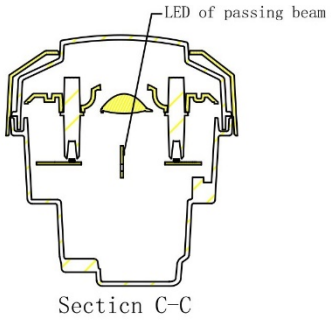
☐ light-emitting surface (with outer lens)

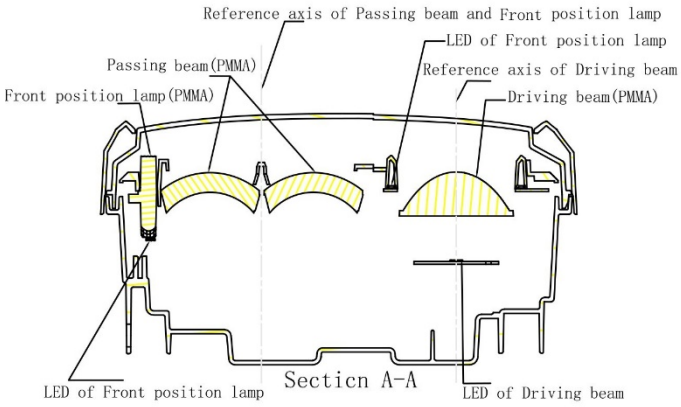
Unit: mm

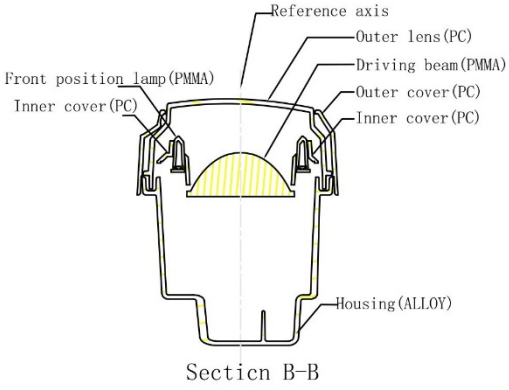
Function	Limit (O)	Limit (I)	Limit (U)	Limit (D)
Passing beam	72	158	35	35
Driving beam	196	34	42	48
Front position lamp	72	158	35	35

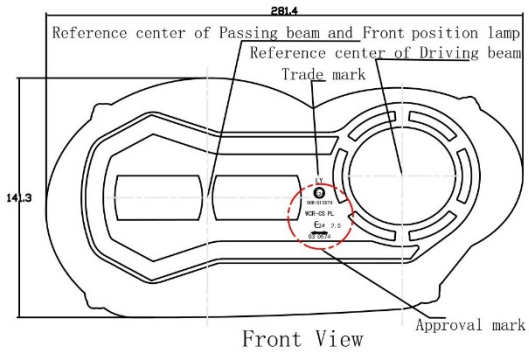
Lamp drawing

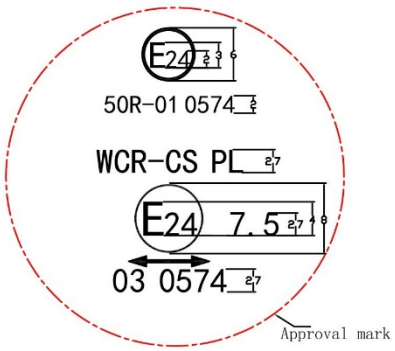


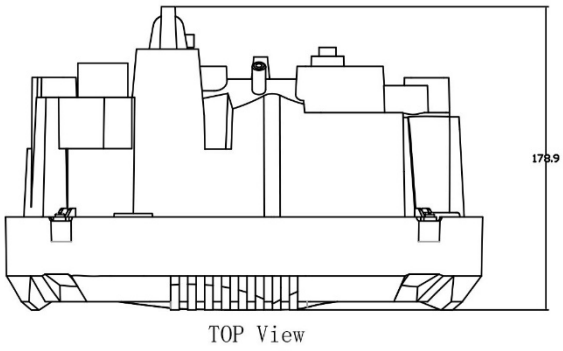












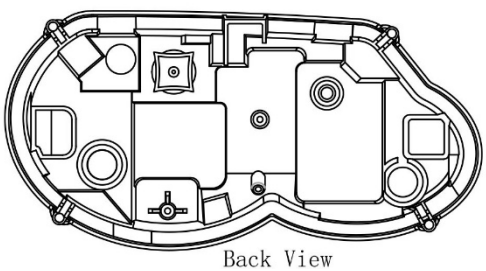
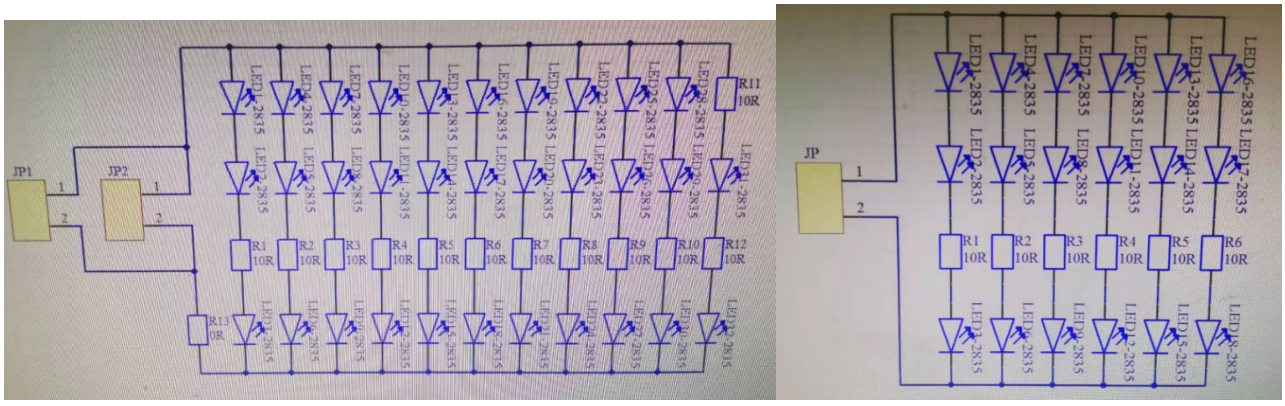


Photo of LED module of Front position lamp

a) Circuit diagram of Front position lamp



b) PCB of Front position lamp

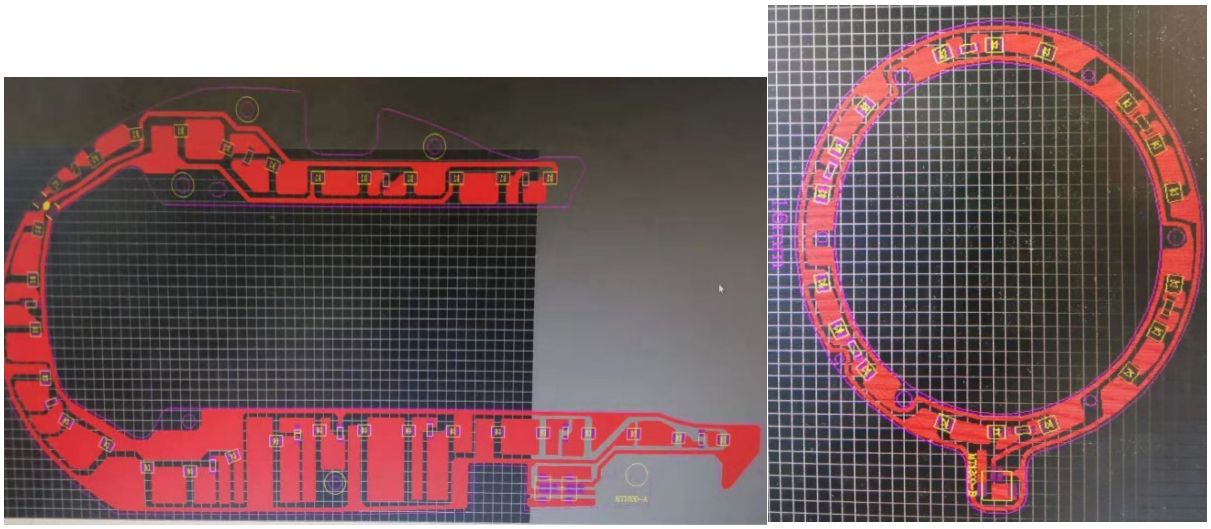
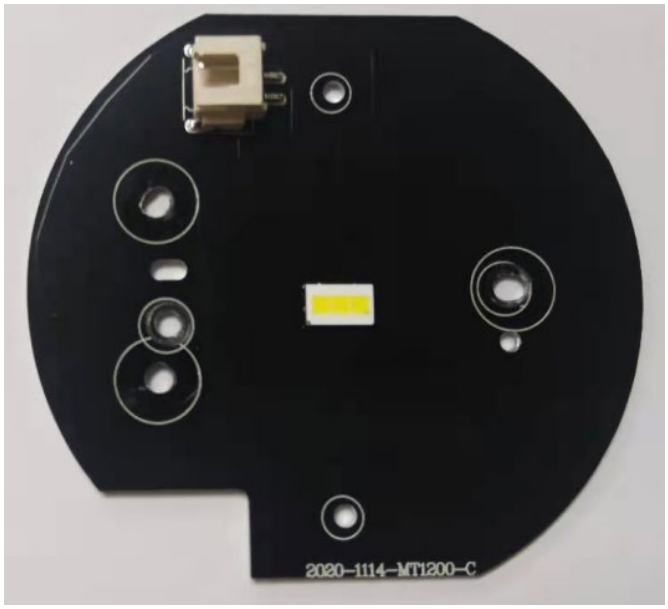
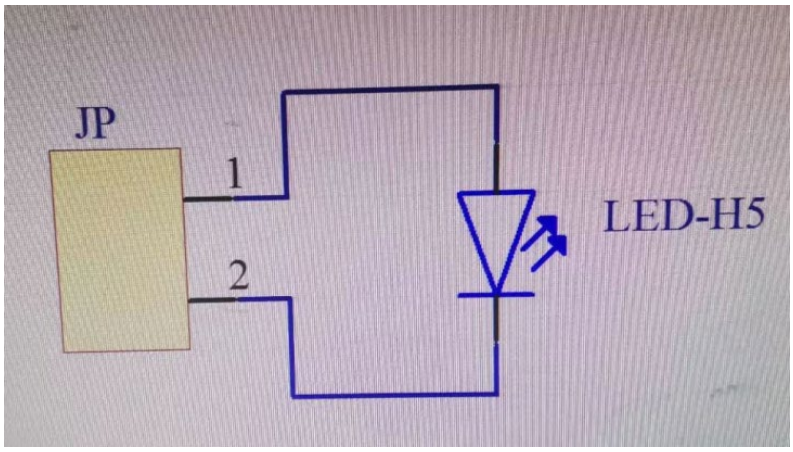


Photo of LED module of Driving beam



a) Circuit diagram of Driving beam



b) PCB of Driving beam

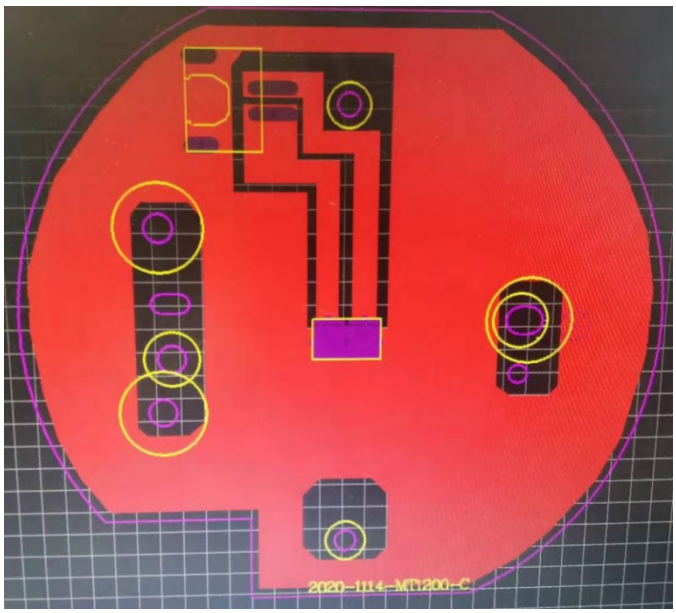
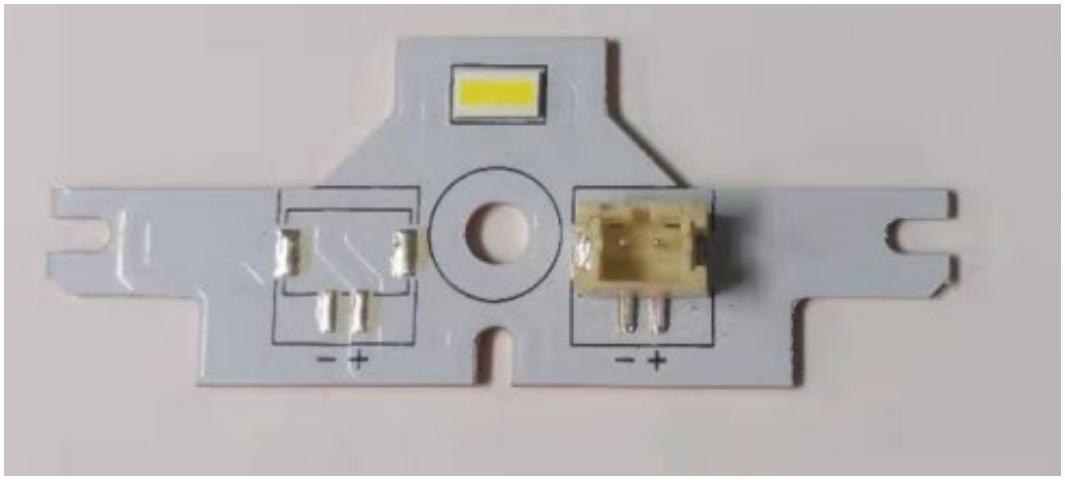
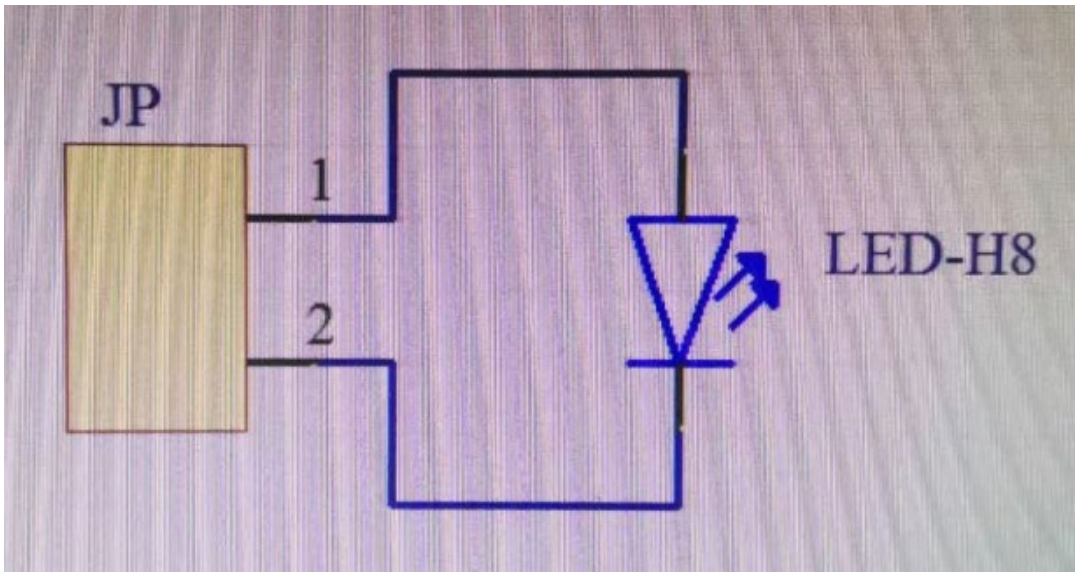


Photo of LED module of Passing beam



a) Circuit diagram of Passing beam



b) PCB of Passing beam

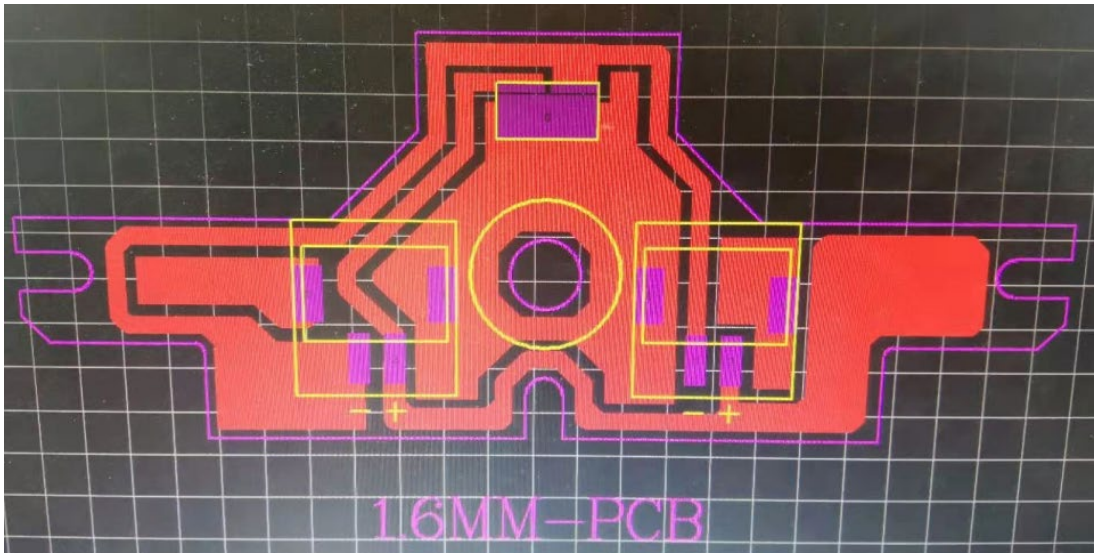
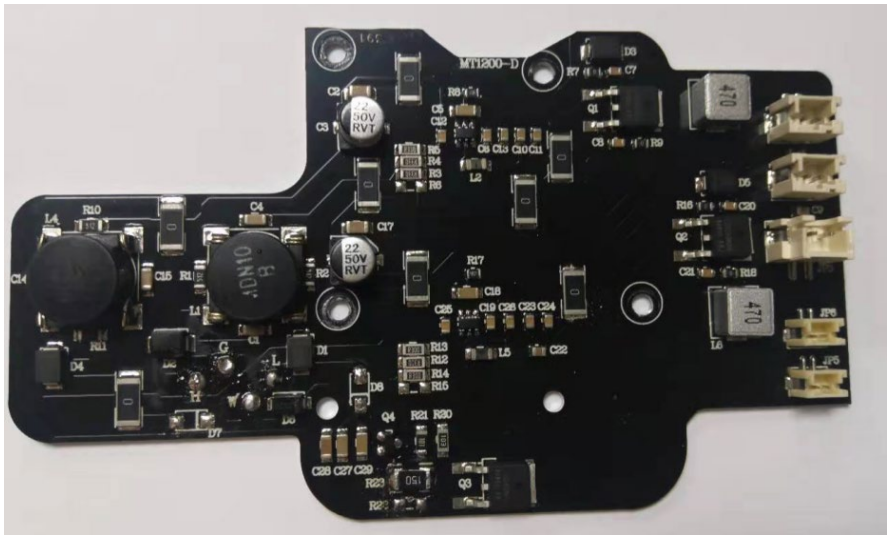
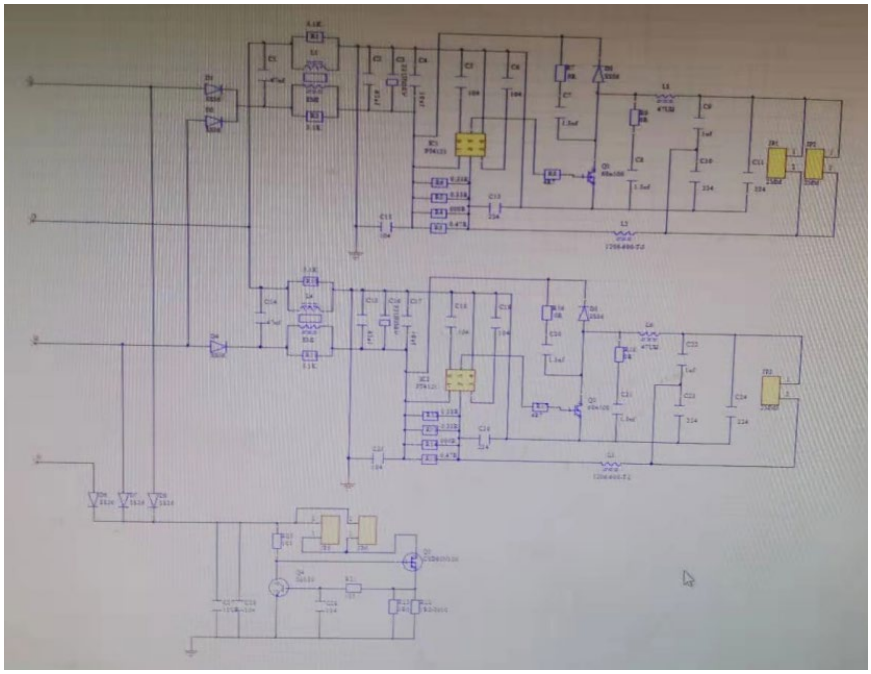


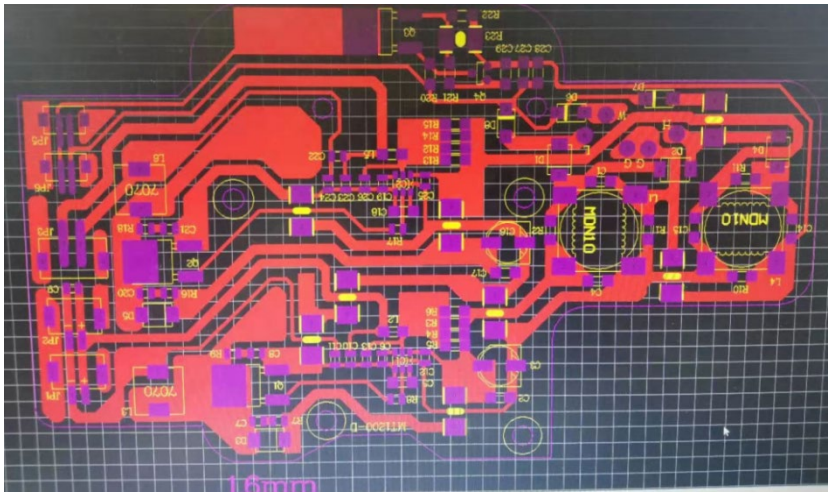
Photo of driver board



a) Circuit diagram of driver board



b) PCB of driver board



Lichttechnisches Institut
Universität Karlsruhe
LTIK

Report Nr. PMT 060

Prüfstelle für lichttechnische Einrichtungen an Fahrzeugen

L i c h t t e c h n i s c h e s I n s t i t u t
Universität Karlsruhe
L T I K

Prüfstelle für lichttechnische Einrichtungen an Fahrzeugen

76128 Karlsruhe
Kaiserstraße 12
Telefon 0721 608 2551
Telefax 0721 66 19 01

Report

about tests fixed in several
ECE-Regulations for headlamps

Number of the report	:	PMT 060
Date of the report	:	September, 06 1999
Subject	:	Test of coated plastic materials to be used for lenses of headlamps
Applicant	:	GE Bayer Silicones, NL-4600 Bergen op Zoom

Description of the materials declared by the applicant

Basis-material

Type	LS2-111
Kind of material	Lexan
Manufacturer	GE Bayer Silicones, NL-4600 Bergen op Zoom

Coating

Type	UVHC3000
Kind of material	
Manufacturer	GE Bayer Silicones, NL-4600 Bergen op Zoom

For the tests of the described materials to be used for lenses of headlamps for vehicles relating to the application the requirements were based on the document TRANS/SC1/WP29/306 provided to be ammended to the ECE-Regulations Nr. 1, 5, 8, 19, 20, 31, 57, 72 and 98.

The devices necessary for the tests were presented. The results of the tests are described in enclossures.

The requirements in accordance with the before-mentioned document are fulfilled.

This report consists of 2 pages.

Enclosures: measuring protocols

i.V. Dr. D. Kooß

LTIK
Report No. PMT 060

Annex
page 1/6

Tests

General: The mentioned paragraphs refer to the relevant annex in the ECE-Regulation Nr. 1, 5, 8, 19, 20, 31, 57, 72 and 98:

REQUIREMENTS FOR LAMPS INCORPORATING LENSES OF PLASTIC MATERIAL
- TESTING OF LENS OR MATERIAL SAMPLES AND OF COMPLETE LAMPS -
(technical annex)

(former document *TRANS/SC1/WP 29/306)*

Resistance to temperature changes

With this test lenses will be subjected to the cycles of temperature changes refered to in 2.2.2.

Because there were no lenses presented for this subject, this test could not be put through.

The test refered to in 2.1.1 must be done at a later time for completion of the material test report.

Resistance to atmospheric agents

Three new samples of material were subjected to the weathering- test referred to in 2.2.1.

After that no damages could be perceived at the samples, the values of transmission, as certained by the procedure corresponding to Annex 2 are summarized in the following table.

Measuring point	Sample		
	1	2	3
T2	88.9	88,9	88,9
T3	87,3	87,5	87,6
Δt	0,018	0,016	0,015
mean value Δt	0,016		
Δt_{max}	0.020		

The permissible limits are not exceeded.

Resistance to chemical agents

At the samples of material referred before after the weathering-test according to 2.2.1 and the measurement according to 2.2.3.1 the procedures according to 2.2.2.2 and 2.2.2 were realized.

After a suitable drying time no damages could be perceived at the samples, the values of diffusion ascertained by the procedure corresponding to Annex 2 are summarized in the following table:

Measuring point	Sample 1	2	3
T2	88,9	88,9	88,9
T4	0,8	0,7	0,7
T5	1,8	1,4	1,3
Δd	0,011	0,008	0,007
Mean value Δd	0,009		
Δd_{max}	0,020		

The permissible limits are not exceeded.

Resistance to detergents and hydrocarbons

Three new samples of material were subjected successively to the procedure described in 2.3.1 and 2.3.2.

The values of transmission ascertained by the procedure corresponding to Annex 2 are summarized in the following table.

Measuring point	Sample		
	1	2	3
T2	88,9	88,9	88,9
T3	88,9	88,6	88,9
Δt	0,000	0,003	0,000
mean value Δt	0,001		
Δt_{max}	0,010		

The permissible limits are not exceeded.

Resistance to mechanical deterioration

Three new samples of material were subjected to the test of checking the resistance to mechanical deterioration according to Annex 3.

The values of transmission and diffusion ascertained by the procedure corresponding to Annex 2 are summarized in the following table.

Measuring point	Sample		
	1	2	3
T2	88,7	88,9	88,8
T3	87,8	88,4	88,3
T4	0,8	0,7	0,7
T5	1,2	1,2	1,2
Δt	0,010	0,006	0,006
Δd	0,005	0,006	0,006
Mean value Δt	0,007		
Δt_{max}	0,100		
Mean value Δd	0,006		
Δd_{max}	0,050		

The permissible limits are not exceeded.

Test of adherence of the coating

A lens was prepared corresponding to 2.5.1, after that the test of adherence of the coating according to 2.5.2 was realized.

After this test it was ascertained that the coating at no place removed from the basis material.

DACH

ilac-MRA CNAS 中国认可 国际互认 检测 TESTING CNAS L5721

№ : A202011050801

TEST REPORT

NAME OF SAMPLE: Lens of Headlamps

CLIENT: Guangzhou Loyo Electronic Technology Co.,Ltd.

CLASSIFICATION OF TEST: Commission Test

Dach Science and Technology (Guangzhou) Co., Ltd.(DACH)

№: A202011050801

TEST REPORT

Name of product: Lens of Headlamps	Trade mark: —
Type/Model: Base material：LS2-111 Coating：UVHC3000	Quantity of sample: 3pcs lenses and 1pcs headlamp without lens
Client: Guangzhou Loyo Electronic Technology Co., Ltd.	Client address: 102,Building A,No.1 Yiheng Road,Qinghu Caitian North Street,Junhe Street,Baiyun District,Guangzhou,Guangdong 510000 P.R.China
Receiving date: 2021-01-18	Completing date: 2021-02-03
Tested according to: ECE R113.03 Uniform provisions concerning the approval of motor vehicle headlamps emitting a symmetrical passing beam or a driving beam or both and equipped with filament, gas-discharge light sources or LED modules Annex 6 2.1	Test item: Resistance to temperature changes

Test conclusion:

The Lenses of Headlamps submitted by Guangzhou Loyo Electronic Technology Co.,Ltd. are tested Resistance to temperature changes according to the standard of ECE R113.03 Annex 6 2.1.
The results are listed on page 4.

Seal of

Date of issue: 3rd Feb,2021

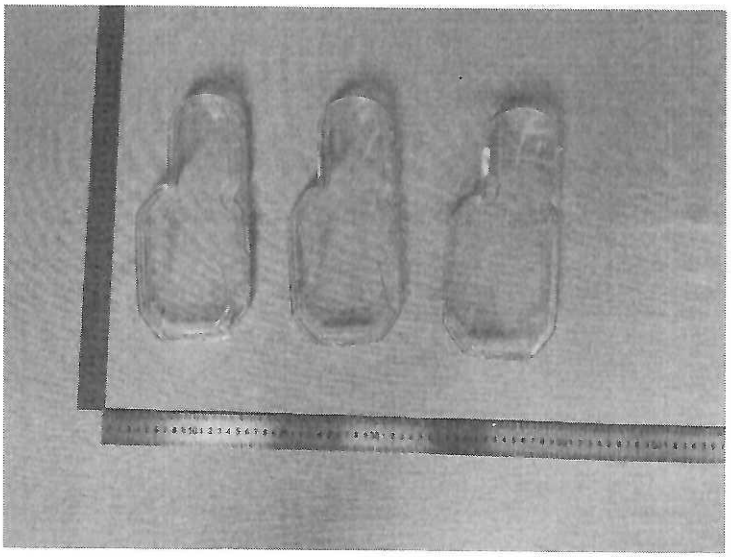
Approved by: Technical director

Reviewed by: Amber Wang

Tested by: Xu Zhuhe

№: A202011050801

TEST REPORT

Description of sample	1Base material: Type: LS2-111 Kind of material: Lexan Manufacturer: GE Bayer Silicones,NL-4600 Bergen op Zoom Coating: Type: UVHC3000 Manufacturer: GE Bayer Silicones,NL-4600 Bergen op Zoom 2 Sample photo: 
Remark	Description of the materials declared by the applicant.

TEST REPORT

1 Resistance to temperature changes

Three new samples (lenses) shall be subjected to five cycles of temperature and humidity (RH = relative humidity) change in accordance with the following programme:
(a) 3 hours at 40 °C ± 2 °C and 85-95 per cent RH;
(b) 1 hour at 23 °C ± 5 °C and 60-75 per cent RH;
(c) 15 hours at –30 °C ± 2 °C;
(d) 1 hour at 23 °C ± 5 °C and 60-75 per cent RH;
(e) 3 hours at 80 °C ± 2 °C;
(f) 1 hour at 23 °C ± 5 °C and 60-75 per cent RH;
Before this test, the samples shall be kept at 23 °C ± 5 °C and 60-75 percent RH for at least four hours.

Before or after The temperature/humidity cycles	Point on measuring screen -headlamp	Illumination in cd for sample No.		
		1#	2#	3#
before	0.86D/3.5R	3368.461	3211.486	3054.511
	0.86D/3.5L	2511.598	2330.627	2245.641
	0.50U/1.5L	144.577	149.476	142.977
	0.50U/1.5R	142.877	147.176	140.678
	I_{max}	63926.28	59237.25	59371.01
after	0.86D/3.5R	3248.245	3161.472	2984.125
	0.86D/3.5L	2391.541	2189.491	2125.254
	0.50U/1.5L	141.347	154.412	140.014
	0.50U/1.5R	139.815	137.841	142.854
	I_{max}	62182.15	59244.12	58043.25
variation	0.86D/3.5R	-3.6%	-1.6%	-2.3%
	0.86D/3.5L	-4.8%	-6.1%	-5.4%
	0.50U/1.5L	-2.2%	3.3%	-2.1%
	0.50U/1.5R	-2.1%	-6.3%	1.5%
	I_{max}	-2.7%	0.0%	-2.2%
The variation between the photometric values measured on each sample before and after the test shall not exceed 10 per cent.				
Verdict		P		

TEST REPORT

Important

1. The test report is invalid without the official stamp of DACH;
2. Any photocopies or part photocopies of the test report are forbidden without the written permission from DACH;
3. The test report is invalid without the signatures of Approval and Reviewer;
4. The test report is invalid if altered;
5. Objections to the test report must be submitted to DACH within 15 days;
6. Generally, commission test is responsible for the tested samples only;

"P" means "pass" , "F" means "fail", "N" or "—" means "not applicable" and " / "means "not test".

Test Lab: Dach Science and Technology (Guangzhou) Co., Ltd.(DACH)
Address: Room 701, 7/F., Building 3, Sci-Tech Park, No. 9, Lanyu Si Street, Economic Development Area, Guangzhou, Guangdong, China
Tel: +86 20 8985 3695

Consigner: Guangzhou Loyo Electronic Technology Co., Ltd.
Address: 102,Building A,No.1 Yiheng Road,Qinghu Caitian North Street,Junhe Street,Baiyun District,Guangzhou,Guangdong 510000P.R.China

Tel: +86 18665608321