

Date: Nov. 12, 2015

FU HWA MIRROR CO., LTD.
688, Sec. 7, Chang Lu Road, Lu Kang,
Chang Hua, Taiwan, R.O.C.

**APPLICATION FOR EXTENSION TYPE APPROVAL OF MIRROR TYPE
ACCORDING TO ECE REGULATION NO. 81, 00 SERIES OF AMENDMENTS**

1. Trade name or mark of the mirror : FU
2. Mirror type : FD-321
3. Manufacturer's name and address : FU HWA MIRROR CO., LTD.
688, Sec. 7, Chang Lu Road, Lu Kang,
Chang Hua, Taiwan, R.O.C.
4. If applicable, name and address of
manufacturer's representative : Not applicable
5. Brief description : Rear-view mirrors for two-wheeled motor
vehicles
6. Submitted for approval on (date) : Nov. 12, 2015

We herewith certify that we didn't apply nor receive a certificate for the above mentioned mirror type in any other EC/ECE Member State.

FU HWA MIRROR CO., LTD.

H.Y. Huang

Name: H.Y. Huang
Position: Engineer
Date: Nov. 12, 2015



**THE NETHERLANDS**
(N E D E R L A N D)**COMMUNICATION**Concerning ⁽¹⁾:

- ~~- approval granted~~
- approval extended
- ~~- approval refused~~
- ~~- approval withdrawn~~
- ~~- production definitely discontinued~~

of a type of rear-view mirror pursuant to Regulation number 81.

Approval number: E4-81R-0014654**Extension number: 02**

1. Trade name or mark of the equipment : FU
2. Equipment type : FD-321
3. Brief description including in particular the following information:
 - 3.1. Main dimensions (of the reflecting surface) : 156 × 96.5 mm
 - 3.2. Nominal radius of curvature (of the reflecting surface) : 1350 ± 150 mm
4. Manufacturer's name and address : FU HWA MIRROR CO., LTD.
688, Sec. 7, Chang Lu Road, Lu Kang,
Chang Hua, Taiwan, R.O.C.
5. If applicable, name and address of manufacturer's representative : Not applicable
6. Equipment submitted for approval on : November 6, 2015



7. Technical service responsible for conducting approval tests : TÜ V Rheinland Kraftfahrt GmbH
Technologiezentrum Verkehrssicherheit
Typprüfstelle Fahrzeuge/Fahrzeugteile
Postfach 91 09 51
D-51105 Köln
8. Date of report issued by that service : November 19, 2015
9. Number of report issued by that service : 84-R81-01465/15-00
10. Vehicles for which the equipment is designed : Two-wheeled motor vehicles
11. Approval is : ~~Granted/refused/extended/withdrawn~~⁽¹⁾
12. Reason(s) for extension of approval : 1. Modification of change to different Technical Service
2. Addition of version B
13. Place : Zoetermeer
14. Date : 24-NOV-2015
15. Signature : 
Uwe Löbig 
16. A list of documents contained in the approval file transmitted to the administrative service which has granted approval is annexed to this communication.

⁽¹⁾ Strike out what does not apply.

Type : FD-321
Manufacturer : FU HWA MIRROR CO., LTD.

TEST REPORT

according to ECE-Regulation

**Uniform provisions concerning the approval of seats of rear-view mirrors
of two-wheeled power-driven vehicles with or without side car, with regard
to the mounting of rear-view mirrors on handlebars**

No.: **ECE-R81**

including all amendments until

No.: **00 series of amendments, suppl. 2**

Approval Status	
ECE - system type approval	: E4-81R-0014654 Ext.02

Structure of report:

0. General information
1. Test object(s) and general test information
2. Test minutes
3. Remark concerning tested object(s)
4. Appendices
5. Statement of conformity

The Test Report shall be reproduced and published in full by the client only. It shall however be reproduced partially with the written permission of the Testing Laboratory only.



Type : FD-321
Manufacturer : FU HWA MIRROR CO., LTD.

0. General information

- 0.1. Trademark or trade name of the mirror : FU
- 0.2. Manufacturer's name for the type of the mirror : FD-321
- 0.3. Name and address of the manufacturer : FU HWA MIRROR CO., LTD.
688, Sec. 7, Chang Lu Road, Lu Kang,
Chang Hua, Taiwan, R.O.C.
- 0.4. Name and address of the manufacturer's authorized representative : Not applicable
- 0.5. No. of information document : FD-321-02
date of issue : November 12, 2015
date of last amendment : June 25, 2014



Type : FD-321
Manufacturer : FU HWA MIRROR CO., LTD.

1. Test object(s) and general test information

1.1. Test object(s)

1.1.1 Identification no. : Without, prototype
Model : FD-321
Remark : Addition of version B, which has different mirror stay.

1.2. General test information

1.2.1 Order issued by : --
(if different from manufacturer)
1.2.2 Test object received on : --
1.2.3 Test date : November 6, 2015
1.2.4 Test site : FU HWA MIRROR CO., LTD., Pu-Yen, Taiwan
1.2.5 Remark : The results of the test refer exclusively to the object(s)
mentioned under point 1.1. of this report.



Type : FD-321
Manufacturer : FU HWA MIRROR CO., LTD.

2. Test minutes

- 2.1. Test facilities** : The test facilities used are in compliance with the requirements of the Regulation.
- 2.2. Test results** : The mirror type has been tested according to the amendments mentioned in appendix 0.
- 2.2.3 General requirements : The mirror type complies with the general requirements of the Regulation.
- 2.2.3 Special requirements : The mirror type complies with the special requirements of the Regulation. Test results see Appendix 1.
- 2.2.3 Test data : The mirror type complies with the requirements of the Regulation concerning the impact and bending tests. Test results see Appendix 1.
- 2.3. Variants and components**
- Variant(s) : --
- Version(s) : A: FD-321
B: FD-321-2



Type : FD-321
Manufacturer : FU HWA MIRROR CO., LTD.

3. Remark concerning tested object(s)

All versions of the mirror type as stated in the information document are covered with the tested mirror version(s) and test object(s) respectively.

4. Appendices

- 0 List of modifications
- 1 Test minutes
- 2 Information folder no. : FD-321-02 (3 pages)
(excluding drawings)

5. Statement of conformity

The above mentioned information folder and the type described in that comply with the requirements mentioned on page 1.

Shanghai, 2015/11/19
KWU/JYW



Expert Technical Service



Type : FD-321
Manufacturer : FU HWA MIRROR CO., LTD.

List of modifications

Appendix 0

Correction of : --

Modification of : - Change to different Technical Service

Addition of : - Version B

Deletion of : --



Type : FD-321
 Manufacturer : FU HWA MIRROR CO., LTD.

Test minutes

Appendix 1

1.1. Dimensions of reflecting surface

Reflecting surface : 113.5 cm²
 Required minimum value : 69 cm²

Diameter of circular mirror : -- mm
 Required minimum value : -- mm

Inscribed circle in a non circular mirror : 96 mm
 Required minimum value : 78 mm

The reflecting surface does fit into a rectangle measuring 120 mm by 200 mm.

1.2. Reflecting surface and coefficient of reflectivity

	Sample A	Sample B
Radius of curvature		
$r_{p1} = (r_1 + r_1') / 2$	: 1381.6 mm	1346.8 mm
$r_{p2} = (r_2 + r_2') / 2$	: 1359.0 mm	1342.2 mm
$r_{p3} = (r_3 + r_3') / 2$	: 1368.4 mm	1335.8 mm
$r = (r_{p1} + r_{p2} + r_{p3}) / 3$	: 1369.7 mm	1341.6 mm
required minimum value of r	: 1000 mm ≤ r ≤ 1500 mm	
Maximum difference between any of the radii (r_{p1} , r_{p2} , r_{p3}) and r	: 10.7 mm	5.8 mm
Allowable maximum difference	: 205.4 mm (0.15 × 1369.7 mm)	
Coefficient of reflection	: 57.9 %	58.1 %
Required minimum coefficient	: 40 %	
Resistance to corrosion and ageing	: Manufacturer's statement attached	
Recognition of colours	: Red, yellow, green, blue, white	
Tinting of mirrors	: Without	



Type : FD-321
Manufacturer : FU HWA MIRROR CO., LTD.

1.3. Impact tests : Version B

Impact point according to Test No. 1 : 40° (left side)
angle for raising pendulum and the
vertical

Breakage of mirror : No
~~The fragments of glass still adhere to a surface firmly
attached to the holder, partial separation of the glass from
its backing does not exceed 2.5 mm either side of the
crack.~~

Impact point according to Test No. 2 : 52°(right side)
angle for raising pendulum and the
vertical

Breakage of mirror : No
~~The fragments of glass still adhere to a surface firmly
attached to the holder, partial separation of the glass from
its backing does not exceed 2.5 mm either side of the
crack.~~

1.4. Bending test : The test load had been applied for one minute.

Breakage of mirror : No



FU HWA MIRROR CO., LTD.
688, Sec. 7, Chang Lu Road, Lu Kang,
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INFORMATION FOLDER NO. FD-321-02

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1. MANUFACTURER : FU HWA MIRROR CO., LTD.
688, Sec. 7, Chang Lu Road, Lu Kang,
Chang Hua, Taiwan
2. MANUFACTURER'S AUTHORIZED REPRESENTATIVE : NOT APPLICABLE
3. APPLICABLE REGULATION : ECE-R81,00 SERIES OF AMENDMENTS
4. DEVICE NAME : REAR-VIEW MIRRORS
5. DEVICE NUMBER : NOT APPLICABLE
6. CLASS : L
7. TRADE MARK : FU
8. TYPE : FD-321
VERSION : VERSION A: FD-321
VERSION B: FD-321-2
9. MOUNTING METHOD
 - 1) MOUNTING LOCATION : IN FRONT OF TWO-WHEELED VEHICLES
 - 2) ORIENTATION ANGLE : REFER TO THE DRAWINGS
 - 3) MONTING METHOD : ONE SCREW
10. CONSTRUCTION OF REFLECTING SURFACE
 - 1) RADIUS OF CURVATURE : $R1350 \pm 150$ mm
 - 2) MIRROR THICKNESS : 1.9 mm
 - 3) MIRROR REFLECTIVE AREA : 113.5 ± 1.5 cm²
 - 4) MAIN DIMENSIONS : $156 \pm 0.5 \times 96.5 \pm 0.5$ mm



FU HWA MIRROR CO., LTD.
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INFORMATION FOLDER NO. FD-321-02

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11. CONSTRUCTION OF COMPONENTS

NO.	PARTS	MATERIAL
<u>VERSION A: FD-321</u>		
1)	HOUSING	ASA
2)	MIRROR	GLASS (Cr coating)
3)	STAY	PP

<u>VERSION B: FD-321-2 #</u>		
1)	HOUSING	ASA
2)	MIRROR	GLASS (Cr coating)
3)	STAY	ZDC2

12. MODELS OF VEHICLES TO BE FITTED: TWO-WHEELED MOTOR VEHICLES

13. REMARKS

<u>TYPE</u>	<u>MIRROR CONTROL SYSTM</u>
VERSION A: FD-321	MANUAL CONTROL
VERSION B: FD-321-2	MANUAL CONTROL #

14. DRAWING NUMBER

8D321N00000 (VERSION A: FD-321)
8D321N00200 (VERSION B: FD-321-2) #



Date: Nov. 12, 2015

FU HWA MIRROR CO., LTD.
688, Sec. 7, Chang Lu Road, Lu Kang,
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INFORMATION FOLDER NO. FD-321-02

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TO WHOM IT MAY CONCERN

REAR-VIEW MIRROR FOR MOTOR VEHICLES

- RESISTANCE TO CORROSION AND AGING OF THE REFLECTIVE SURFACE.

HEREBY WE DECLARE THAT THE REAR-VIEW MIRROR FOR MOTOR VEHICLES

TYPE: FD-321

- COMPLIES WITH PARAGRAPH 7.2.5. OF ECE R81-00

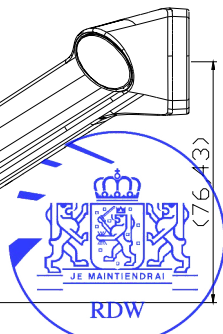
THE REFLECTING SURFACE RETAINS THE CHARACTERISTICS SPECIFIED IN
PARAGRAPH 7.2.4. OF ECE R81-00, IN SPITE OF PROLONGED EXPOSURE TO ADVERSE
WEATHER CONDITIONS, IN NORMAL CONDITIONS OF USE.

FU HWA MIRROR CO., LTD.

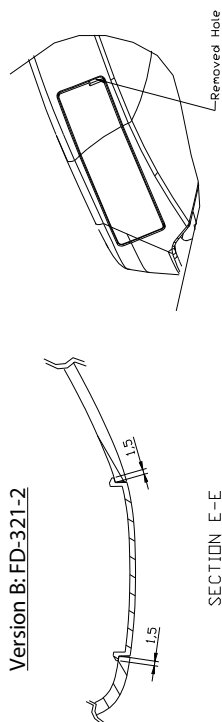
H.Y. Huang

Name: H.Y. Huang
Position: Engineer
Date: Nov 12, 2015



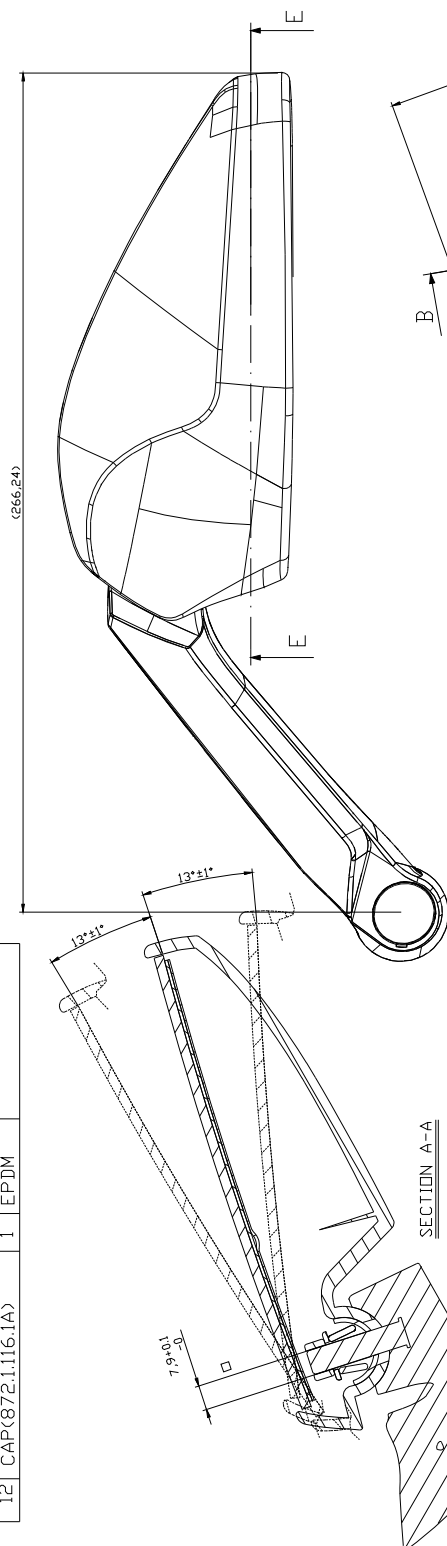


ITEM NO	PART NAME	QTY.	MATERIAL	REMARK
1	HOUSING RH/LH	1	ASA	
2	COVER RH/LH	1	ASA	
3	STAY RH/LH	1	ZDC2	MB BOLT INSERTED GRAY PAINTING
4	RETAINER	1	SPCC	
5	SPRING	1	SWPB	
6	WASHER	1	SPCC	
7	NUT	1	SWRM	MB
8	HOLDER RH/LH	1	SPCC	
9	SCREW	3	SWRM	
10	MIRROR RH/LH	1	GLASS	C- Coating R135±150
11	TAPE RH/LH	1	PET	Reflection R6.10±0.02 MIN
12	CAP(87E1.116.1A)	1	EPDM	

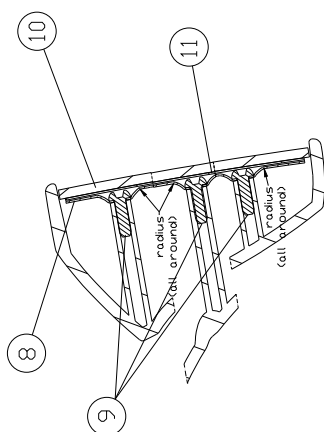


SECTION E-E

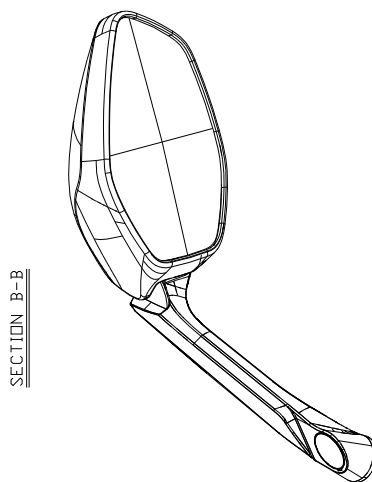
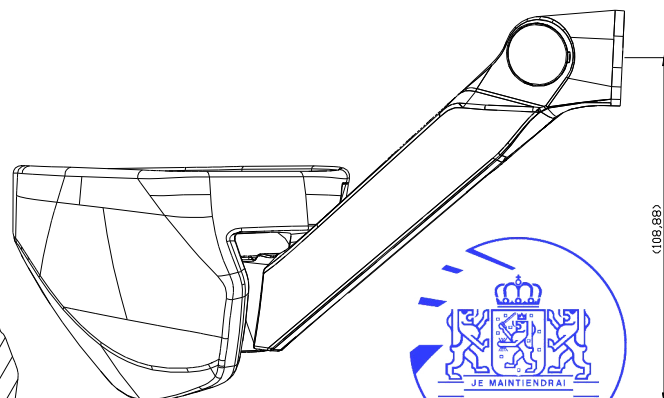
VIEW F



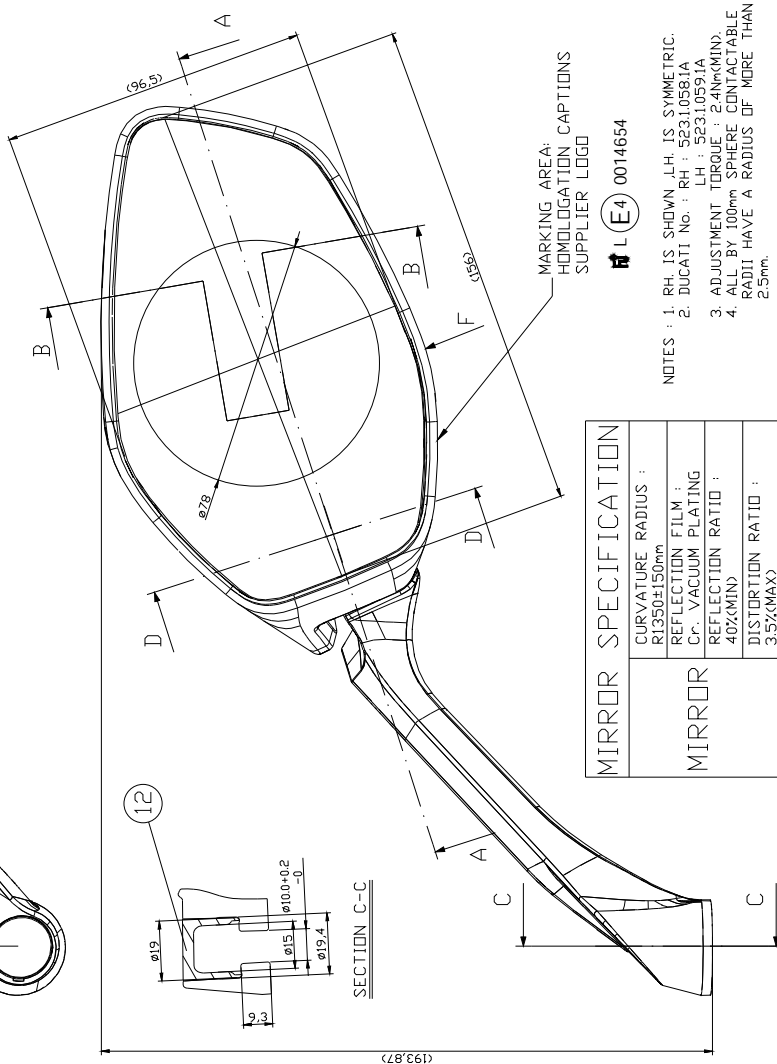
SECTION A-A



SECTION D-D

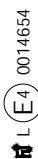


SECTION B-B



SECTION C-C

MARKING AREA:
HOMOLOGATION CAPTIONS
SUPPLIER LOGO



NOTES : 1. RH. IS SHOWN LH. IS SYMMETRIC.
2. DUCATI No. : RH : 523.10581A
 LH : 523.10591A
3. ADJUSTMENT TORQUE : 2.4Nm(MIN).
4. ALL BY 100mm SPHERE CONTACTABLE
 RADIi HAVE A RADIUS OF MORE THAN
 2.5mm.

MIRROR SPECIFICATION	CURVATURE RADIUS : R1250±150mm REFLECTION FILM : Cr- VACUUM PLATING REFLECTION RATIO : 40%(MIN) DISTORTION RATIO : 2.5%(MAX)
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DRN J. H. Chen	MAKE SUITS	ND. 8D32IR/L0020	SCALE 1 : 1
DESIGN J. H. Chen	HANDLE	MATERIAL	PROJECTION
CHD W. J. Tsai	DUCATI 1306 MIRROR		DWG NO. 8D32IN00200
APPD W. J. Tsai	MME	FD-321-2	DATE 2015.11.03
FU HWA MIRROR CO., LTD.			

FU HWA MIRROR CO., LTD.

