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INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

[A Division of NATRiP Implementation Society (NATIS), Govt. of India]

C	A	K	B	0012

AK-0070

Date: 09th February 2015

Cert	Brief + Table 11 & 13	Drg	Total
2	9	4	15 Pgs

CERTIFICATE

FOR COMPLIANCE TO THE CENTRAL MOTOR VEHICLES RULES.

1 In order to establish compliance to the provisions of CMVR, 1989, applicable as on date, documental verification/ necessary testing was carried out, on the following base model, submitted by the vehicle manufacturer referred below:

Vehicle Manufacturer	**M/s. Kuku Automotives** A-5 Yudistar Marg, C-Scheme Jaipur, RJ 302 001			
Net Power	**1170 W**	**Battery**	**Make**	**M/s. Naveen Batteries**
Max Speed	**24.25 km/h**		**Capacity**	**52 Ah**
			Id / Model No.	**Anchor – NB800**

Motor		**Controller**	
Identification no.	**Manufacturer**	**Identification no.**	**Manufacturer**
BM1418W	**M/s Shanghai Mainbon Industry Co.Ltd.,** 1212,578, TianbaoRoad, Shanghai 200 086, China	**BC1418**	**M/s Changzhou Xinrun Pipe Co. Ltd.** Wujin district of Luoyang town, Changzhou Jiangsu province, east west, jia number 150

BASE MODEL	**TYPE: E-rickshaw**	**Seating Capacity** (Incl. Driver)	**GVW, kg**
KUKU Greens	**Special Purpose Battery Operated Three Wheeler-E-Rickshaw**	**5 Persons**	**680**

Note: Seating Capacity (including driver) to be verified by RTO: At least @ 68 kg/person + 40 kg total luggage allowance.

1a Brief technical specifications (No. KA/TA/T7/14.8 dt. 03.12.2014, KA/TA/T11/14.10 dt. 03.12.2014 &KA/TA/T13/14.11 dt. 03.12.2014) of the vehicle model as declared by the vehicle manufacturer, are enclosed with this certificate. Detailed specifications (No. KA/TA/T1/14.7 dt. 03.12.2014), of the vehicle model, are also separately issued to the vehicle manufacturer.

2 This certificate is issued for the above base model, with compliance to additional provisions, including following requirements, (as detailed at ANNEXURE-I , IA & IB):

Standards	Notification	Date	Effective From	Applicable CMVR
E – Rickshaw BoV / VIN / Brakes / Lamps/ Horn / Bulbs / Tyre/ Lighting & light signaling devices / Traction Battery and other safety components	GSR 709 (E)	08.10.2014	08.10.2014	ANNEXURE-I ANNEXURE- IA ANNEXURE- IB
	S.O. 2590 (E)	08.10.2014		
	GSR 784(E)	12.11.2008		

3 This Certificate is issued as per CMV Rule 126, to establish compliance with the Central Motor Vehicles Rules, 1989, and shall not be construed as a certificate of compliance to any rules other than those listed in ANNEXURE-I, IA & IB. Compliance to these rules has been verified based on the use of specific components / parts / assemblies etc. details of which are given in the detailed specifications duly endorsed by ICAT as mentioned at Para. 1a above. It is the vehicle **manufacturer's** responsibility to ensure fitment of same components / parts / assemblies etc. before submission of the vehicle for registration.

DISCLAIMER

1. ICAT issues 'Type Approval Certificates' (TAC) for vehicles/ engines/gensets/ parts/ assemblies etc. based on the documents produced and/or prototype / vehicle(s) submitted by the applicant and testing thereof.
2. ICAT issues TAC in compliance to Motor Vehicle Act/ Central Motor Vehicle Rules/ Central Pollution Control Board rules and their provisions as amended from time to time or any other statutory orders under which ICAT is authorized. Other Rules/Acts are outside the purview/scope of the TAC.
3. Test(s) on prototype /s/are carried out on the basis of standard procedures as notified under specific rules. Results of such tests are property of bearer of TAC. These results cannot be disclosed unless specifically ordered by Government, Court, etc.
4. The bearer of the TAC is under the obligation to ensure production strictly as per the provisions of the specific TAC.
5. ICAT is not responsible for testing each vehicle/ engines/gensets/ component/part/assemblies etc. for which TAC is issued. Further, ICAT is not responsible for ensuring manufacturing quality of the type approved vehicles/ engines/gensets/ components/ parts/ assemblies etc.
6. ICAT is no way responsible for any misuse or copying of any design/type/system in connection with entire vehicle/ engines/gensets/ components/parts and assemblies covered under the TAC.
7. Breach of any statutory provision of Indian laws or laws of other countries, will be sole responsibility of the bearer of the TAC and ICAT shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ICAT in this regard.
8. ICAT has the right, but not under obligation to initiate cancellation / withdrawal of the certificate issued, in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ICAT.

The appropriate local court at Gurgaon shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate.

AUTHORISED SIGNATORIES,

S.K. KALIA
Sr. GENERAL MANAGER

DINESH TYAGI
DIRECTOR

AK0070

Office Address : Plot No.-26, Sector-3, HSIIDC, IMT-Manesar, Gurgaon-122050, Haryana (India)
Phone : 0124-4586111, Fax : +91-124-2290005, E-mail: team@icat.in, Website : www.icat.in

ANNEXURE-I
To

C	A	K	B	0012

Following rules are verified and found to be complying. Date: 09th February 2015

Rule No	Sub Rules	Description			Standard
93	(1), (2), (4), (6) & (7)	Overall dimension of motor vehicles			-----
94	(1), (2) & (3)	Condition of tyres			-----
95	(1), (2), (3), (4), (5) & (6) (i)	Size & Ply rating of tyres	Fr & Rr: 90/90-12,54J Tube Type	Make: BIRLA	IS:15627:2005 & AIS:050:2004
96	(1), (2), (3), (4)(i), (5), (6), (7)(a)	Brakes			IS:14664:1999
99	---	Forward and backward motion			-----
102	(1) & (2)	Signalling devices, direction indicators & stop lights			-----
103	(1)	Position of the indicator			-----
104	(4)	Fitment of reflectors			AIS:057:2005
105	(1)(b), (3), (4) & (7)	Lamps			-----
106	(1)	Deflection of lights			-----
108	(1)	Use of red or white lights			-----
109	---	Parking light			-----
110	---	Lamps three-wheelers			-----
111	---	Prohibition of spotlights etc.			-----
119	(1) & (2)	Horns	Performance		IS:1884-1993
			Installation		IS:15796-2008
122	(1) & (2)	Embossment of the Chassis Number & Motor Number and date of manufacture (Ref: Table 11 of the Brief Technical Specifications			-----
124	Refer ANNEXURE-IA	Safety standards of components as applicable			S.O. 2590 (E) dt. 08.10.2014
125	(1) & (2)	Rear View Mirror	Specifications		AIS:001/2001
			Installation		AIS:002/2001

ANNEXURE-IA

Rule 124 Table B	Particulars	Test Standards	Compliance Verified
1.	Automobile Lamps	AIS:034/2004	✓
2.	Wheel Rims	AIS:073/2007	
3.	(a) Installation requirement for lighting and light signalling devices	AIS:009/2001	
	(b) Performance requirement of lighting, light signalling	AIS:010/2004	
4.	Constructional & Functional Safety of battery operated vehicle	AIS-038/2003	
5.	Measurement of Net Power& max. 30. min. Power & Speed for battery operated vehicles	AIS:041/2003	
6.	Traction batteries used in battery operated vehicles	AIS: 048/2009	
7.	Requirements of Handholds	AIS: 046/2008	

ANNEXURE-IB

CMV Rule	Compliance Verified for		Test Standards	Compliance Verified
95(1)	Size and Ply rating of Tyre		IS-15627-2005	✓
122(1)	Vehicle Identification Number including month and year of manufacture – VIN number		AIS-065-2005	
124(4)	The procedure for Type Approval and establishing Conformity of production for components	Tyres / Horn	AIS-037-2004**	
		Bulb / Rear View Mirror		
		Lighting and Light Signaling Devices / Retro - Reflectors		

**Compliance needs to be established for Type approval / Conformity of Production for components, listed in the notification.

ICAT Case No.	2014 – 506 (IOCS: 37209)
Test Report Nos.	CT0PK 0038 dt. 03.02.2015

AUTHORISED SIGNATORIES,

S.K. KALIA Sr. GENERAL MANAGER		DINESH TYAGI DIRECTOR	Page 2 of 2

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

[A Division of NATRiP Implementation Society (NATIS), Govt. of India]

C	T	0	P	K	0038

DATE- 03/02/2015

TYPE APPROVAL TEST REPORT

Manufacturer	Objective of the test
Kuku Automotives A-5 Yudistar Marg, C- scheme Jaipur, Rajasthan - 302001	To conduct type approval tests as per the G.S.R 709 (E) Dt: 08-10-2014, S.O. 2590 (E) Dt: 08-10-2014 and AIS 041.

Test vehicle	**E-Rickshaw**			
Vehicle Model	**KUKU Greens**			
Test Request	37209, CSC/J2/506 Dt: 04-Dec-14	Vehicle Specification	KA/TA/T13/14.11 Dt: 03-Dec-14	
Frame No.	MC7KGCB11R14J0001	Unladen Weight (kg)	298	
Road Load Equation F=N, V=Kmph	Power absorbed @ 1.44 kW.	Equivalent Inertia	450	
Coast down report No.	As per part XIII of MoRTH/CMVR/TAP-115/116.			
Traction Battery	Make: M/s Naveen Batteries	Type	Lead Acid	
	Model: Anchor NB800	Nominal Volts (V)	12	
Traction Motor	Make: M/s Unite Motor Co.			
	ID: BM1418W	Max Power	1170	
Power controller	Make: M/s Changzhou Xinrun Pipe co.			
	ID: BC1418	Rating	41-52V, 30A	
Charger	Make: M/s Classic Electro Systems	Model	IS170017	
Test Procedure	AIS - 041.			

Test Equipment	Make	Type
Chassis Dyno	AVL Emission Test Systems,GMBH	955 mm Compact Chassis Dyno
Cooling Fan	AVL Emission Test Systems,GMBH	Air Stream Fan
Driver Aid	AVL Emission Test Systems,GMBH	--

Prepared By	Checked By		Department Head	
GAURAV SIKKA	VIKAS SADAN		† PAMELA TIKKU	

Office Address : Plot No.-26, Sector-3, HSIIDC, IMT-Manesar, Gurgaon-122050. Haryana (India)
Phone : 0124-4586111, Fax : +91-124-2290005. E-mail: team@icat.in, Website : www.icat.in

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DATE- 03/02/2015

Test Results

Test Procedure	Type of test	Measured Value
AIS - 041	Maximum 30 Minute Speed	24.25 km/hr
	Net Power	1.17 kW
	Maximum 30 Minute Power	1.15 kW

Remarks : 1. Vehicle meets the requirements as per Notification G.S.R. 709(E)
2. The tests were conducted as per the requirements of AIS - 041.
3. Test was conducted at ICAT, Manesar.

CONDITION OF ISSUE:

1. ICAT issues Test Reports/ Extension Reports/ Developmental Test Reports for vehicles /components/parts/ assemblies etc. based on the documents produced and/or prototype / vehicle(s) or sample(s) submitted by the applicant and testing thereof.
2. ICAT issues Test Reports/ Extension Reports/ Developmental Test Reports in compliance to Motor Vehicle Act/ Central Motor Vehicle Rules and their provisions as amended from time to time or any other statutory orders under which ICAT is authorized. Other Rules/Acts are outside the purview/scope of the Test Reports/ Extension Reports/ Developmental Test Reports
3. Test(s) on prototype /vehicle(s) or sample(s) is/are carried out on the basis of standard procedures as notified under specific rules/ requested by the applicant. Results of such tests are property of bearer of Test Reports/ Extension Reports/ Developmental Test Reports. These results cannot be disclosed unless specifically ordered so by Government, Court, etc.
4. Unless otherwise supported by a separate Certificate, this Test Reports/ Extension Reports/ Developmental Test Reports shall not be considered in isolation as valid Type approval for any vehicle.
5. ICAT is not responsible for testing each vehicles/components/parts/assemblies etc. for which Test Reports/ Extension reports/ Developmental test reports is issued. Further, ICAT is not responsible for ensuring manufacturing quality of the vehicles/ components/ parts/ assembles etc. for which the Test Reports/ Extension reports/ Developmental test reports is /are issued.
6. ICAT is in no way responsible for any misuse or copying of any design/type/system in connection with entire vehicle/ components/parts and assemblies covered under the Test Reports/ Extension reports/ Developmental test reports is /are issued.
7. Breach of any statutory provisions, of Indian laws or laws of other countries, will be sole responsibility of the bearer of Test Reports/ Extension Reports / Developmental reports is/are issued and ICAT shall not be liable for any claims or damages, whatsoever. The bearer shall alone be liable for the same and shall undertake to indemnify ICAT in this regard.
8. Further, ICAT has the right, but not under obligation to initiate cancellation / withdrawal of the Test Reports/ Extension Reports/ Developmental Test Reports is/are issued in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ICAT.
9. No extract, abridgment or abstraction from this test report may be published or used to advertise the product without the written consent of the Director, ICAT, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought.

The appropriate local court at Gurgaon shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.

Prepared By	Checked By		Department Head	
GAURAV SIKKA	VIKAS SADAN		PAMELA TIKKU	Page 2 of 2

ICAT/CMVR/E-rickshaw 2014=506 09 FEB 2015

Table 7 of AIS-007 (Revision 4)

BRIEF TECHNICAL SPECIFICATIONS FOR MOTOR VEHICLES

A. Manufacturer's name and address	M/S Kuku Automotives M/S Kuku Automotives A-5 Yudistar Marg, C-Scheme Jaipur, RJ 302001 Ph 0141 5107735
Importer's name and address (in case of CBU)	N.A.
Country of origin, if imported	N.A.
Vehicle data	
Basic model	KUKU Greens
Type / Description	Special Purpose battery Operated Three Wheeler-E Rickshaw
Category of the vehicle (as per AIS-053)	E Rickshaw
Variant(s)	N.A.
Type / Description	N.A.
Category of variant(s) (as per AIS-053)	N.A.
Engine	
Make and Country of origin, if imported	N.A.
Model	N.A.
Type	N.A.
Bore x stroke (mm)	N.A.
No. of cylinders	N.A.
Displacement	N.A.
Compression ratio	N.A.
Max. Engine output (kW @ rpm)	N.A.
Max. Torque (Nm @ rpm)	N.A.
Air cleaner type	N.A.
Clutch	
Type	N.A.
Gear box	
Make & model	N.A.
Type	N.A.
No. of gears	N.A.
Gear ratio 1st 2nd 3rd 4th 5th 6th Reverse	N.A.
Drive Axle (Front / Rear / All)	N.A.
Front axle ratio	N.A.
Rear axle ratio	N.A.
Steering/Handle bar	N.A.
Type / Description	Handle bar
Steering wheel diameter mm	N.A.

International Centre for Automotive Technology

Manufacturer: M/S Kuku Automotives | Document No.: ICAT/CMVR/ | Test Agency | Test No.:
Signature: Sally Tanwar | Signature | Name: S. K. Kalia
For Kuku Automotives | Sheet No.: | Designation: Sr. General Manager
Name: Sally Tanwar
Designation: Marketing Head | Date: 05/12/2014 | Date of Issue | Page No. 1 of 3

Partner

ICAT/CMVR/E-rickshaw 2014=506

09 FEB 2015

Frame	
Long member size (mm)	2222.0mm
Number of cross members	5 cross members

Table 7 of AIS-007 (Revision 4)

Suspension	
Type / Description	[illegible] telescopic with sponge RCC coil spring
Spring	Coiled and leaf spring
Anti-roll bar	N.A
Shock absorbers	Dual [illegible] hydraulic shock absorber
Brake	
Service brake (Brief description)	Expendable type brake shoe
Auto Slack Adjuster Fitted (Yes / No / Optional)	N.A
ABS Fitted (Yes / No / Optional)	N.A
Front (Disc / Drum)	Drum
Rear (Disc / Drum)	Drum
Total braking area (cm²)	251 cm²
Parking brake	Hand lever operated acting on rear wheels
Secondary brake	N.A
Wheels and tyres	
Wheel rim size	2.15J x 12
Tyre size designation including ply rating	90/90 x 12
Speed index	J
Load index / Load rating	[illegible]
Tyre Type (Radial / Cross / Tube / Tubeless)	Tubeless
Laden Tyre pressure (front & rear) (kg/cm²)	Front [illegible] kg/cm² Rear [illegible] kg/cm²
Electrical system	
System voltage (V)	48 V (12Vx4)
Battery rating (Ah)	90 Ah
Wiper motor	N.A
Wiping system (Brief description)	N.A
Fuel tank	
Material	N.A
Capacity (l)	N.A
Dimensions	
Wheel base (mm)	2146mm
Overall width (mm)	998mm
Overall length (mm)	2750 mm
Overall height (mm)	[illegible] mm
Front track (mm)	N.A
Rear track (mm)	835mm
Min. ground clearance (mm)	130mm
Cargo box dimensions (mm)	N.A
Load body platform area	N.A

International Centre for Automotive Technology

Manufacturer: M/S kuku Automotives Document No: [illegible] Test Agency

Signature: Shelly Name: Shelly Grover Stamp No: Designation: Marketing Head Date: 6/2/2015

For Kuku Automotives Partner

S. K. Kalia Sr. General Manager

Page [illegible]

09 FEB 2015

ICAT/CMVR/E-rickshaw 2014=506

Table 7 of AIS-007 (Revision 4)

Weights	
Maximum GVW kg (for rigid vehicles)	680 Kg
Maximum GCW kg (for articulated / combination vehicles)	NA
Maximum FAW (kg)	Front 200Kg
Maximum RAW (kg)	Rear 480Kg
Kerb weight with 90% fuel (with spare wheel , tools, etc.) (kg)	300Kg
Maximum gradeability in 1st gear	NA
Seating	
Seating capacity	5
Sketch showing seating layout with dimensions	Drawing No. KG-SP-001

International Centre for Automotive Technology

Manufacturer : M/S Kuba Automotives	Document No : KA/TA/PT/14-8	Test Agency :	Cert No :
Signature : Shelly Tanwar		Signature	
Name: Shelly Tanwar	Sheet No	Name Designation	
Designation: Marketing Head	Date:03/12/2014	Date of Test	Page No: 3 of 3

S. K. Kalia
Sr. General Manager

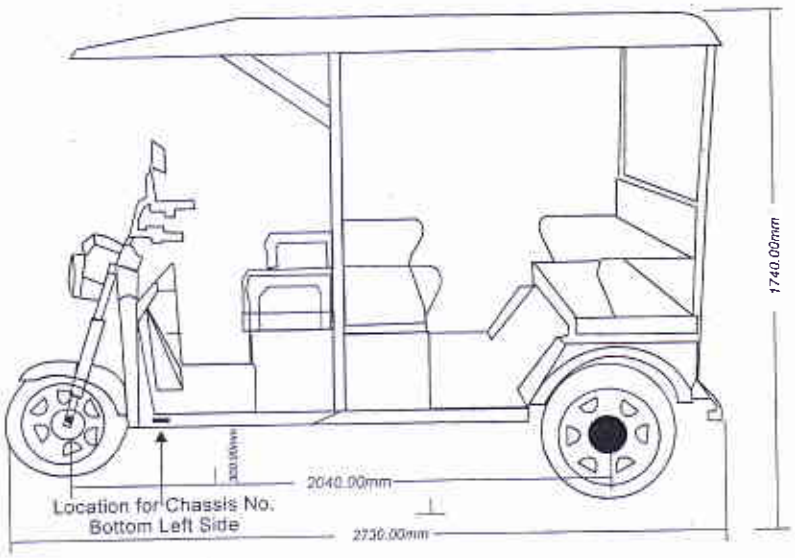
For Kuba Automotives
Partner

ICAT/CMVR/E-rickshaw 2014-506-

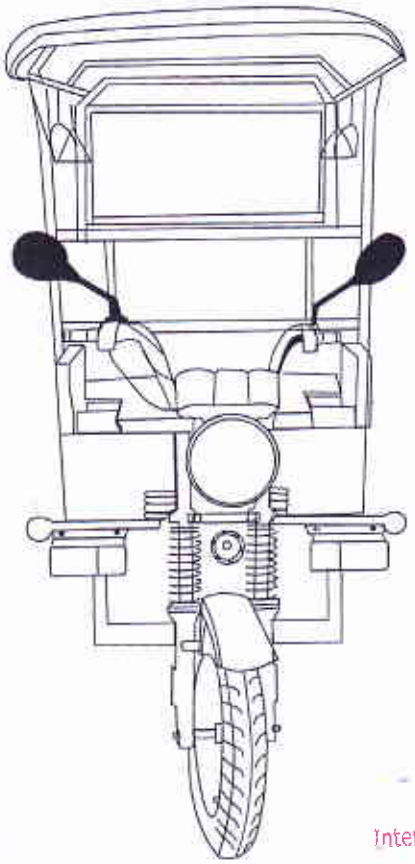
09 FEB 2015

VEHICLE DIMENSIONS LAYOUT

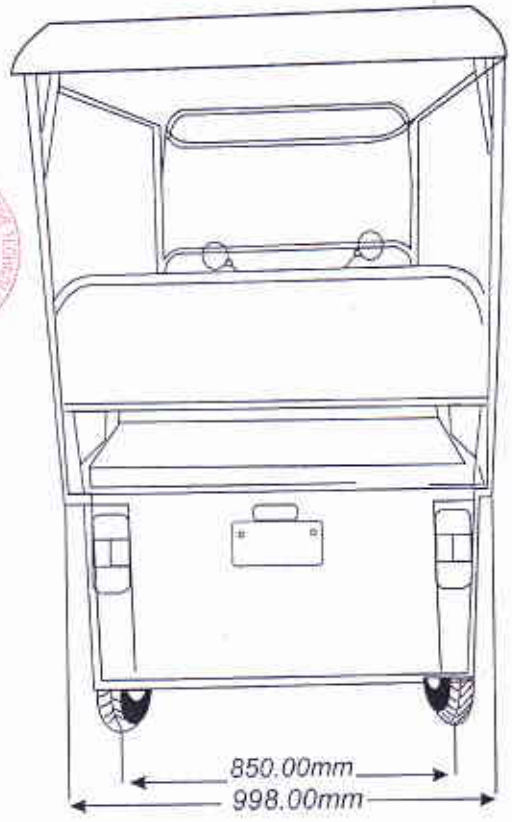
Side View



Front View



Back View



WIDTH & WHEEL TRACK

International Centre for Automotive Technology

S. K. Kalia
Sr. General Manager

QTY.:-1	MATERIAL:	DATE:- 05/12/2014
SHEET :-1/1	Model Name - KUKU Greens	
SCALE- 1:1	Part Name-VEHICLE DIMENSIONS	
	Drawing No. :- KG - VD - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN.
DRAWN BY:	SHELLY TANWAR	Shelly Tanwar
APPROVED BY:	SANJAY YADAV	

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

For Kuku Automotives

Partner

ICAT/CMVR/E-rickshaw

M/s. Kuku Automotives (Model-KUKU Greens)

09 FEB 2015

Side View

Side View

Rear View

Front View

S. K. Kalia
Sr. General Manager

ICAT/CMVR/E-rickshaw 2014=506

M/s. Kuku Automotives (Model-KUKU Greens)

09 FEB 2015

International Centre for Automotive Technology

S. K. Kalia
Sr. General Manager

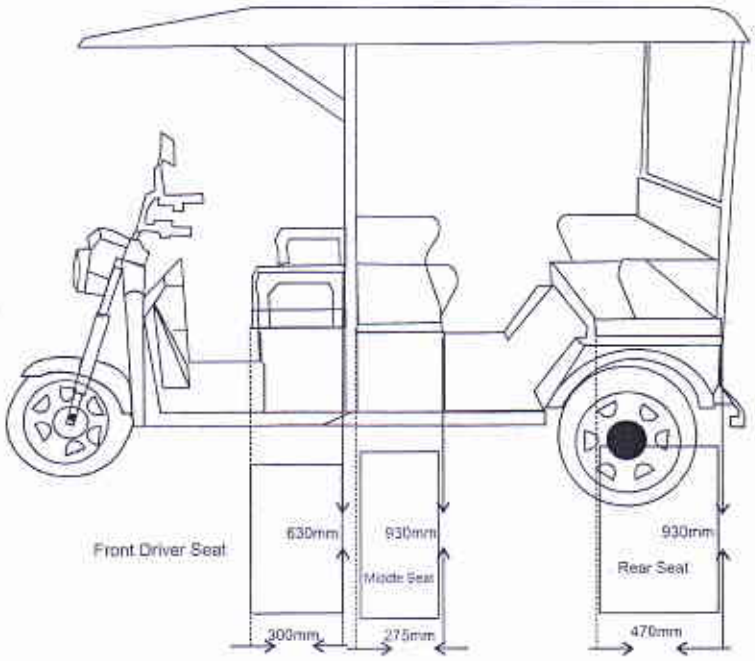
Motor

Controller

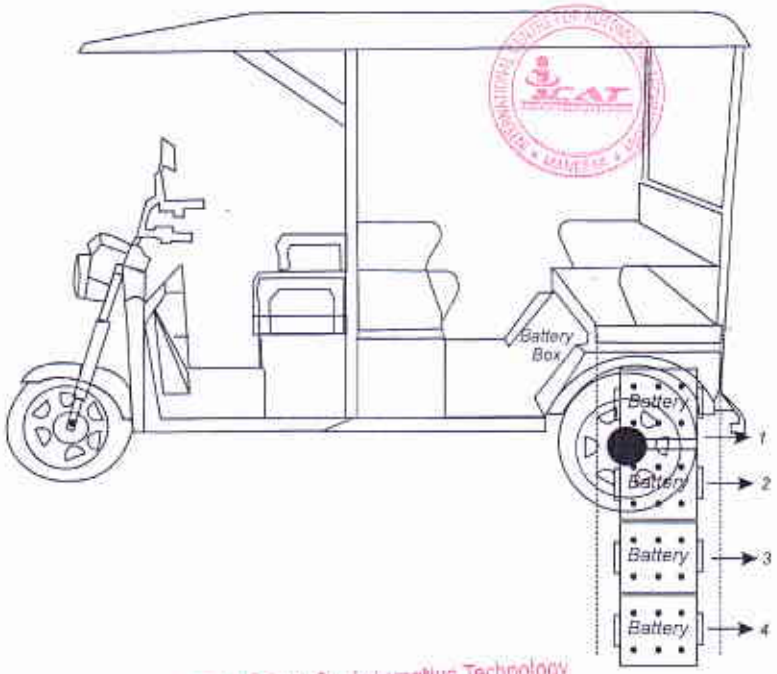
SEATING & BATTERY POSITION LAYOUT

ICAT/CMVR/E-rickshaw 2014=506 09 FEB 2015

Seating Arrangement



Battery Placement



International Centre for Automotive Technology

S. K. Rath
Sr. General Manager

QTY.:-1	MATERIAL:	DATE:- 05/12/2014
SHEET:-1/1	Model Name - KUKU Greens	
SCALE: 1:1	Part Name-SEATING DIMENSIONS	
	Drawing No. :- KG - SP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN.
DRAWN BY:	SHELLY TANWAR	
APPROVED BY:	SANJAY YADAV	

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

For KUKU Automotives Pvt. Ltd.

Partner

ICAT/CMVR/E-rickshaw

Table 11 of AIS-007 (Revision 4)

09 FEB 2015

2014=506-

DETAILS OF LOCATION OF CHASSIS NUMBER AND CODE FOR MONTH AND YEAR OF MANUFACTURE AS PER RULE 122 OF CMVR

Name of the Vehicle Manufacturer & Address :	**M/S Kuku Automotives** **A-5 Yudistar Marg, C-Scheme** **Jaipur, RJ 302001**
Name of the basic model :	**KUKU Greens**
Name of Variants, if any :	**N.A.**
Place of Embossing or etching the Chassis Number (Vehicle Identification Number). Supporting details by drawing or pictures may be provided if necessary.	**Punching on the Chassis,** **Attached Drawing no.KG-VD-001**

Code for month and year of production:

Code for month of production:		**Code for year of production:**	
Month	Code	Year	Code
January	01	2014	14
February	02	2015	15
March	03	2016	16
April	04	2017	17
May	05	2018	18
June	06	2019	19
July	07	2020	20
August	08	2021	21
September	09	2022	22
October	10	2023	23
November	11	2024	24
December	12	2025	25

Position of the code for month of production in the Chassis number :	**8th & 9th digit in chassis no**
Position of the code for year of production in the Chassis number :	**11th & 12th digit in chassis no**
Height of the Chassis number (Vehicle Identification Number) :	**5mm**

Example of Engine No. :-

Example of Chassis No. (Vehicle Identification Number) with Month & Year of Manufacture:-

MC7KGCB11R14J0001

International Centre for Automotive Technology

Manufacturer : M/S Kuku Automotives	Document No : ICAT/ATT/[illegible]	Test Agency :	Cert No :
Signature : Shelly Tanwar For Kuku Automotives		Signature : Name : S. K. Kalia	
Name: Shelly Tanwar	Sheet No :	Designation : Sr. General Manager	
Designation: Marketing Partner	Date: 6/12/2014	Date of Issue :	Page No : 1 of 1

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[A Division of NATRiP Implementation Society (NATIS), Govt. of India]

KUKU AUTOMOTIVES
A-5, YUDHISTER MARG,
NEAR YOJANA BHAVAN, C-SCHEME,
JAIPUR- 302001, RAJASTHAN, INDIA

INVOICE #	**17538**
Dated:	11-Feb-2015
Docket Id:	CVTNBKUKUJ12T37209
Dated:	04-Dec-2014

KIND ATTN: SHELLY TANWAR
MARKETING
HEAD

Description	Amount(INR)
Type Approval test on E-rickshaw model KUKU Greens as per GSR 709(E) & S O 2590 under CSC/J2/506(Certificate No. C A K B 0012) ***Refer to Annexure-I for details***	
TYPE APPROVAL OF E RICKSHAW	44207.92

INR FORTY NINE THOUSAND SIX HUNDRED SEVENTY TWO ONLY

PAN	: AAATN7662F
SERVICE TAX REGN NO	: AAATN7662FST002
BANK	: HDFC BANK
ACCOUNT NO.(FOR DOMESTIC TRANSFER	: 05891450000118
ACCOUNT NO.(FOR INTERNATIONAL TRANSFER)	: 05892320000190
RTGS IFSC CODE	: HDFC0000589
MICR CODE	: 110240079
SWIFT CODE	: HDFCINBB

Invoice Amount (INR):	44207.92
Service Tax @ **12.0%**	5304.95
EDU Cess (2% of Service Tax) @ **0.24%**	106.10
Sec and High EDU Cess (1% of Service Tax) @ **0.12%**	53.05
Total Invoice Amount (INR):	49672.00

FOR INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

Authorized Signature

Office Address : Plot No.-26, Sector-3, HSIIDC, IMT-Manesar, Gurgaon-122050. Haryana (India)
Phone : 0124-4586111, Fax : +91-124-2290005. E-mail: team@icat.in, Website : www.icat.in

Annexure I to Invoice # 17538 Dated 11-Feb-2015

Sr. No.	Invoice Number	Invoice Date	Invoice Amount(INR)
1	17254	31-Dec-2014	446888.00

Description	Amount(INR)
TYPE APPROVAL OF E RICKSHAW	44207.92
Total	44207.92

FOR INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

Authorized Signature

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

[A Division of NATRiP Implementation Society (NATIS), Govt. of India]

KUKU AUTOMOTIVES
A-5, YUDHISTER MARG,
NEAR YOJANA BHAVAN, C-SCHEME,
JAIPUR- 302001, RAJASTHAN, INDIA

INVOICE #	**17254**
Dated:	31-Dec-2014
Docket Id:	CVTNBKUKUJ12T37209
Dated:	04-Dec-2014

KIND ATTN: SHELLY TANWAR
MARKETING
HEAD

Description	Amount(INR)
Type Approval test on E-rickshaw model KUKU Greens as per GSR 709(E) & S O 2590 under CSC/J2/506 (Interim Close) ***Refer to Annexure-I for details***	
TYPE APPROVAL OF E RICKSHAW	397729.00

INR FOUR LAC FORTY SIX THOUSAND EIGHT HUNDRED EIGHTY EIGHT ONLY

PAN	: AAATN7662F
SERVICE TAX REGN NO	: AAATN7662FST002
BANK	: HDFC BANK
ACCOUNT NO.(FOR DOMESTIC TRANSFER	: 05891450000118
ACCOUNT NO.(FOR INTERNATIONAL TRANSFER)	: 05892320000190
RTGS IFSC CODE	: HDFC0000589
MICR CODE	: 110240079
SWIFT CODE	: HDFCINBB

Invoice Amount (INR):	397729.00
Service Tax @ **12.0%**	47727.48
EDU Cess (2% of Service Tax) @ **0.24%**	954.55
Sec and High EDU Cess (1% of Service Tax) @ **0.12%**	477.27
Total Invoice Amount (INR):	446888.00

FOR INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

Authorized Signature

Office Address : Plot No.-26, Sector-3, HSIIDC, IMT-Manesar, Gurgaon-122050. Haryana (India)
Phone : 0124-4586111, Fax : +91-124-2290005 E-mail: team@icat.in, Website : www.icat.in

Annexure I to Invoice # 17254 Dated 31-Dec-2014

Description	Amount(INR)
TYPE APPROVAL OF E RICKSHAW	397729.00
Total	397729.00

FOR INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

Authorized Signature

C T 0 P K 0038 DATE- 03/02/2015

TYPE APPROVAL TEST REPORT

Manufacturer	Objective of the test
Kuku Automotives A-5 Yudistar Marg, C- scheme Jaipur, Rajasthan - 302001	To conduct type approval tests as per the G.S.R 709 (E) Dt: 08-10-2014, S.O. 2590 (E) Dt: 08-10-2014 and AIS 041.

Test vehicle	**E-Rickshaw**			
Vehicle Model	**KUKU Greens**			
Test Request	37209, CSC/J2/506 Dt: 04-Dec-14	Vehicle Specification	KA/TA/T13/14.11 Dt: 03-Dec-14	
Frame No.	MC7KGCB11R14J0001	Unladen Weight (kg)	298	
Road Load Equation F=N, V=Kmph	Power absorbed @ 1.44 kW.	Equivalent Inertia	450	
Coast down report No.	As per part XIII of MoRTH/CMVR/TAP-115/116.			
Traction Battery – Make	M/s Naveen Batteries	Type	Lead Acid	
Traction Battery – Model	Anchor NB800	Nominal Volts (V)	12	
Traction Motor – Make	M/s Unite Motor Co.			
Traction Motor – ID	BM1418W	Max Power	1170	
Power controller – Make	M/s Changzhou Xinrun Pipe co.			
Power controller – ID	BC1418	Rating	41-52V, 30A	
Charger – Make	M/s Classic Electro Systems	Model	IS170017	
Test Procedure	AIS - 041.			

Test Equipment	Make	Type
Chassis Dyno	AVL Emission Test Systems,GMBH	955 mm Compact Chassis Dyno
Cooling Fan	AVL Emission Test Systems,GMBH	Air Stream Fan
Driver Aid	AVL Emission Test Systems,GMBH	--

Prepared By	Checked By		Department Head	
GAURAV SIKKA	VIKAS SADAN		† PAMELA TIKKU	PK0038

Office Address : Plot No.-26, Sector-3, HSIIDC, IMT-Manesar, Gurgaon-122050. Haryana (India)
Phone : 0124-4586111, Fax : +91-124-2290005. E-mail: team@icat.in, Website : www.icat.in

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C	T	0	P	K	0038

DATE- 03/02/2015

Test Results		
Test Procedure	**Type of test**	**Measured Value**
AIS - 041	**Maximum 30 Minute Speed**	**24.25 km/hr**
	Net Power	**1.17 kW**
	Maximum 30 Minute Power	**1.15 kW**

Remarks : 1. Vehicle meets the requirements as per Notification G.S.R. 709(E)
2. The tests were conducted as per the requirements of AIS - 041.
3. Test was conducted at ICAT, Manesar.

CONDITION OF ISSUE:

1. ICAT issues Test Reports/ Extension Reports/ Developmental Test Reports for vehicles /components/parts/ assemblies etc. based on the documents produced and/or prototype / vehicle(s) or sample(s) submitted by the applicant and testing thereof.
2. ICAT issues Test Reports/ Extension Reports/ Developmental Test Reports in compliance to Motor Vehicle Act/ Central Motor Vehicle Rules and their provisions as amended from time to time or any other statutory orders under which ICAT is authorized. Other Rules/Acts are outside the purview/scope of the Test Reports/ Extension Reports/ Developmental Test Reports
3. Test(s) on prototype /vehicle(s) or sample(s) is/are carried out on the basis of standard procedures as notified under specific rules/ requested by the applicant. Results of such tests are property of bearer of Test Reports/ Extension Reports/ Developmental Test Reports. These results cannot be disclosed unless specifically ordered so by Government, Court, etc.
4. Unless otherwise supported by a separate Certificate, this Test Reports/ Extension Reports/ Developmental Test Reports shall not be considered in isolation as valid Type approval for any vehicle.
5. ICAT is not responsible for testing each vehicles/components/parts/assemblies etc. for which Test Reports/ Extension reports/ Developmental test reports is issued. Further, ICAT is not responsible for ensuring manufacturing quality of the vehicles/ components/ parts/ assembles etc. for which the Test Reports/ Extension reports/ Developmental test reports is /are issued.
6. ICAT is in no way responsible for any misuse or copying of any design/type/system in connection with entire vehicle/ components/parts and assemblies covered under the Test Reports/ Extension reports/ Developmental test reports is /are issued.
7. Breach of any statutory provisions, of Indian laws or laws of other countries, will be sole responsibility of the bearer of Test Reports/ Extension Reports / Developmental reports is/are issued and ICAT shall not be liable for any claims or damages, whatsoever. The bearer shall alone be liable for the same and shall undertake to indemnify ICAT in this regard.
8. Further, ICAT has the right, but not under obligation to initiate cancellation / withdrawal of the Test Reports/ Extension Reports/ Developmental Test Reports is/are issued in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ICAT.
9. No extract, abridgment or abstraction from this test report may be published or used to advertise the product without the written consent of the Director, ICAT, who reserves the absolute right to agree or reject all or any of the details of any items of publicity for which consent may be sought.

The appropriate local court at Gurgaon shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.

Prepared By	Checked By		Department Head	
GAURAV SIKKA	VIKAS SADAN		† PAMELA TIKKU	

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INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

[A Division of NATRiP Implementation Society (NATIS), Govt. of India]

C	A	K	B	0012

AK-0070

Date: 09th February 2015

Cert	Brief + Table 11 & 13	Drg	Total
2	9	4	15 Pgs

CERTIFICATE

FOR COMPLIANCE TO THE CENTRAL MOTOR VEHICLES RULES.

1. In order to establish compliance to the provisions of CMVR, 1989, applicable as on date, documental verification/ necessary testing was carried out, on the following **base model**, submitted by the vehicle manufacturer referred below:

Vehicle Manufacturer	**M/s. Kuku Automotives** A-5 Yudistar Marg, C-Scheme Jaipur, RJ 302 001			
Net Power	**1170 W**	**Battery**	**Make**	**M/s. Naveen Batteries**
Max Speed	**24.25 km/h**		**Capacity**	**52 Ah**
			Id / Model No.	**Anchor – NB800**

Motor		**Controller**	
Identification no.	**Manufacturer**	**Identification no.**	**Manufacturer**
BM1418W	**M/s Shanghai Mainbon Industry Co.Ltd.,** 1212,578, TianbaoRoad, Shanghai 200 086, China	**BC1418**	**M/s Changzhou Xinrun Pipe Co. Ltd.** Wujin district of Luoyang town, Changzhou Jiangsu province, east west, jia number 150

BASE MODEL	**TYPE: E-rickshaw**	**Seating Capacity** (Incl. Driver)	**GVW, kg**
KUKU Greens	**Special Purpose Battery Operated Three Wheeler-E-Rickshaw**	**5 Persons**	**680**

Note: Seating Capacity (including driver) to be verified by RTO: At least @ 68 kg/person + 40 kg total luggage allowance.

1a. Brief technical specifications (**No. KA/TA/T7/14.8 dt. 03.12.2014, KA/TA/T11/14.10 dt. 03.12.2014 &KA/TA/T13/14.11 dt. 03.12.2014**) of the vehicle model as declared by the vehicle manufacturer, are enclosed with this certificate. Detailed specifications (**No. KA/TA/T1/14.7 dt. 03.12.2014**), of the vehicle model, are also separately issued to the vehicle manufacturer.

2. This certificate is issued for the above base model, with compliance to additional provisions, including following requirements, (as detailed at **ANNEXURE-I , IA & IB**)

Standards	Notification	Date	Effective From	Applicable CMVR
E – Rickshaw BoV / VIN / Brakes / Lamps/ Horn / Bulbs / Tyre/ Lighting & light signaling devices / Traction Battery and other safety components	GSR 709 (E)	08.10.2014	08.10.2014	ANNEXURE-I ANNEXURE- IA ANNEXURE- IB
	S.O. 2590 (E)	08.10.2014		
	GSR 784(E)	12.11.2008		

3. This Certificate is issued as per CMV Rule 126, to establish compliance with the Central Motor Vehicles Rules, 1989, and shall not be construed as a certificate of compliance to any rules other than those listed in **ANNEXURE-I, IA & IB**. Compliance to these rules has been verified based on the use of specific components / parts / assemblies etc. details of which are given in the detailed specifications duly endorsed by ICAT as mentioned at Para. **1a** above. It is the vehicle **manufacturer's** responsibility to ensure fitment of same components / parts / assemblies etc. before submission of the vehicle for registration.

AUTHORISED SIGNATORIES,

AK0070

S.K. KALIA		DINESH TYAGI	Page 1 of 2
Sr. GENERAL MANAGER		DIRECTOR	

ANNEXURE-I
To

C	A	K	B	0012

Following rules are verified and found to be complying. Date: 09th February 2015

Rule No	Sub Rules	Description			Standard
93	(1), (2), (4), (6) & (7)	Overall dimension of motor vehicles			-----
94	(1), (2) & (3)	Condition of tyres			-----
95	(1), (2), (3), (4), (5) & (6) (i)	Size & Ply rating of tyres	Fr & Rr: 90/90-12,54J Tube Type	Make: BIRLA	IS:15627:2005 & AIS:050:2004
96	(1), (2), (3), (4)(i), (5), (6), (7)(a)	Brakes			IS:14664:1999
99	---	Forward and backward motion			-----
102	(1) & (2)	Signalling devices, direction indicators & stop lights			-----
103	(1)	Position of the indicator			-----
104	(4)	Fitment of reflectors			AIS:057:2005
105	(1)(b), (3), (4) & (7)	Lamps			-----
106	(1)	Deflection of lights			-----
108	(1)	Use of red or white lights			-----
109	---	Parking light			-----
110	---	Lamps three-wheelers			-----
111	---	Prohibition of spotlights etc.			-----
119	(1) & (2)	Horns	Performance		IS:1884-1993
			Installation		IS:15796-2008
122	(1) & (2)	Embossment of the Chassis Number & Motor Number and date of manufacture (Ref: Table 11 of the Brief Technical Specifications			-----
124	Refer ANNEXURE-IA	Safety standards of components as applicable			S.O. 2590 (E) dt. 08.10.2014
125	(1) & (2)	Rear View Mirror	Specifications		AIS:001/2001
			Installation		AIS:002/2001

ANNEXURE-IA

Rule 124 Table B	Particulars	Test Standards	Compliance Verified
1.	Automobile Lamps	AIS:034/2004	✓
2.	Wheel Rims	AIS:073/2007	
3.	(a) Installation requirement for lighting and light signalling devices	AIS:009/2001	
	(b) Performance requirement of lighting, light signalling	AIS:010/2004	
4.	Constructional & Functional Safety of battery operated vehicle	AIS-038/2003	
5.	Measurement of Net Power& max. 30. min. Power & Speed for battery operated vehicles	AIS:041/2003	
6.	Traction batteries used in battery operated vehicles	AIS: 048/2009	
7.	Requirements of Handholds	AIS: 046/2008	

ANNEXURE-IB

CMV Rule	Compliance Verified for		Test Standards	Compliance Verified
95(1)	Size and Ply rating of Tyre		IS-15627-2005	✓
122(1)	Vehicle Identification Number including month and year of manufacture – VIN number		AIS-065-2005	
124(4)	The procedure for Type Approval and establishing Conformity of production for components	Tyres / Horn	AIS-037-2004**	
		Bulb / Rear View Mirror		
		Lighting and Light Signaling Devices / Retro - Reflectors		

**Compliance needs to be established for Type approval / Conformity of Production for components, listed in the notification.

ICAT Case No.	2014 – 506 (IOCS: 37209)
Test Report Nos.	CT0PK 0038 dt. 03.02.2015

AUTHORISED SIGNATORIES,

S.K. KALIA
Sr. GENERAL MANAGER

DINESH TYAGI
DIRECTOR

ICAT/CMVR/E-rickshaw 2014=506 05 FEB 2015

Table 7 of AIS-007 (Revision 4)

BRIEF TECHNICAL SPECIFICATIONS FOR MOTOR VEHICLES

A. Manufacturer's name and address	M/S Kuku Automotives M/S Kuku Automotives A-5 Yudistar Marg. C-Scheme Jaipur, RJ 302001 Ph 0141 5107735
Importer's name and address (in case of CBU)	N.A.
Country of origin, if imported	N.A.
Vehicle data	
Basic model	KUKU Greens
Type / Description	Special Purpose battery Operated Three Wheeler-E Rickshaw
Category of the vehicle (as per AIS-053)	E Rickshaw
Variant(s)	N.A.
Type / Description	N.A.
Category of variant(s) (as per AIS-053)	N.A.
Engine	
Make and Country of origin, if imported	N.A.
Model	N.A.
Type	N.A.
Bore x stroke (mm)	N.A.
No. of cylinders	N.A.
Displacement	N.A.
Compression ratio	N.A.
Max. Engine output (kW @ rpm)	N.A.
Max. Torque (Nm @ rpm)	N.A.
Air cleaner type	N.A.
Clutch	
Type	N.A.
Gear box	
Make & model	N.A.
Type	N.A.
No. of gears	N.A.
Gear ratio 1st 2nd 3rd 4th 5th 6th Reverse	N.A.
Drive Axle (Front / Rear / All)	N.A.
Front axle ratio	N.A.
Rear axle ratio	N.A.
Steering/Handle bar	N.A.
Type / Description	Handle bar
Steering wheel diameter mm	N.A.

International Centre for Automotive Technology

Manufacturer: M/S Kuku Automotives — Document No.: ICAT/CMVR/506/2014 — Test Agency — Test Report

Signature: Shelly Tanwar — Name: Shelly Tanwar — Designation: Marketing Head — Sheet No.: — Date: 05/12/2014

Signature — Name: S. K. Kalia — Designation: Sr. General Manager — Page No. 1 of 3

For Kuku Automotives

Partner

ICAT/CMVR/E-rickshaw 2014-506-[illegible] 09 FEB 2015

Frame	
Long member size (mm)	[illegible] mm
Number of cross members	5 cross members

Table 7 of AIS-007 (Revision 4)

Suspension	
Type / Description	F: telescopic with spring R: Leaf [illegible]
Spring	Coiled and leaf spring
Anti-roll bar	N.A
Shock absorbers	Front : hydraulic shock absorbers
Brake	
Service brake (Brief description)	Expendable type brake shoe
Auto Slack Adjuster Fitted (Yes / No / Optional)	N.A.
ABS Fitted (Yes / No / Optional)	N.A.
Front (Disc / Drum)	Drum
Rear (Disc / Drum)	Drum
Total braking area (cm²)	251 cm²
Parking brake	[illegible]
Secondary brake	N.A
Wheels and tyres	
Wheel rim size	2.15J x 12
Tyre size designation including ply rating	90/90 x 12
Speed index	J
Load index / Load rating	54
Tyre Type (Radial / Cross / Tube / Tubeless)	Tube type
Laden Tyre pressure (front & rear) (kg/cm²)	Front – 2.5 kg/cm2 Rear – 2.5 kg/cm2
Electrical system	
System voltage (V)	48 V (12Volt)
Battery rating (Ah)	90 Ah
Wiper motor	N.A
Wiping system (Brief description)	N.A
Fuel tank	
Material	N.A
Capacity (l)	N.A
Dimensions	N.A
Wheel base (mm)	2140mm
Overall width (mm)	995mm
Overall length (mm)	2730 mm
Overall height (mm)	1740 mm
Front track (mm)	N.A
Rear track (mm)	838mm
Min. ground clearance (mm)	140mm
Cargo box dimensions (mm)	N.A
Load body platform area	N.A

Manufacturer: M/S Kuku Automotives
Signature: For Kuku Automotives
Partner
Name: Shelly Tanwar
Designation: Marketing Head

International Centre for Automotive Technology
S. K. Kalla
Sr. General Manager

ICAT/CMVR/E-rickshaw /2014=506

09 FEB 2015

Table 7 of AIS-007 (Revision 4)

Weights	
Maximum GVW kg (for rigid vehicles)	680 Kg
Maximum GCW kg (for articulated / combination vehicles)	NA
Maximum FAW (kg)	Front 200Kg
Maximum RAW (kg)	Rear 480Kg
Kerb weight with 90% fuel (with spare wheel , tools, etc.) (kg)	300Kg
Maximum gradeability in 1st gear	NA
Seating	
Seating capacity	5
Sketch showing seating layout with dimensions	Drawing No. KG-SP-001

International Centre for Automotive Technology

Manufacturer : M/S Kuku Automotives	Document No : KAT/AT/14-15	Test Agency :	Cert No
Signature		Signature	
Name: Shelly Tanwar	Sheet No	Name	
Designation: Marketing Head	Date:03/12/2014	Designation	Page No: 3 of 3
		Date of Issue	

For Kuku Automotives

Partner

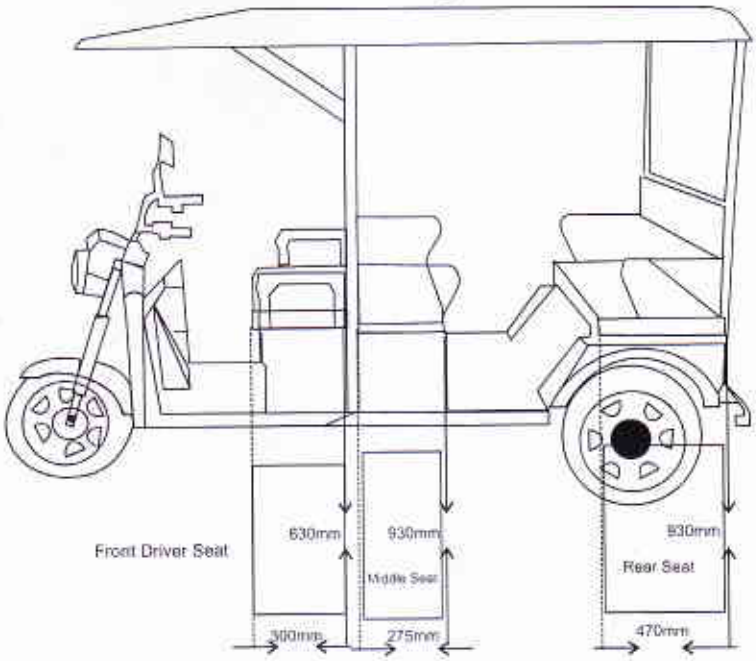
S. K. Kalia
Sr. General Manager

SEATING & BATTERY POSITION LAYOUT

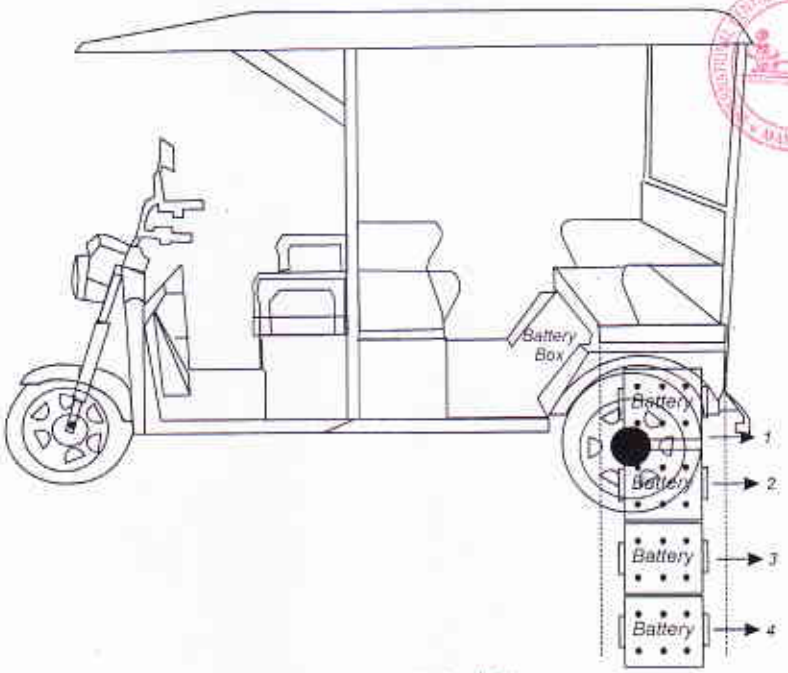
ICAT/CMVR/E-rickshaw 2014=506

09 FEB 2015

Seating Arrangement



Battery Placement



International Centre for Automotive Technology

S. K. Kalia
Sr. General Manager

QTY.:-1	MATERIAL	DATE - 05/12/2014
SHEET :-1/1	Model Name - KUKU Greens	
SCALE: 1:1	Part Name-SEATING DIMENSIONS	
	Drawing No. :- KG - SP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN.
DRAWN BY:	SHELLY TANWAR	Shelly
APPROVED BY:	SANJAY YADAV	

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

For Kuku Automotives

Partner

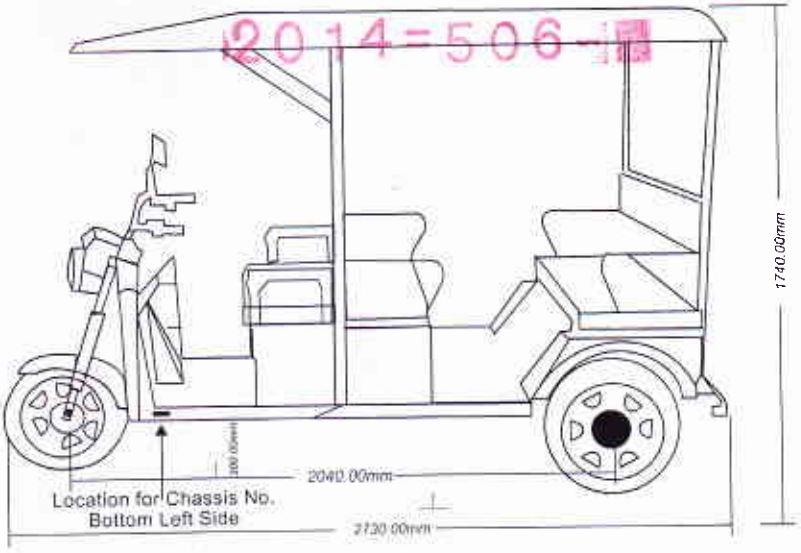
VEHICLE DIMENSIONS LAYOUT

09 FEB 2015

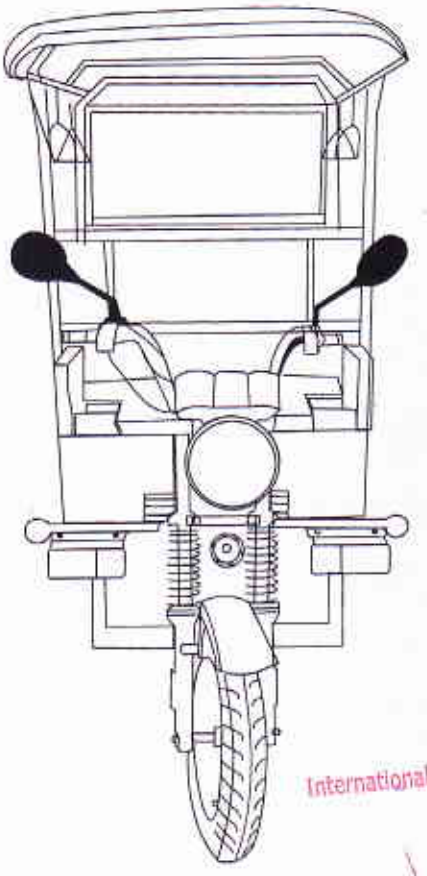
ICAT/CMVR/E-rickshaw

2014-506-I

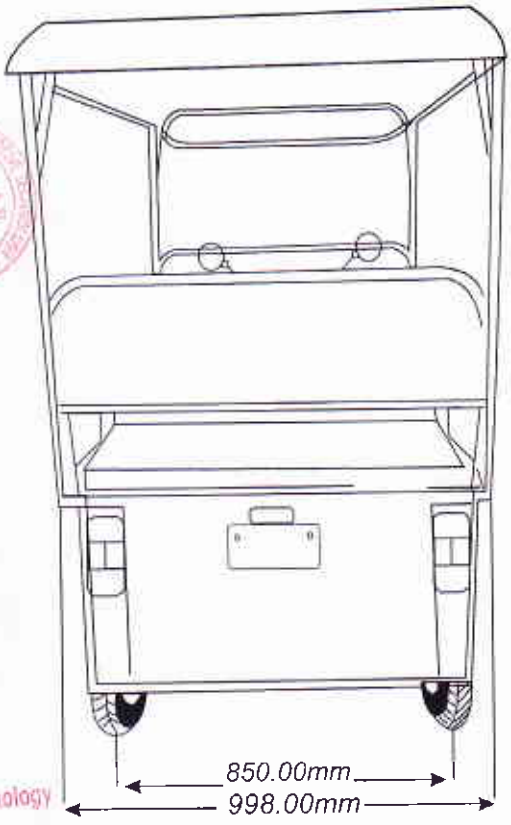
Side View



Front View



Back View



WIDTH & WHEEL TRACK

International Centre for Automotive Technology

S. K. Kalia
Sr. General Manager

QTY. -1	MATERIAL	DATE:- 05/12/2014
SHEET :- 1/1	Model Name - KUKU Greens	
SCALE: 1:1	Part Name-VEHICLE DIMENSIONS	
	Drawing No. :- KG - VD - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN.
DRAWN BY:	SHELLY TANWAR	Shelly Tanwar
APPROVED BY:	SANJAY YADAV	

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

For Kuku Automotives

Partner

ICAT/CMVR/E-rickshaw

2014-506

M/s. Kuku Automotives (Model-KUKU Greens)

09 FEB 2015

Side View

Side View

Rear View

Front View

Central Institute for Automotive Technology

S. K. Kalia
Sr. General Manager

M/s. Kuku Automotives (Model-KUKU Greens)

Motor

Controller

ICAT/CMVR/E-rickshaw 2014=506- 09 FEB 2015

Table 11 of AIS-007 (Revision 4)

DETAILS OF LOCATION OF CHASSIS NUMBER AND CODE FOR MONTH AND YEAR OF MANUFACTURE AS PER RULE 122 OF CMVR

Name of the Vehicle Manufacturer & Address :	**M/S Kuku Automotives A-5 Yudistar Marg, C-Scheme Jaipur, RJ 302001**
Name of the basic model :	**KUKU Greens**
Name of Variants, if any :	**N.A.**
Place of Embossing or etching the Chassis Number (Vehicle Identification Number). Supporting details by drawing or pictures may be provided if necessary.	**Punching on the Chassis, Attached Drawing no.KG-VD-001**

Code for month and year of production:

Code for month of production:		Code for year of production:	
Month	Code	Year	Code
January	01	2014	14
February	02	2015	15
March	03	2016	16
April	04	2017	17
May	05	2018	18
June	06	2019	19
July	07	2020	20
August	08	2021	21
September	09	2022	22
October	10	2023	23
November	11	2024	24
December	12	2025	25

Position of the code for month of production in the Chassis number :	**8th & 9th digit in chassis no**
Position of the code for year of production in the Chassis number :	**11th & 12th digit in chassis no**
Height of the Chassis number (Vehicle Identification Number) :	**5mm**

Example of Engine No. :-

Example of Chassis No. (Vehicle Identification Number) with Month & Year of Manufacture:-

MC7KGCB11R14J0001

International Centre for Automotive Technology

Manufacturer: M/S Kuku Automotives	Document No.: ICAT/CMVR/511(14-15)	Test Agency	Cert No.:
Signature: Shelly Tanwar For Kuku Automotives		Signature	
Name: Shelly Tanwar	Sheet No:	Name: S. K. Kalia	
Designation: Marketing Head Partner	Date: 05/12/2014	Designation: Sr. General Manager	Page No. 1 of 1
		Date of Issue	

2014=506

ICAT/CMVR/E-rickshaw

Table 13 of AIS-007 (Revision 4)

09 FEB 2015

TECHNICAL SPECIFICATIONS - BATTERY OPERATED VEHICLES

1.0	**General description of vehicle**	
1.1	Vehicle Model	KUKU Greens
1.2	Vehicle Type	Special Purpose battery Operated Three Wheeler-E Rickshaw
1.3	Drawing and /or photographs of the vehicle	KG-VD-001
2.0	**Description of The Traction Battery**	
2.1	Trade Name and Mark of the Battery	**Naveen Batteries, AnchorNB800 (ID:-DNCSJ14B-479)**
2.2	Kind of Electro – Chemical Couple	PB & PBO2
2.3	Nominal Voltage (V)	48V DC (12X4)
2.4	Battery Maximum Thirty Minutes Power (Constant Power Discharge) (kW)	2.8±.3 KW
2.5	Battery Performance in 2 h Discharge (Constant Power or Constant Current)	52Ah
2.5.1	Battery Energy (kWh)	.85kwh
2.5.2	Battery Capacity , Ah in 2 h	52Ah at 5C
2.6	End of Discharge Voltage Value (V)	42V
2.7	Provision of ventilation for battery Yes / No	Yes
2.7.1	Brief description of the ventilation system adopted in the vehicle. (Refer AIS-038/2003 Clause 3.1.1). Provide drawing if necessary.	Provided
2.7.2	Brief description of the ventilation system adopted in the battery compartment. (Refer AIS-038/2003, Clause 3.1.2). Provide drawing if necessary.	Enclosed
2.8	On-board Indication of battery state of charge	LED display
2.8.1	Details of indication when state of charge of the battery reaches a level when the manufacturer recommends re-charging.	Red Zone Indication below 30%.
2.8.1.1	Indication format.	Numerals with LED
2.8.1.2	Relationship of state of charge indicator and the indication.	N.A.
2.8.1.3	Make	Changzhou Xinrun Pipe Co. Ltd.
2.8.1.4	Model	NA

Table 13 of AIS-007 (Revision 4)

2.8.2	Indication of state of charge of battery reaches a level at which driving vehicle further may cause damage to batteries	20% Charge State where the batteries can go into deep discharge state and take extra time for Re Charging
2.8.2.1	Indication format.	Red Indication
2.8.2.2	Relationship of state of charge indicator and the indication.	N.A.
2.9	Battery Mass (kg)	Set of 4 batteries Total-108kg with acid
2.10	Brief description of maintenance procedure, if any	Electrolyte top up at regular intervals
3.0	**Description of The Drive Train**	
3.1	General	Motor direct coupled with differential
3.1.1	Make	Changzhou Xinrun Pipe Co.Ltd. China
3.1.2	Type	Brushless DC Motor
3.1.3	Use : Mono motor / multi motors (number)	Mono motor
3.1.4	Transmission Arrangement parallel / transaxial / others to precise	Tranaxial
3.1.5	Test Voltage (V)	48V
3.1.6	Motor Nominal Speed (Min $^{-1}$)	3000RPM
3.1.7	Motor Maximum Speed, Min $^{-1}$ or by default reducer outlet shaft / gear box speed (specify gear engaged)	2800 RPM
3.1.8	Maximum Power Speed (Min $^{-1}$) and (km/h)	24.25 km/h
3.1.9	Maximum Power (kW)	1.17 KW
3.1.10	Maximum Thirty Minutes Power (kW)	1.12KW
3.1.11	Maximum Thirty Minutes speed km/h (Reference in AIS-039/2003 and AIS-040/2003)	24.25Km/h
3.1.12	Flexible Range (where P>90% of Max. Power)	80±5Km
3.1.13	Speed at the beginning of the range (Min $^{-1}$)	22km/h
3.1.14	Speed at the end of the range (Min $^{-1}$)	12km/h
3.2	Traction Motor	
3.2.1	Make	**SHANGHAI MAINBON INDUSTRY CO., LTD.** (Unite Motor Co.) 1212,578 TianbaoRoad,Shanghai 200 086, CHINA **ID:- BM1418W**
3.2.2	Working Principle	BLDC
3.2.2.1	Direct current / alternating current / number of phases	Direct current 3 Phase
3.2.2.2	Separate excitation / series / compound	Series
3.2.2.3	Synchron / asynchron	NA

Table 13 of AIS-007 (Revision 4)

3.2.2.4	Coiled rotor / with permanent magnets / with housing	With Permanent Magnet
3.2.2.5	Number of Poles of the Motor	8 Poles
3.2.3	Motor power curve (kW) with motor RPM (min^{-1}) / vehicle speed in (km/h)	NA
3.3	Power Controller	
3.3.1	Make	**Changzhou Xinrun Pipe Co. Ltd.**(Add:- Wujin district of Luoyang town, Changzhou Jiangsu province, east west, jia number 150) **ID:- BC1418**
3.3.2	Type	Electronic
3.3.3	Control Principle : vectorial / open loop / closed / other (to be specified)	Closed loop
3.3.4	Maximum effective current supplied to the Motor (A)	30 AMP
3.3.5	Voltage range use (V to V)	41V to 52V
3.4	Cooling System motor : liquid / air controller : liquid / air	Air Air
3.4.1	Liquid cooling equipment characteristics	N.A.
3.4.1.1	Nature of the liquid , circulating pumps, yes / no	N.A.
3.4.1.2	Characteristics or make(s) and type(s) of the pump	N.A.
3.4.1.3	Thermostat : setting	N.A.
3.4.1.4	Radiator : drawing(s) or make(s) and type(s)	N.A.
3.4.1.5	Relief valve : pressure setting	N.A.
3.4.1.6	Fan : Characteristics or make(s) and type(s)	N.A.
3.4.1.7	Fan : duct	N.A.
3.4.2	Air-cooling equipment characteristics	N.A.
3.4.2.1	Blower : Characteristics or make(s) and type(s)	N.A.
3.4.2.2	Standard air ducting	N.A.
3.4.2.3	Temperature regulating system yes / no	N.A.
3.4.2.4	Brief description	N.A.
3.4.2.5	Air filter : make(s) type(s)	N.A.
3.4.3	Maximum temperatures recommended by the manufacturer:	N.A.
3.4.3.1	Motor Outlet : °C	100°C
3.4.3.2	Controller inlet : °C	40°C
3.4.3.3	At motor reference point(s) °C	On body 100°C
3.4.3.4	At controller reference point(s) °C	On cover vent
3.5	Insulating Category :	Class E
3.5.1	International Protection (IP)-Code :	N.A.

Table 13 of AIS-007 (Revision 4)

3.6	Lubrication System Principle Bearings : friction / ball Lubricant : grease / oil Seal : yes / no Circulation : with / without	N.A.
4.0	**Charger** :	
4.1	Charger : on board / external	External
4.1.1	Trademark , model, rating	Classic electro, Model – **TONA CHARGER, (ISI70017)**
4.2	Description of the normal profile of charging system	SMPS based, CVCC type
4.3	Specifications of mains	
4.3.1	mains : single phase/ three phase :	Single face
4.3.2	Nominal Voltage (V) & frequency (Hz) with tolerances:	230±20V&50Hz±10Hz
4.4	Reset period recommended between the end of the discharge and the start of the charge	20minutes
4.5	Recommended duration of a complete charge	8 to 10 hrs
4.6	In case of on-board charger	
4.6.1	Continuous rating of charger socket (A) :	NA
4.6.2	Time rating (h) of charger socket, if any :	NA
4.6.3	Whether soft-start facility Yes / No :	NA
4.6.4	Maximum initial in-rush current (A)	NA
5.0	**Electrical details of vehicle for functional safety**	
5.1	Schematic diagram showing the electrical layout giving all major electrical items along with their physical location in the vehicle. It shall include batteries, power-train components, protection fuses, circuit breakers etc. (Reference in AIS-038/2003 Clause 3.1.3)	Sketch
5.2	Specifications of circuit breakers/ fuses used for protection of batteries / power-train (Reference in AIS-038/ 2003 Clause 3.1.3)	MCB
5.2.1	IS / IEC specifications	8828 , CM/L-8261977
5.2.2	Rating (A)	32Amp
5.2.3	Opening time (ms)	50 milliseconds
5.3	Working voltage V (Reference in AIS-038/ 2003 Clause 3.2)	48V.DC
5.4	Schematic highlighting physical location of live parts having working voltage greater than 60 V DC or 25 V AC (Reference in AIS-038/ 2003 Clause 3.2.1.2)	NA
5.5	Electric cables / connectors / wiring harness (Reference in AIS-038/ 2003 Clause 3.2.2.2)	
5.5.1	IEC protection class	Class A
5.5.2	Insulation material used	PVC/nylon
5.5.3	Conduits provided Yes / No	NO

Manufacturer :Kuku Automotives	Document No : KA/TA/T13/14.11	Test Agency :	*Cert No :*
Signature		Signature	
Name: Shelly Tanwar	Sheet No:	Name Designation	
Designation: Marketing Head	Date: 03/12/2014	*Date of Issue*	Page No 4 of 5

Table 13 of AIS-007 (Revision 4)

5.6	List of exposed conductive parts of on-board equipment. (Reference in AIS-038/ 2003 Clause 3.2.2.3)	Connector used
5.6.1	Any potential equalization resistance used to electrically connect these parts Yes/ No	NA
5.6.2	If yes, give details	NA
5.7	List of failures due to which the vehicle will come to standstill (Reference in AIS-038/ 2003 Clause 3.3.6)	Loose connection
5.8	List of conditions under which the performance of vehicle is limited and how. (Reference in AIS-038/ 2003 Clause 3.3.13)	Battery Low Loose connection of couplers
5.9	Declaration regarding Design guidelines followed with respect to various requirements.	NA
6.0	Electrical energy consumption of Vehicle in W-h/km, as per Clause 5.5.1 of AIS-039	NA

2014=506

ICAT/CMVR/E-rickshaw

Table 1 AIS-007 (Revision 4)
DETAILED TECHNICAL SPECIFICATIONS

09 FEB 2015

INFORMATION RELATING JOINTLY TO L1, L2 AND L5 CATEGORY VEHICLES (2 and 3 Wheelers)			
0.	**General**		
0.1.	Make	:	**M/s Kuku Automotives**
0.2.	Type (state any possible variants and versions: each variant and each version must be identified by a code consisting of numbers or a combination of letters and numbers)	:	Special Purpose battery Operated Three Wheeler-E Rickshaw
0.2.1.	Commercial name (s)	:	KUKU Greens
0.3.	Means of type identification if stated on vehicle	:	KUKU (Greens)
0.3.1.	Location of that means of identification	:	Front & Rear Body
0.4.	Vehicle category (AIS-053)	:	E Rickshaw
0.5.	Name and address of manufacturer with contact persons' name, designation, e-mail, phone nos. etc. Provide details of importer, if applicable.	:	M/S Kuku Automotives A-5 Yudistar Marg, C-Scheme Jaipur, RJ 302001 Contact person - Mr. Sanjay Yadav (MD) Contact no - 09314500174 , 09829011930 E-mail -sanjay_yadav@kukuautomotives.com
0.5.1.	Name(s) and address (es) of assembly plants	:	M/S Kuku Automotives A-5 Yudistar Marg, C-Scheme Jaipur, RJ 302001
0.5.2	Name and address of the vehicle importer		N.A.
0.6.	Name and address of manufacturer's authorized representative. if any	:	Mr. Sanjay Yadav (MD) or Shelly Tanwar (marketing head) CB-229B,IInd floor, Ring road, Naraina, N.D. 110028
0.7	Method of inscription of VIN on the chassis	:	Punching
0.7.1.	The serial numbering (of production vehicles) of the type begins with No	:	MC7
0.8.	Position and method of affixing the component type-approval mark for components and separate technical units	:	Approved Components with Marking
1.0	**General arrangement of the vehicle**		
1.1	Photos and/or drawings of a typical vehicle	:	Drawing No. KG-VD-001
1.2	Drawing of the complete vehicle indicating overall length, width, track and height.	:	Drawing No. KG-VD-001
1.2.1	Wheelbase	:	2146mm
1.3	Number of axles and wheels (where appropriate. number of crawler tracks or belts):	:	Axles : 2 , wheels : 3
1.4	Position and arrangement of engine	:	N.A.
1.5	Number of seating positions	:	One at front and Two at rear

Table 1 AIS-007 (Revision 4)

2.0	**Weights (in kg)**				
2.1	Vehicle kerb weight[9]	:	300Kg		

International Centre for Automotive Technology

Manufacturer : KUKU Automotives Signature Name: Shelly Tanwar Designation: Marketing Head	Document No : ICAT/CMVR/147 Sheet No : Date : 03/12/2014	Test Agency : Signature Name Designation Date of Issue	Test No : Page No : 1 of 15

For Kuku Automotives
Partner

S. K. Kalia
Sr. General Manager

2.1.1	Distribution of that weight between the axles	:	Front 60Kg	Rear 240Kg	
2.2	Vehicle kerb weight together with rider (reference weight)	:	368Kg		
2.3	Gross Vehicle Weight	:	680 Kg		
2.3.1	Division of that weight between the axles	:	Front 200Kg	Rear 480Kg	
2.3.2	Maximum technically permissible -weight (maximum permissible axle weight) on each of the axles				
2.3.2.1	Front Axle	:	Front 200Kg		
2.3.2.2	Rear Axle	:	Rear 480Kg		
2.4	Maximum hill-starting ability (Gradeability) at the maximum technically permissible mass declared by the manufacturer	:	N.A.		
2.5	Maximum towable weight (where applicable)	:	N.A.		
2.6	Maximum weight of the combination.	:	N.A.		
3.0	**Engine**[10]				
3.1	Manufacturer	:	N.A.		
3.1.1	Make	:	N.A.		
3.1.2	Type (stated on the engine. or other means of identification):	:	N.A.		
3.1.3	Location of engine number (if applicable):	:	N.A.		
3.2	Spark- or compression-ignition engine		N.A.		
3.2.1	Specific characteristics of the engine		N.A.		
3.2.1.1	Operating cycle (four or two-stroke. spark or compression ignition)	:	N.A.		
3.2.1.2	Number. arrangement and firing order of cylinders	:	N.A.		
3.2.1.2.1	Bore: mm[6]	:	N.A.		
3.2.1.2.2	Stroke: mm[6]	:	N.A.		
3.2.1.3	Cylinder capacity[7]: cm^3	:	N.A.		
3.2.1.4	Compression ratio	:	N.A.		
3.2.1.5	Drawings of cylinder head. piston(s). piston rings and cylinder(s)	:	N.A.		
3.2.1.6	Idling speed , min^{-1} (specify tolerance)	:	N.A.		

Table 1 AIS-007 (Revision 4)

3.2.1.7	Maximum net power output: kW at min^{-1} (specify standard and tolerance)	:	N.A.		

International Centre for Automotive Technology

Manufacturer : KUKI Automotives	Document No : KAT/CMVR/14	Test Agency :	Cert No :
Signature : Shelly Tanwar		Signature :	
Name : Shelly Tanwar	Sheet No :	Name : S. K. Kulla	
Designation : Marketing Head	Date : 03/12/2014	Designation : Sr. General Manager	Page No: 2 of 15

For Kuki Automotives Partner

3.2.1.8	Net maximum torque: Nm at min^{-1} (specify standard)	:	N.A.		
3.2.1.9	In case of compression ignition engines, the max power and max torque shall also be specified as per conditions given in MST/CMVR/TAP 115/116	:	N.A.		
3.2.2	Fuel: diesel/petrol/mixture/LPG/other (1)	:	N.A.		
3.2.3	Fuel tank		N.A.		
3.2.3.1	Maximum capacity	:	N.A.		
3.2.3.2	Drawing of tank with indication of material used	:	N.A.		
3.2.3.3	Diagram clearly indicating the position of the tank on the vehicle	:	N.A.		
3.2.3.4	Type Approval number or BIS license no of the fuel tank fitted	:	N.A.		
3.2.4	Fuel supply		N.A.		
3.2.4.1	Via carburettor(s): yes/no	:	N.A.		
3.2.4.1.1	Make(s):	:	N.A.		
3.2.4.1.2	Type(s) and Identification mark:	:	N.A.		
3.2.4.1.3	Number fitted	:	N.A.		
3.2.4.1.4	Settings	:	N.A.		
3.2.4.1.4.1	Jets (indicate venture dia, main jet, pilot jet)	:	N.A.		
3.2.4.1.4.2	Maximum Level in float chamber	:	N.A.		
3.2.4.1.4.3	Mass of float	:	N.A.		
	OR	:	N.A.		
3.2.4.1.4.4	Fuel curve as a function of the air flow and setting required in order to maintain that curve	:	N.A.		
3.2.4.1.5	Cold-starting system: manual/automatic	:	N.A.		
3.2.4.1.5.1	Operating principle(s):	:	N.A.		
3.2.4.2	By fuel injection : yes/no	:	N.A.		
3.2.4.2.1	Description of system	:	N.A.		
3.2.4.2.2	Operating principle: direct/indirect/turbulence chamber injection	:	N.A.		
3.2.4.2.3	Injection pump	:	N.A.		
	Either	:	N.A.		
3.2.4.2.3.1	Make(s):	:	N.A.		

3.2.4.2.3.2	Type(s):	:	N.A.	
	or	:	N.A.	
3.2.4.2.3.3	Maximum fuel flow rate, mm^3 per stroke or cycle(1) at a pump rotational speed of: min^{-1} or characteristic diagram	:	N.A.	
3.2.4.2.3.4	Injection advance	:	N.A.	
3.2.4.2.3.5	Injection advance curve	:	N.A.	
3.2.4.2.3.6	Calibration procedure: test bench/engine	:	N.A.	
3.2.4.2.4	Regulator		N.A.	
3.2.4.2.4.1	Type	:	N.A.	
3.2.4.2.4.2	Cut-off point		N.A.	
3.2.4.2.4.2.1	Cut-off point under load: min-	:	N.A.	
3.2.4.2.4.2.2	Cut-off point under no load: min^{-1}	:	N.A.	
3.2.4.2.4.3	Idling speed: min^{-1}	:	N.A.	
3.2.4.2.5	Injection pipe work		N.A.	
3.2.4.2.5.1	Length: mm	:	N.A.	
3.2.4.2.5.2	Internal diameter: mm	:	N.A.	
3.2.4.2.6	Injector(s)		N.A.	
	either	:	N.A.	
3.2.4.2.6.1	Make(s):	:	N.A.	
3.2.4.2.6.2	Type(s):	:	N.A.	
	or	:	N.A.	
3.2.4.2.6.3	Description of system	:	N.A.	
3.2.4.3	By fuel injection (solely in the case of spark-ignition): yes/no	:	N.A.	
	either:	:	N.A.	
3.2.4.3.1	Description of system	:	N.A.	
3.2.4.3.2	Operating principle: injection into induction manifold (single/multiple point) (1) /direct injection/other (state which)		N.A.	
	or	:	N.A.	
3.2.4.3.2.1	Make(s) of the injection pump	:	N.A.	
3.2.4.3.2.2	Type(s) of the injection pump	:	N.A.	
3.2.4.3.3	Injectors: opening pressure (state tolerance) kPa	:	N.A.	

	or characteristic diagram (state tolerance)	:	N.A.	
3.2.4.3.4	Injection advance	:	N.A.	
3.2.4.3.5	Cold-starting system		N.A.	
3.2.4.3.5.1	Operating principle(s):	:	N.A.	
3.2.4.3.5.2.	Operating/setting limits (1) (state tolerance)	:	N.A.	
3.2.4.4.	Fuel pump: yes/no(1)	:	N.A.	
3.2.5.	Electrical equipment		N.A.	
3.2.5.1.	Nominal voltage: ....V, positive/negative earth(1)	:	N.A.	
3.2.5.2.	Generator	:	N.A.	
3.2.5.2.1.	Type	:	N.A.	
3.2.5.2.2.	Nominal power: .... W	:	N.A.	
3.2.6.	Ignition	:	N.A.	
3.2.6.1.	Make(s)	:	N.A.	
3.2.6.2.	Type(s)	:	N.A.	
3.2.6.3.	Operating principle	:	N.A.	
3.2.6.4.	Ignition advance curve or operating set point (state tolerance)	:	N.A.	
3.2.6.5.	Static timing (state tolerance): .... before TDC	:	N.A.	
3.2.6.6.	Points gap (state tolerance): .... mm	:	N.A.	
3.2.6.7.	Dwell angle (state tolerance) : .... degrees	:	N.A.	
3.2.6.8	Spark plug - make and identification	:	N.A.	
3.2.6.9	Anti-radio interference system		N.A.	
3.2.6.9.1.	Terminology and drawing of anti-radio interference equipment	:	N.A.	
3.2.6.9.2.	Indication of the nominal DC resistance value and, in the case of resistive ignition leads, statement of nominal resistance per meter	:	N.A.	
3.2.7.	Cooling system (liquid/air)(1)	:	N.A.	
3.2.7.1.	Nominal setting for the engine-temperature control device	:	N.A.	
3.2.7.2	Cooling system temperatures permitted by the manufacturer		N.A.	
3.2.7.3.	Liquid		N.A.	
3.2.7.3.1.	Nature of liquid	:	N.A.	
3.2.7.3.2.	Circulating pump(s): yes/no(1)	:	N.A.	
3.2.7.3.3	Maximum temperature at outlet: .... °C		N.A.	
3.2.7.4.	Air		N.A.	

Table 1 AIS-007 (Revision 4)

3.2.7.4.1.	Blower: yes/no [1]	:	N.A.	
3.2.7.4.2	Reference point	:	N.A.	
3.2.7.4.3	Maximum temperature at reference point: …..°C	:	N.A.	
3.2.8.	Induction system		N.A.	
3.2.8.1.	Supercharging: yes/no[1]	:	N.A.	
3.2.8.1.1.	Make(s)	:	N.A.	
3.2.8.1.2.	Type(s)	:	N.A.	
3.2.8.1.3.	Description of system [example: maximum boost pressure ….. kPa, waste gate (where appropriate)]	:	N.A.	
3.2.8.2.	Intercooler: with/without[1]	:	N.A.	
3.2.8.3.	Description and drawings of induction pipe work and accessories (plenum chamber, heating device, additional air intakes, etc.):	:	N.A.	
3.2.8.3.1.	Description of induction manifold (with drawings and/or photos):	:	N.A.	
3.2.8.3.2.	Air filter, drawings	:	N.A.	
	or	:	N.A.	
3.2.8.3.2.1.	Make(s)	:	N.A.	
3.2.8.3.2.2.	Type(s)	:	**N.A.**	
3.2.8.3.3.	Inlet silencer, drawings	:	**N.A.**	
	or	:	**N.A.**	
3.2.8.3.3.1.	Make(s)	:	**N.A.**	
3.2.8.3.3.2.	Type(s)	:	**N.A.**	
3.2.9.	Exhaust system		**N.A.**	
3.2.9.1.	Drawing of complete exhaust system with identification (if proprietary) or part no (if non-proprietary)	:	N.A.	
3.2.10.	Minimum cross-section of the inlet and exhaust ports	:	N.A.	
3.2.11.	Induction system or equivalent data		N.A.	
3.2.11.1.	Maximum valve lift, opening and closing angles in relation to the dead centers, or data concerning the settings of other possible systems	:	N.A.	
3.2.11.2.	Reference and/or setting ranges[1]	:	N.A.	
3.2.12.	Anti-air pollution measures adopted		N.A.	
3.2.12.1.	Crankcase-gas recycling device, solely in the case of four-stroke engines description and drawings):	:	N.A.	

			N.A.	
			N.A.	
			N.A.	

Table 1 AIS-007 (Revision 4)

3.2.12.2.	Additional anti-pollution devices, if any (where present and not included under another heading)	:	N.A.	
3.2.12.2.1.	Catalytic converter make and identification	:	N.A.	
3.2.12.2.1.1	Type	:	N.A.	
3.2.12.2.1.2	Number of catalytic converters and elements	:	N.A.	
3.2.12.2.1.3	Dimensions, shape and volume of the catalytic converter(s)	:	N.A.	
3.2.12.2.1.4	Substrate(structure and material)	:	N.A.	
3.2.12.2.1.5	Cell density	:	N.A.	
3.2.12.2.1.6	Type of casing for the catalytic converter(s)	:	N.A.	
3.2.12.2.3	Total charge of precious metal g/vehicle.	:	N.A.	
3.2.12.2.4	Relative concentration (%) of Pt : Rh : Pd	:	N.A.	
3.2.12.2.5	Diagram indicating the arrangement and position of catalyst w.r.t. exhaust manifold.	:	N.A.	
3.2.13	Secondary Air Injection (yes/no) [1]	:	N.A.	
3.2.13.1	Make and identification	:	N.A.	
3.2.14	CO (%) and HC (ppm) content of the exhaust gas (manufacturer's standard)		N.A.	
3.3.	Electric traction motor (yes / no)	:	N.A.	
3.4.	Lubrication system		N.A.	
3.4.1.	Description of system	:	N.A.	
3.4.1.1	Location of oil reservoir (if any)	:	N.A.	
3.4.1.2	Feed system (pump/injection into induction system/mixed with the fuel, etc.)[1]	:	N.A.	
3.4.2.	Lubricant mixed with the fuel		N.A.	
3.4.2.1.	Percentage	:	N.A.	
3.4.3.	Oil cooler: yes/no[1]	:	N.A.	
3.4.3.1.	Drawing(s):	:	N.A.	
	Or	:	N.A.	
3.4.3.1.1.	Make(s)	:	N.A.	
3.4.3.1.2.	Type(s):	:	N.A.	
4.0	**Transmission[8]**			
4.1.	Diagram of transmission system	:	N.A.	

4.2.	Type (mechanical, hydraulic, electrical, etc.)[1]:	:	N.A.	
4.3.	Clutch (type)	:	N.A.	

Table 1 AIS-007 (Revision 4)

4.4.	Gearbox		N.A.	
4.4.1.	Type: automatic/manual[1]	:	N.A.	
4.4.2.	Method of selection:by hand/foot[1]	:	N.A.	
4.4.2.1	Gear shifting pattern	:	N.A.	
4.4.3.	Gear ratios		N.A.	
4.4.3.1	Primary ratio	:	N.A.	
4.4.3.2	Secondary ratio	:	N.A.	
4.4.3.3	Individual and Overall ratios		N.A.	
4.4.3.3.1	First gear	:	N.A.	
4.4.3.3.2	Second gear	:	N.A.	
4.4.3.3.3	Third gear	:	N.A.	
4.4.3.3.4	Fourth gear	:	N.A.	
4.4.3.3.5	Fifth gear	:	N.A.	
4.4.3.3.6	Sixth gear	:	N.A.	
4.4.3.4	Minimum continuously Variable transmission	:	N.A.	
4.4.3.5	Maximum continuously Variable transmission	:	N.A.	
4.4.3.6	Reverse Gear	:	Electrically Switch Operated	
4.5.	Brief description of the ECUs used in the transmission	:	N.A.	
4.6.	Maximum speed of vehicle and gear in which it is reached (in km/h)[9]	:	NA	
4.7.	Speedometer			
4.7.1	Make(s)	:	N.A.	
4.7.2.	Type(s)	:	N.A.	
4.7.3.	Photographs and/or drawings of the complete system	:	N.A.	
4.7.4.	Speed range displayed	:	N.A.	
4.7.5.	Tolerance of the measuring mechanism of the speedometer	:	N.A.	
4.7.6.	Technical constant of the speedometer	:	N.A.	
4.7.7.	Method of operation and description of the drive mechanism	:	N.A.	
4.7.8.	Overall transmission ratio of the drive mechanism or pulse / wheel revolution (in case of digital speedometer)	:	N.A.	

Table 1 AIS-007 (Revision 4)

ICAT/CMVR/E-rickshaw 2014-506

09 FEB 2015

Table : AIS-007 (Revision 4)

5.0	**Suspension**	
5.1	Drawing of suspension arrangement	: NA
5.1.1.	Brief description of the ECUs used in the suspension	: N.A.
5.1.2	Springs front and rear	: N.A.
5.1.3	Anti roll bar	: N.A
5.1.4	Shock Absorbers front and rear	: [illegible]
5.2	Tyres (standard type) (Enclose annexure, if required)	

Tyre	Variant / version	Type	Size designation with speed category symbol and load capacity index	Make (s)	Type Approval Number or BIS license number or identification
Front	-	Tube type	Size 90/90-12 [illegible]	[illegible]	CM/L-[illegible]
Rear	-	Tube type	Size 90/90-12 [illegible]	[illegible]	CM/L-[illegible]
Any other	NA				

5.2.1.	Nominal rolling circumference as per AIS-050	: 1396
5.2.2	Tyre pressures recommended by the manufacturer: kPa	: 250 Kpa
5.2.3	Tyre wheel (rim) combination	: NA
5.2.4	Minimum-speed category symbol compatible with the theoretical maximum design speed of the vehicle	: [illegible]
5.2.5	Minimum load-capacity index with the maximum load on each tyre	: [illegible] Kg
5.2.6	Categories of use compatible for the vehicle	: 2/3 Wheeler
5.3	Wheel rims	Super Star Wheels Pvt Ltd [illegible] Koyo Components India [illegible]
5.3.1	Designation (front and rear)	: 2.15x12
5.3.2	Type (Alloy / Sheet metal / spoke)	: Sheet metal
5.3.3	Maximum design loading capacity	: [illegible] kg
5.3.4	Approval mark	: SSWPL [illegible] KOYO [illegible]
6.0	**Steering**	
6.1	Steering gear and control	: NA
6.1.1	Type of gear	: NA
6.1.2	Brief description of the ECUs used in the steering system	: NA

Manufacturer [illegible] Vehicle name [illegible] Document No [illegible] Test Agency Signature Name

For Kuku Automotives

Partner

Name: [illegible] Sheet No [illegible] Date [illegible] Designation [illegible]

International Centre for Automotive Technology

S. K. Kalia
Sr. General Manager

7.0	**Braking**			
7.1	Diagram of braking devices	:	KG-BP-001	
7.2	Front and rear brakes, disc and/or drum (1) and their numbers	:	Drum (3Nos)	

Table 1 AIS-007 (Revision 4)

7.2.1.	Make(s)	:	Front:- ASK Automotives Pvt Ltd, Plot no 28, Sector-4, IMT Manesar, Gurgaon Haryana. Rear:- Changzhou Xinrun Pipe Fittings Co Ltd., Wujin district of Luoyang town, Changzhou Jiangsu province. east west, jia number 150	
7.2.2.	Type(s)	:	Drum (brake pad)	
7.3	Drawing of parts of the brake system	:	Drawing no. Front:- KG-FBRS-001 Rear:- KG-RBRS-001	
7.3.1	Shoes and/or pads (1)	:	Brake Shoes	
7.3.2	Linings and/or pads (Indicate make, grade of material or identification mark) (1)	:	Linings Front:- ASK- D11 Rear:- XINRUN- BDM1418	
7.3.3	Brake levers and/or pedals(1)	:	Front -lever operated RHS Handle Bar Rear -Foot pedal operated	
7.3.4	Hydraulic reservoirs (where applicable)	:	N.A.	
7.4	Other devices (parking brake, etc.) (where applicable): drawing and description	:	Mechanical, Hand lever operated acting on rear two wheels	
7.5	Brief description of the ECUs used in the braking system	:	N.A.	
7.6	Brake hose – make(s) and Type Approval Number or BIS license number or identification **(If Applicable)**:	:	N.A.	
7.7	Brake fluid – make(s) **(If Applicable)**	:	N.A.	
7.8	Control cables (in case of 2 wheelers below 50cc)		N.A.	
8.0	**Lighting and light-signaling devices**			
8.1	List of all devices (Enclose annexure, if required)	:		

ICAT/CMVR/E-rickshaw 2014-506[illegible] 09 FEB 2015

Device	Variant / Version	Number	Make	Type Approval Number	Color	Tell-tale
Head Lamp High beam	115LM	1	[illegible]	TAC - C91336	White	Blue
Head Lamp dipped beam	115LM	1	Lumax	TAC - C91336	White	NA
Front position light	ID- 35632M80 1H0L, 35612M80 1H0R	2	[illegible]	TAC - C90904	White	[illegible]
Tail - stop light	NEO 541A	2	Neolite	TAC - C80122	Red	NA
Number plate illumination light	01090040	1	Lumax	TAC - C91263	White	NA
Direction indicator lights, front and rear	ID- 35632M80 1H0L 35612M80 1H0R NEO 541A	Rear 2 Front 2	Neolite Lumax	TAC - C80122 TAC - C90904	Amber	Green
Parking lights	ID- 35632M80 1H0L 35612M80 1H0R NEO 541A	4	Lumax Neolite	TAC - C90904 TAC - C80122	White Red	NA
Reversing light	NEO 541A	2	Neolite	TAC - C80122	White	NA
Hazard warning lamp	ID- 35632M80 1H0L 35612M80 1H0R NEO 541A	4	Lumax Neolite	TAC - C90901 TAC - C80122	Amber	Green

Manufacturer: [illegible] Signature: For Kuku Automotives Partner
Document No.: [illegible]
Date: [illegible]

International Centre for Automotive Technology
Test Agency Signature Name
S. K. Kalla
Sr. General Manager
Page No. [illegible]

ICAT/CMVR/E-rickshaw 2014-5063

09 FEB 2015

Table 1 AIS-007 (Revision 4)

8.1.1	Maximum intensity of Head lamp	:	NA
8.2	Diagram showing the location of the lighting and light-signaling devices on vehicle with relevant dimensions (see AIS-009)	:	Attached Drawing No. KA-LP-[illegible]
8.3	Hazard warning lamps (where applicable)	:	NA
8.4	Additional requirements relating to special vehicles	:	N.A.
8.5	Brief description of the ECUs used in the lighting system and in the light-signaling system	:	N.A.
8.6	List of all bulbs (Enclose annexure if required)		

Bulb used for	Variant Version	number	Make	Type Approval Number	colour	Designation as per AIS
Head lamp high beam / low beam	12V, 35/35	1	Phoenix	C80042	white	HS1
Front position light	12V 5w	2	[illegible]	A92371	White	[illegible]
Tail / stop light	12V 21/5W	2	RAVI	A92679	[illegible]	[illegible]
Number plate illumination light	12V 5w	1	OSRAM	C90702	white	[illegible]
Direction indicator lights	12V 21W	4	RAVI	A92680	White	[illegible]
Parking light						
Reversing light (s)	12V 21W	2	RAVI	A92680	White	[illegible]
Hazard warning lamp						

9.0	Equipment		
9.1	Coupling devices (where applicable)		N.A.
9.1.1	Type: hook/ring/other[1]	:	N.A.
9.1.2	Photograph and/or drawings showing the position and the construction of the coupling devices	:	N.A.
9.2	Arrangement and identification of controls, tell-tales and indicators (as per IS 14415 or SS 12.1 as applicable)		N.A.
9.2.1	Photographs and/or drawings of the arrangement of the symbols, controls, tell-tales and indicators	:	N.A.

For Kuku Automotives

Partner

International Centre for Automotive Technology

S. K. Kalla

Sr. General Manager

9.3	Statutory inscriptions		N.A.		
9.3.1	Photographs and/or drawings showing the location of VIN.	:	Drawing No. KG-VD-001		
9.3.2	Height of VIN characters.	:	5 mm		
9.4	Device(s) to protect against unauthorized use		N.A.		
9.4.1	Type of device(s)	:	N.A.		
9.4.2	Summary description of device(s) used	:	N.A.		
9.5	Audible warning device(s)	:			
9.5.1	Summary description of device(s) used such as horn and their purpose	:	Horn 12V DC 2A		
9.5.2	Make(s)	:	M/s Prakant Electronics PVT. LTD.		
9.5.3	Type(s)	:	12V DC 2A		
9.5.4	Type-approval Number / BIS license number:	:	CD1823		
9.5.5	Drawing(s) showing the location of the audible warning device(s) in relation to the structure of the vehicle	:	Drawing No. KG-HP-001		
9.5.6	Details of the method of attachment, including the part of the vehicle structure to which the audible warning device(s) is (are) attached	:	Mounted in front below head lamp		
10.0	Rear-view mirrors (please provide the following information for each rear-view mirror)				
10.1	Make and Type Approval Number or Identification	:	M/S Fiem Industries Pvt. Ltd.	A91637	FM-556-00
10.2	Variant	:	N.A.		
10.3	Drawing(s) showing the location of the rear-view mirror(s) in relation to the structure of the vehicle	:	KG-MP-001		
10.4	Precise information concerning the type of attachment, including that part of the vehicle structure to which the rear-view mirror is attached	:	Mounted on handle bar		
11	Provision for Devices for rider and pillion				
11.1	Hand-hold for a passenger(s)	:	Provided , 4 numbers		
11.1.1	Type: strap and/or handle(1)	:	Handle		

ICAT/CMVR/E-rickshaw 2014=506

Table 1 AIS-007 (Revision 4)

09 FEB 2015

11.1.2	Photographs and/or drawings showing the location	:		
11.2.	Foot rest for rider and pillion	:	Body work platform	
11.3	Protective device covering half of the rear wheel.	:	By Body	
12.0	Any other features manufacturer desires to declare		Molded Hood Top	
	INFORMATION RELATING SOLELY TO L5 CATEGORY VEHICLES			
1.0	**Dimensions and weights** (in mm and kg) (where necessary, refer to drawings)			
1.1.	Dimensions to be complied with when building un-bodied chassis	:	N.A.	
1.1.1.	Length	:	2730 mm	
1.1.2.	Width	:	998 mm	
1.1.3.	Unladen height	:	1740 mm	
1.1.4.	Front overhang	:	Nil	
1.1.5.	Rear overhang	:	300 mm	
1.2.	Weights			
1.2.1.	Maximum payload declared by manufacturer	:	400Kg	
2.0	**Equipment**			
2.1	Left blank	:	N.A.	
2.2	Windscreen and other glazing	:	N.A.	
2.2.1.	Windscreen	:	N.A.	
2.2.1.1	Make and Materials used	:	N.A.	
2.2.1.2	Type Approval Number / BIS license number:	:	N.A.	
2.2.2	Other glazing	:	N.A.	
2.2.2.1	Make and Materials used	:	N.A.	
2.2.2.2	Type Approval Number / BIS license number:	:	N.A.	
2.3	Windscreen wiper(s)	:	N.A.	
2.3.1	Detailed technical description (with photographs or drawings) (see AIS-045):	:	N.A.	
2.4	Seats	:		
2.4.1	Number	:	3	
2.4.2	Location	:	One in Front and Two at the Rear	
2.4.3	Coordinates or drawing of the R point declared by manufacturer	:	N.A.	

International Centre for Automotive Technology

Manufacturer : KUKU Automotives	Document No : KA/TA/T1014/7	Test Agency :	Cert No :
Signature : Kelly		Signature :	
Name : Kelly Tanwar	Sheet No :	Name : S. K. Kalia	
Designation : Marketing Head	Date : 03/12/2014	Designation : Sr. General Manager	Page No: 14 of 15

For Kuku Automotives Partner

Table 1 AIS-007 (Revision 4)

2.4.3.1	Driving seat	:	Single	
2.4.4	Intended seat-back inclination	:	Front-Straight , Rear- 6°	
2.4.4.1	Driving seat	:	Straight	

Footnotes: -

1) State as appropriate
2) Where a device has been component type-approved, the description may be replaced by a reference to that component type-approval. Likewise, no description is needed where a component's structure is clear from the diagrams or drawings attached to the certificate. State the numbers of the corresponding Annexes for each heading where photographs and drawings must be attached.

   Where used, means of identification may appear only on vehicles, separate technical units or components falling within the scope of the AIS / IS governing components type-approval.
3) Classification in accordance with AIS-053.
4) Maximum payload declared by the manufacturer: - load obtained by subtracting the weight defined in 2.2, from the mass defined in 2.3.
5) The mass of the rider is taken to be a round figure of 75 kg.
6) This figure should be to the nearest tenth of a millimeter.
7) This value should be calculated with pi = 3,1416 to the nearest cm^3
8) The information requested should be supplied for a possible variant.
9) A tolerance of 5 % is permitted provided that the limit values pursuant to AIS-017 are not exceeded.
10) Where unconventional engines and systems are fitted, information equivalent to that referred under this heading must be supplied by their manufacturer.
11) In case of CNG / LPG vehicles the additional details in Table 21 format shall be applicable. In case BOV, additional details as per table 13 shall be applicable.

International Centre for Automotive Technology

Manufacturer : KUKI Automotives	Document No : KA/TA/11/13	Test Agency :	Case No :
Signature : Shelly Tanwar		Signature :	
Name : Shelly Tanwar	Sheet No :	Name : S. K. Kalia	
Designation : Marketing Head	Date : 03/12/2014	Designation : Sr. General Manager	Page No : 15 of 15

For Kuki Automotives Limited
Partner

REAR VIEW MIRROR POSITION LAYOUT

ICAT/CMVR/E-rickshaw 2014=506

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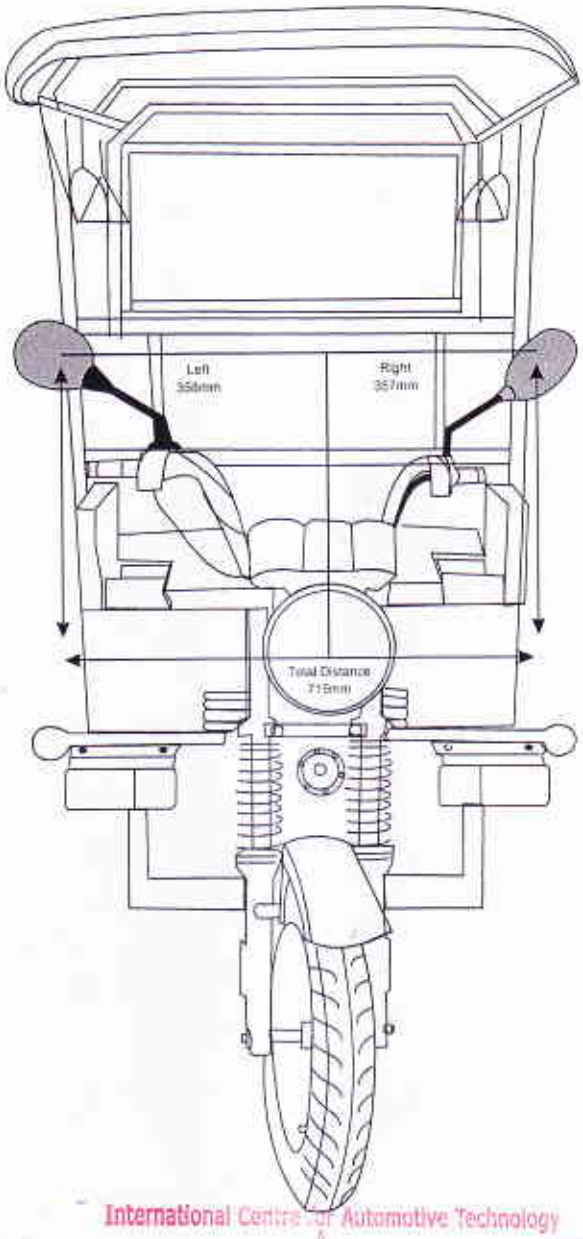
MIRROR View



International Centre for Automotive Technology

S. K. Kalia
Sr. General Manager

Mirror Make :- Fiem Industries Ltd ID:- FM-556 00 L TAC No. A91637

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

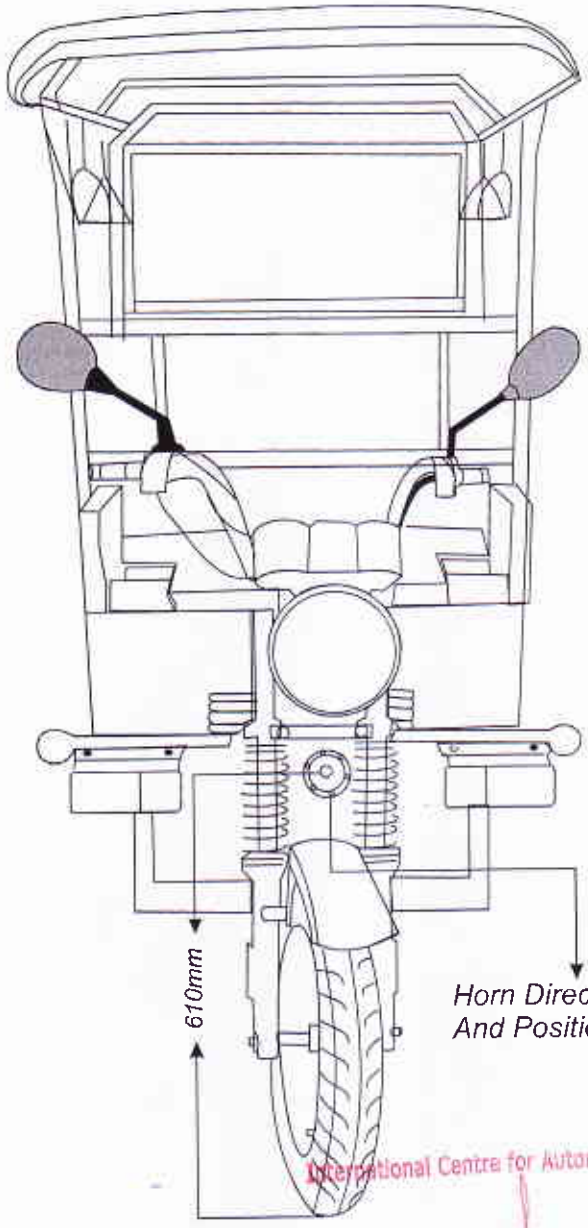
QTY.:-1	MATERIAL:	DATE:- 05/12/2014
SHEET :-1/1	Model Name - KUKU Greens	
SCALE: 1:1	Part Name-Rear View Mirror Installation	
	Drawing No. :- KG - MP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN
DRAWN BY:	SHELLY TANWAR	Shelly
APPROVED BY:	SANJAY YADAV	

For Kuku Automotives

Partner

HORN - INSTALLATION

Horn Installation



QTY:-1	MATERIAL:	DATE:- 05/12/2014
SHEET :-1/1	Model Name - KUKU Greens	
SCALE: 1:1	Part Name-HORN INSTALLATION	
	Drawing No. :- KG - HP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN.
DRAWN BY:	SHELLY TANWAR	Shelly
APPROVED BY:	SANJAY YADAV	

For Kuku Automotives

Partner

Horn Make:- PRAKANT
ID:- E08 0 000
TAC No:- CD1823

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

KUKU AUTOMOTIVES	Model Name - KUKU Greens	QTY:-1	Drawing No. KG - FBRS - 001	DRAWN BY SHELLY TANWAR	SIGN. Shelly Tanwar	
	Part Name- Brake Shoes Dimensions	SCALE: 1:1	DATE 05/12/2014	APPROVED BY SANJAY YADAV	SIGN.	SHEET :-1/1

For Kuku Automotives Partner

ICAT/CMVR/E-rickshaw /2014=506

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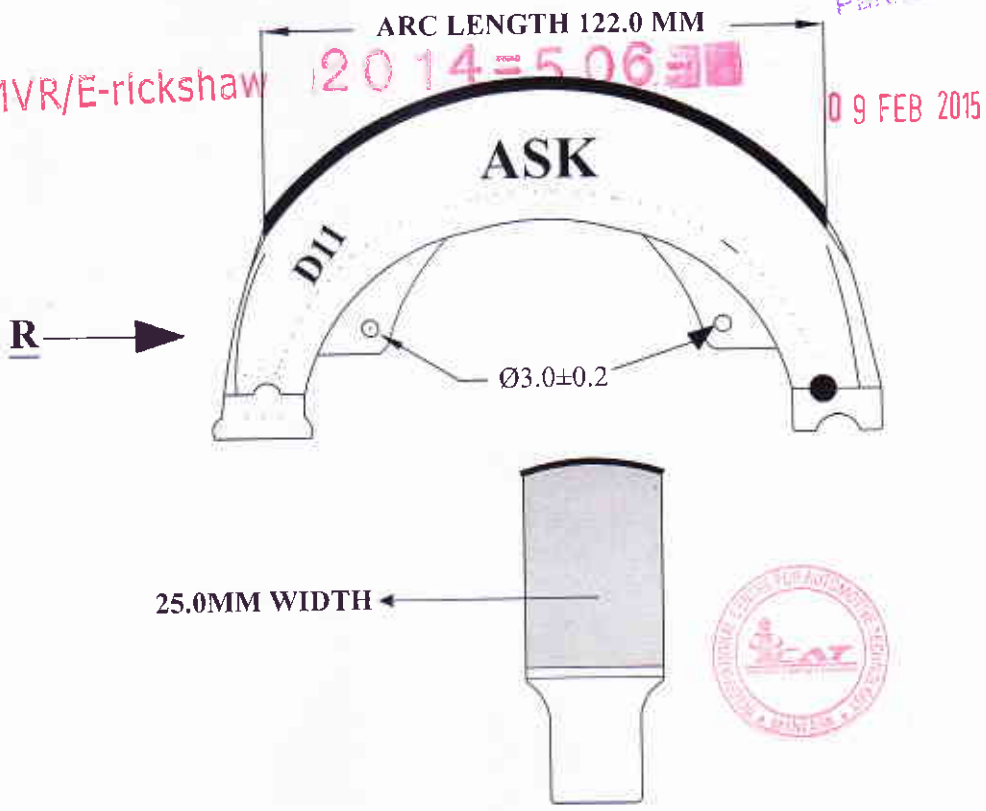
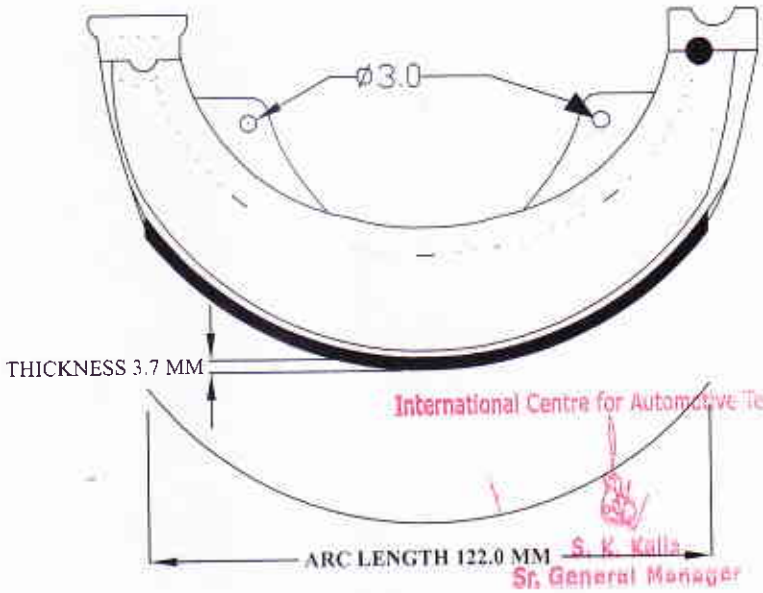


FRONT VIEW
DIRECTION 'R'



International Centre for Automotive Technology
S. K. Kalia
Sr. General Manager

NOTE : -
ALL PARAMETERS ARE IN MM UNLESS OR OTHERWISE STATED.

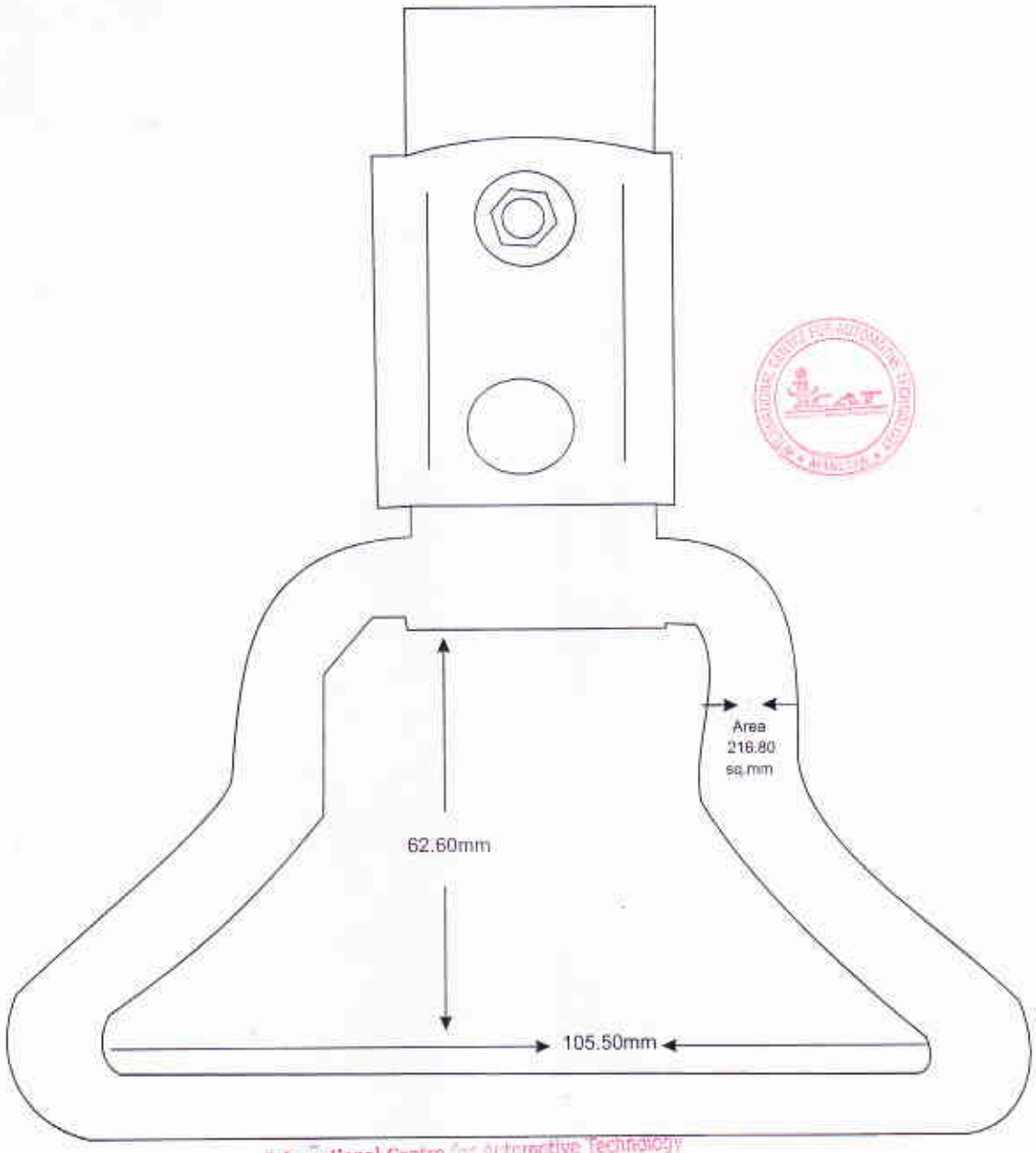
MAKE COMPANY NAME :- ASK AUTOMOTIVE PVT. LTD.
Plot No. 28, Sector-4, IMT Manesar, Gurgaon (Haryana) - 122050 INDIA

DIMENSIONAL DRAWING FOR HAND HOLD

2014=506

09 FEB 2015

ICAT/CMVR/E-rickshaw



International Centre for Automotive Technology

S. K. Kalia
Sr. General Manager

QTY :-1	MATERIAL Poly Propellene	DATE:- 05/12/2014
SHEET :-1/1	Model Name - KUKU Greens	
Make :- Auto Wire	Part Name - HAND HOLD	
SCALE: 1:1	Drawing No. :- KG - HH - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN.
DRAWN BY:	SHELLY TANWAR	Shelly Tanwar
APPROVED BY:	SANJAY YADAV	

NOTES:-
1. All Dimensions in mm
2. Tolerance ± 1.00 mm

For Kuku Automotives

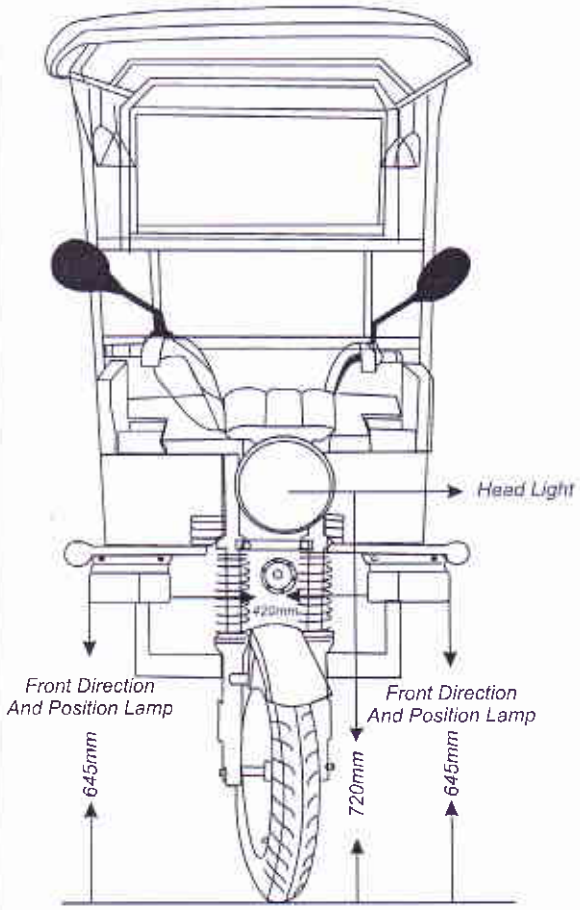
Partner

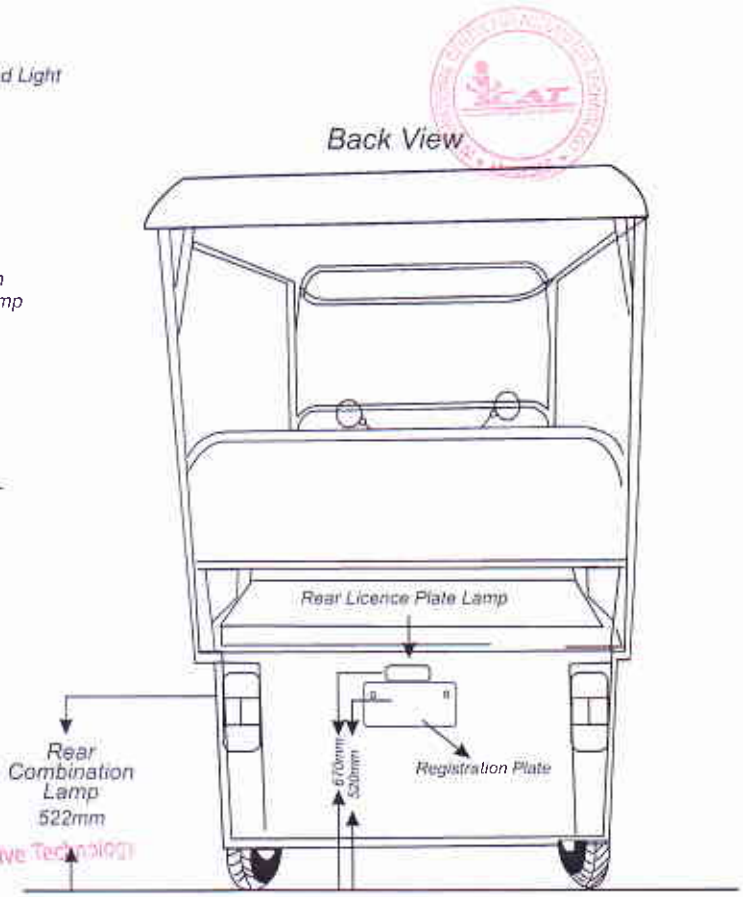
LIGHTING INSTALLATION

09 FEB 2015

ICAT/CMVR/E-rickshaw 2014=506

Front Side Lighting Installation





Rear Side Lighting Installation

Head Light:- Make:- Lumax ID:- 2091-02-00 TAC No.:- C91336	**Rear Combination lamp** Make:- NEOLITE ID:- NEO541A TAC No:- C80322	**Front Combination Lamp** Make:- Lumax ID:- 35632M80110L LH ID:- 35612M80110R RH TAC No:- C90904	**Registration Plate Lamp** Make:- Lumax ID:- 01090040 TAC No:- C91263

QTY. -1	MATERIAL:	DATE:- 05/12/2014
SHEET -1/1	Model Name - KUKU Greens	
SCALE: 1:1	Part Name-LIGHTING INSTALLATION	
	Drawing No. :- KG - LP - 001	

KUKU AUTOMOTIVES

	NAME	SIGN
DRAWN BY:	SHELLY TANWAR	
APPROVED BY:	SANJAY YADAV	

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. **ALL DIMENSIONS** ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

For Kuku Automotives
Partner

Brake Position Layout

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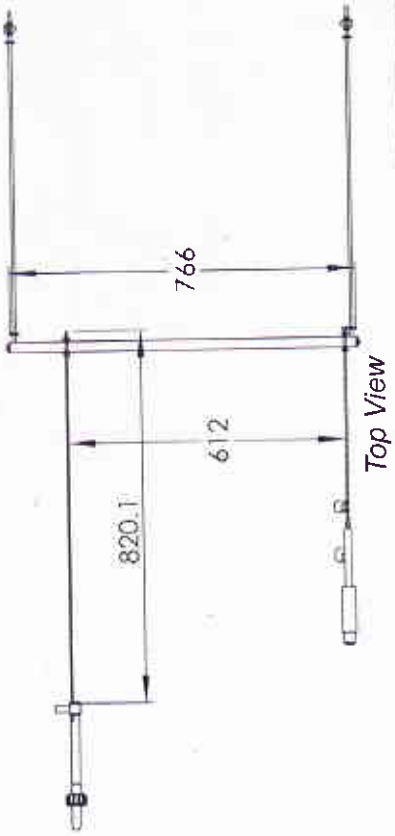
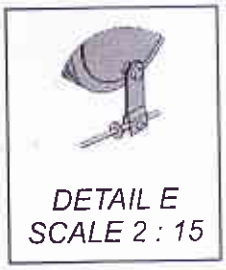
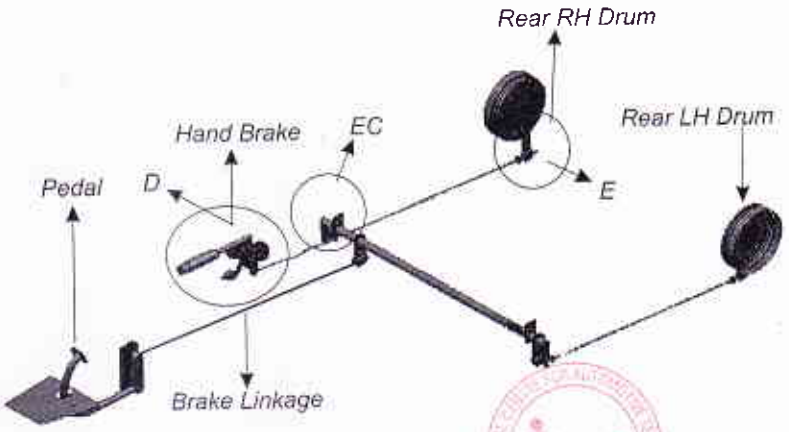
ICAT/CMVR/E-rickshaw 2014-506

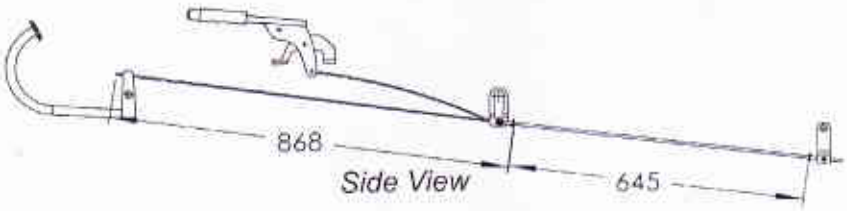


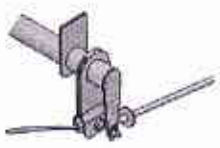


DETAIL E
SCALE 2 : 15



Isometric View





DETAIL C
SCALE 2 : 15

DETAIL D
SCALE 2 : 15

International Centre for Automotive Technology

S. K. Kalia
Sr. General Manager

QTY. -1	MATERIAL	DATE:- 05/12/2014
SHEET. -1/1	Model Name - KUKU Greens	
SCALE 1:1	Part Name - BRAKE POSITION	
	Drawing No. - KG - BP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN
DRAWN BY:	SHELLY TANWAR	Shelly Tanwar
APPROVED BY:	SANJAY YADAV	

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
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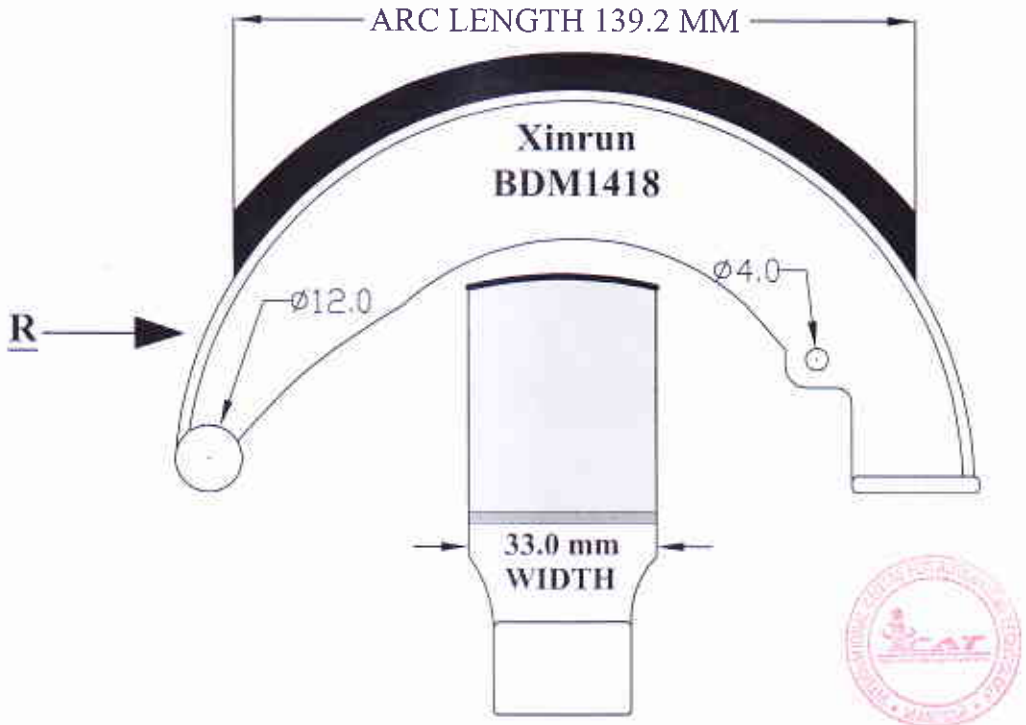
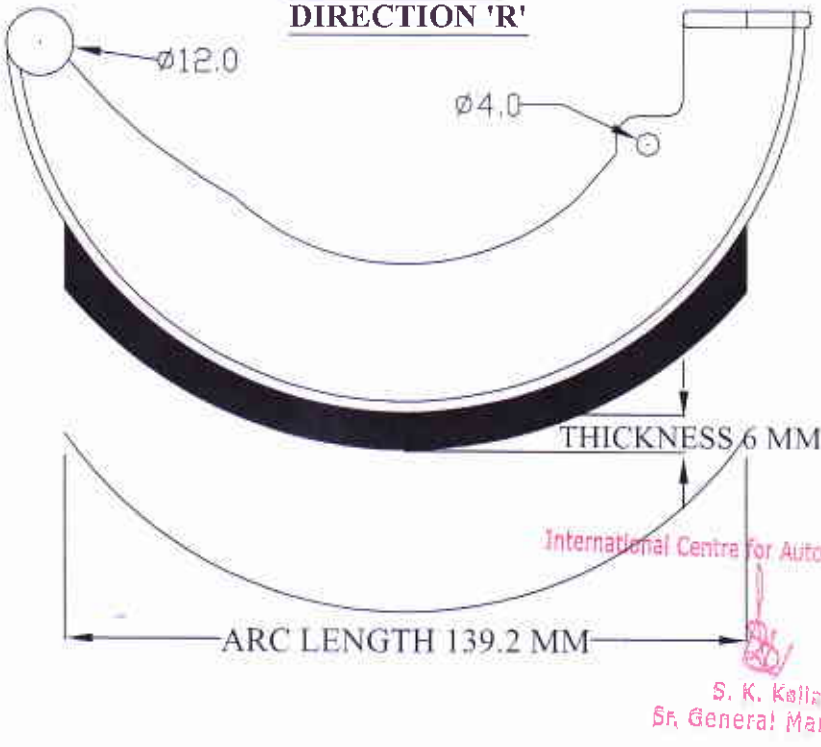
For Kuku Automotives

Partner

KUKU AUTOMOTIVES	Model Name - KUKU Greens	QTY.-1	Drawing No. KG - RBRS - 001	DRAWN BY SHELLY TANWAR	SIGN.	
	Part Name- Brake Shoes Dimensions	SCALE: 1:1	DATE 05/12/2014	APPROVED BY SANJAY YADAV	SIGN.	SHEET :-1/1



FRONT VIEW
DIRECTION 'R'



NOTE : -
ALL PARAMETERS ARE IN MM UNLESS OR OTHERWISE STATED.

MAKE COMPANY NAME :- CHANGZHOU XINRUN PIPE FITTINGS CO. LTD.
ADDRESS : WUJIN DISTRICT OF LUOYANG TOWN, CHANGZHOU,
JIANGSU PROVINCE, EAST WEST JIA NUMBER 150

Innovation • Service • Excellence

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

[A Division of NATRiP Implementation Society (NATIS), Govt. of India]

C	T	0	V	K	0014

Date : 22/01/2015

PERFORMANCE TEST (CMVR) REPORT

1	Customer	M/s Kuku Automotives
2	Customer's Address	A-5 Yudistar Marg, C-Scheme Jaipur, RJ 302001
3	Tech. specs no. & date CSC Doc. and date Docket Id	KA/TA/T1/14.7 Date -03/12/2014 KA/TA/T7/14.8 Date -03/12/2014 CSC/J2/506 Dt - 05/12/2014 CVTNBKUKUJ12T37209
4	Vehicle Tested a) Model b) Type c) Category d) Manufacturer	 **KUKU Greens** **3-Wheeler** **E-Rickshaw** **M/s Kuku Automotives**
5	Test Requirement	Compliance to the requirements of Central Motor Vehicle Rules (CMVR) 1989 as amended up to date as notified in G.S.R 709(E) Dt. 08/10/2014 and SO 2590 Dt. 08/10/2014
6	Test Procedure	As per respective standards.
7	Place of Issue	Manesar
8	Total No. of pages	7 + 3 Dwg

Format No : ICAT/VEL/F/22/03

Remarks : Refer Page 7 of 7 of this report for disclaimer clauses.

Prepared By	Checked By		Department Head	
				Page 1 of 7 + 3 Dwg
Gurkaran Singh	**Keshav Kr. Tripathi**		**U.K. Bhat**	

Office Address Plot No.-26, Sector-3, HSIIDC, IMT-Manesar, Gurgaon-122050. Haryana (India)
Phone : 0124-4586111, Fax : +91-124-2290005 E-mail: team@icat.in, Website : www.icat.in

C	T	0	V	K	0014	Date : 22/01/2015

PERFORMANCE TEST (CMVR) REPORT
KUKU Greens

Motor No.:	000520140621152	Manufacturer:	M/s Kuku Automotives
Chassis No.:	MC7KGCB11R14J0001	Fuel:	Battery Operated
Test Site:	Manesar	Vehicle specification	KA/TA/T1/14.7 Date -03/12/2014
		Reference No. & Date:	KA/TA/T7/14.8 Date -03/12/2014

Rule No.	PARAMETER	TEST RESULTS						
96	**Brake Test (IS:14664-1999) Dynamic Test - Front**	**Initial Speed (km/h)**	**Control Force (kg)**	**Stopping Distance (m)**		**MFDD (m/s^2)**		Service Brake Type - **Mechanical,Expandable type brake shoe** Front brake - **Drum, Operated by RHS Handle lever** Make of Lining - **M/s. ASK Automotives Pvt. Ltd.(ID : D11)** Dimensions (mm) - **122x25x4** Rear brake - **Drum, Foot Pedal operated** Make of Lining - **M/s. Changzhou Xinrun Pipe Fittings Co. Ltd. (ID : BDM1418)** Dimensions (mm) - **139.2x33x6** Tyres - **All Birla 90/90-12 54J** Parking Brake Type of Brake - **Mechanical, Hand lever operated acting on rear two wheels** **Refer Drawing No. - KG-BP-001, KG-FBRS-001 and KG-RBRS-001 for brake system layout and brake liner dimensions.** * Conducted after type F test as per Clause 13.1 & 13.3.1 of IS14664 :1999 # Test Conducted as per Clause 12.10 of IS 14664:1999 **Test conducted for introduction of new model. First time Type Approval.**
				Observed	**Limit**	**Observed**	**Limit**	
	Laden#	--	--	--	--	--	--	
	Unladen#	--	--	--	--	--	--	
	Hot Performance	**16.9**	**21.0**	**10.6**	16.6	**1.1**	0.7*	
	Brake Test (IS:14664-1999) Dynamic Test - Rear	**Initial Speed (km/h)**	**Control Force (kg)**	**Stopping Distance (m)**		**MFDD (m/s^2)**		
				Observed	**Limit**	**Observed**	**Limit**	
	Laden	**19.4**	**36.9**	**4.8**	7.3	**4.1**	2.7	
	Unladen	**19.4**	**36.9**	**4.0**	7.7	**5.0**	2.5	
	Hot Performance	**16.8**	**43.1**	**3.2**	4.5	**3.5**	2.9*	
	Brake Test (IS:14664-1999) Dynamic Test - Both Brake	**Initial Speed (km/h)**	**Control Force (kg)**	**Stopping Distance (m)**		**MFDD (m/s^2)**		
				Observed	**Limit**	**Observed**	**Limit**	
	Laden	**19.4**	**40.8**	**4.3**	5.2	**4.6**	4.4	
	Unladen	**19.4**	**32.1**	**3.8**	5.2	**5.3**	4.4	
	Brake Test (IS:14664-1999) Parking Brake	**Initial Speed (km/h)**	**Control Force (kg)**	**Stopping Distance (m)**		**MFDD (m/s^2)**		
				Observed	**Limit**	**Observed**	**Limit**	
	Dynamic Parking Brake	**19.4**	**17.5**	**10.7**	17.1	**2.0**	1.5	
	Static Parking Brake	Could hold the laden vehicle upwards & downwards, with G.V.W **680.0 kg** on 18 % gradient with force of **23.78 kg.**						

Format No.: ICAT/VEL/F/03/01

Prepared By	Checked By		Department Head	
Gurkaran Singh	Keshav Kr. Tripathi		U.K. Bhat	Page 2 of 7 + 3 Dwg

C	T	0	V	K	0014	Date : 22/01/2015

PERFORMANCE TEST (CMVR) REPORT
KUKU Greens

Motor No.:	000520140621152	Manufacturer:	M/s Kuku Automotives
Chassis No.:	MC7KGCB11R14J0001	Fuel:	Battery Operated
Test Site:	Manesar	Vehicle specification	KA/TA/T1/14.7 Date -03/12/2014
		Reference No. & Date:	KA/TA/T7/14.8 Date -03/12/2014

Rule No.	PARAMETER			TEST RESULTS
124 (1) (26)	**Protection against water effect (AIS: 038 (Cl. No. 3.5))**			Motor Make : **M/s UNITE Motor Company China (ID: BM1418)** Sr. No.: **000520140621152** Type: **Brush Less DC Motor** Battery Make : **M/s Naveen Batteries(ID:-DNCSJ14B-479)** Type: **Lead Acid Traction Battery** Model: **ANCHOR NB800** Voltage: **48V(12V x 4)** **Test conducted for introduction of new model. First time Type Approval.**
	Requirement	**Observation**	**Remark**	
	The tests as per 3.5.1, 3.5.2 and 3.5.3 shall be performed. After each exposure (vehicle still wet), the vehicle shall then comply with the insulation resistance test, at normal environmental condition, but keeping the power equipment connected to the traction battery (main switch closed), with requirement of at least 100 Ω/V	**Complies with the requirement**		
	Washing (AIS: 038 (Cl. No. 3.5.1))			
	This test is intended to normal washing of battery operated vehicle, but not specific cleaning using high water pressure or underbody washing. The critical areas of the vehicle regarding this test are border lines i.e. a a seal of two parts as flaps, glass seals, outline of opening parts, outline of front grills, seals of lamps. The test uses a hose nozzle according to IPX5 as specified in IEC 60529. Using fresh water with a flow rate of 12.5 lpm, all borderlines shall be exposed and followed in all directions with the water stream at a speed rate of 0.1 m/s, keeping a distance of 3 m between the nozzle aperture and the borderline.	**The insulation resistance after washing is 239.1 Ω/V**	**Complies with the requirement**	

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Gurkaran Singh	Keshav Kr. Tripathi		U.K. Bhat	Page 3 of 7 + 3 Dwg

C	T	0	V	K	0014	Date : 22/01/2015

PERFORMANCE TEST (CMVR) REPORT
KUKU Greens

Motor No.:	000520140621152	Manufacturer:	M/s Kuku Automotives
Chassis No.:	MC7KGCB11R14J0001	Fuel:	Battery Operated
Test Site:	Manesar	Vehicle specification Reference No. & Date:	KA/TA/T1/14.7 Date -03/12/2014 KA/TA/T7/14.8 Date -03/12/2014

Rule No.	PARAMETER			TEST RESULTS
124 (1) (26)	**Flooding (AIS: 038 (Cl. No. 3.5.2))**			**Test conducted for introduction of new model. First time Type Approval.**
	Requirement	**Observation**	**Remark**	
	This test is intended to simulate the driving of a battery operated vehicle on flooded streets or in water puddles. The vehicle shall be driven in a wade pool, 10cm in depth, over a distance of 500m as a speed of 20 km/h resulting in a time of approximately 1.5 min. If the wade pool used is less than 500m in length, so that it has to be driven several times, the total time including the periods outside the wade pool shall be less than 10 min.	**The insulation resistance after flooding is 133.6 Ω/V**	**Complies with the requirement**	
	Heavy Rainstorm (AIS: 038 (Cl. No. 3.5.3))			
	This test is intended to simulate a sudden heavy rainstorm e.g. a thunderstorm, when opening parts especially to access to the passenger, load and motor compartment are open except those requiring one more tools. This test uses a spray nozzle according to IPX 3 as specified in IEC 60529. Using fresh water with a flow rate of 10 lpm, all the surface with normally open opening parts shall be exposed for 5 min, possibly through a regular movement of spray nozzle.	**The insulation resistance after heavy rainstorm is 2391.7 Ω/V**	**Complies with the requirement**	

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C	T	0	V	K	0014	Date : 22/01/2015

PERFORMANCE TEST (CMVR) REPORT
KUKU Greens

Motor No.:	000520140621152	Manufacturer:	M/s Kuku Automotives
Chassis No.:	MC7KGCB11R14J0001	Fuel:	Battery Operated
Test Site:	Manesar	Vehicle specification	KA/TA/T1/14.7 Date -03/12/2014
		Reference No. & Date:	KA/TA/T7/14.8 Date -03/12/2014

Rule No.	PARAMETER	TEST RESULTS		
---	**Weight Measurement (IS: 11825-1986)**			Vehicle Dimensions Length(mm) - **2730** Width(mm) - **998** Height(mm) - **1740**
	Unladen	Measured	Specified	
	FAW, kg	**61**	60.0	
	RAW, kg	**237**	240.0	
	Total Weight, kg	**298**	300.0	
	Laden			
	FAW, kg	**200**	200.0	
	RAW, kg	**480**	480.0	
	Total Weight, kg	**680**	680.0	Format No. : ICAT/VEL/F/12/01

Remarks: The vehicle meets the requirement of above mentioned CMV Rules applicable as per the G.S.R. 709(E) Dt. 8/10/2014 and SO 2590 Dt. 8/10/2014

Prepared By	Checked By		Department Head	
				Page 5 of 7 + 3 Dwg
Gurkaran Singh	**Keshav Kr. Tripathi**		**U.K. Bhat**	

C	T	0	V	K	0014	Date : 22/01/2015

PERFORMANCE TEST (CMVR) REPORT
KUKU Greens

Motor No.:	000520140621152	Manufacturer:	M/s Kuku Automotives
Chassis No.:	MC7KGCB11R14J0001	Fuel:	Battery Operated
Test Site:	Manesar	Vehicle specification	KA/TA/T1/14.7 Date -03/12/2014
		Reference No. & Date:	KA/TA/T7/14.8 Date -03/12/2014

Photographs

Front View

Rear View

Right Hand View

Left Hand View

Prepared By	Checked By		Department Head	
Gurkaran Singh	Keshav Kr. Tripathi		U.K. Bhat	Page 6 of 7 + 3 Dwg

C	T	0	V	K	0014

Date : 22/01/2015

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The appropriate local court at Gurgaon shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.

Format No : ICAT/VEL/F/52/00

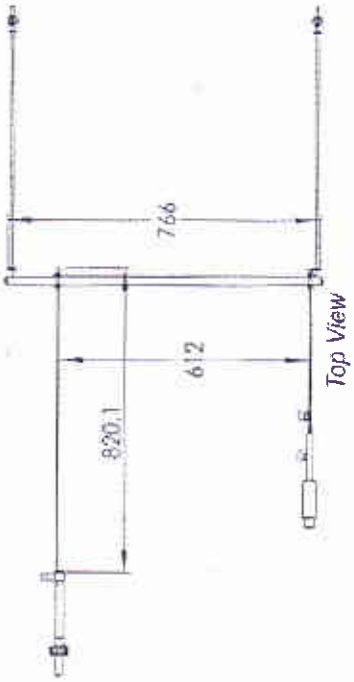
Prepared By	Checked By		Department Head	
Gurkaran Singh	Keshav Kr. Tripathi		U.K. Bhat	Page 7 of 7 + 3 Dwg

C	T	0	V	K	0014

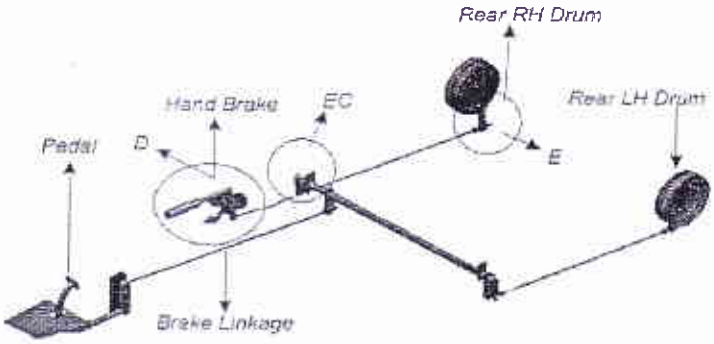
Date : 22/01/2015

Drawing No.01

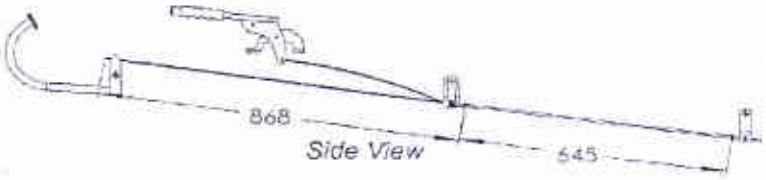
Brake Position Layout

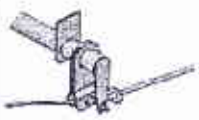


DETAIL E
SCALE 2 : 15



Isometric View





DETAIL C
SCALE 2 : 15

DETAIL D
SCALE 2 : 15

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

QTY : 1	MATERIAL :	DATE : 22/12/2014
SHEET - 1/1	Model Name - KUKU Shakti	
SCALE 1:1	Part Name - BRAKE POSITION	
	Drawing No. - KG - BP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN
DRAWN BY	SHELLY TANWAR	
APPROVED BY	SANJAY YADAV	

For Kuku Automotives

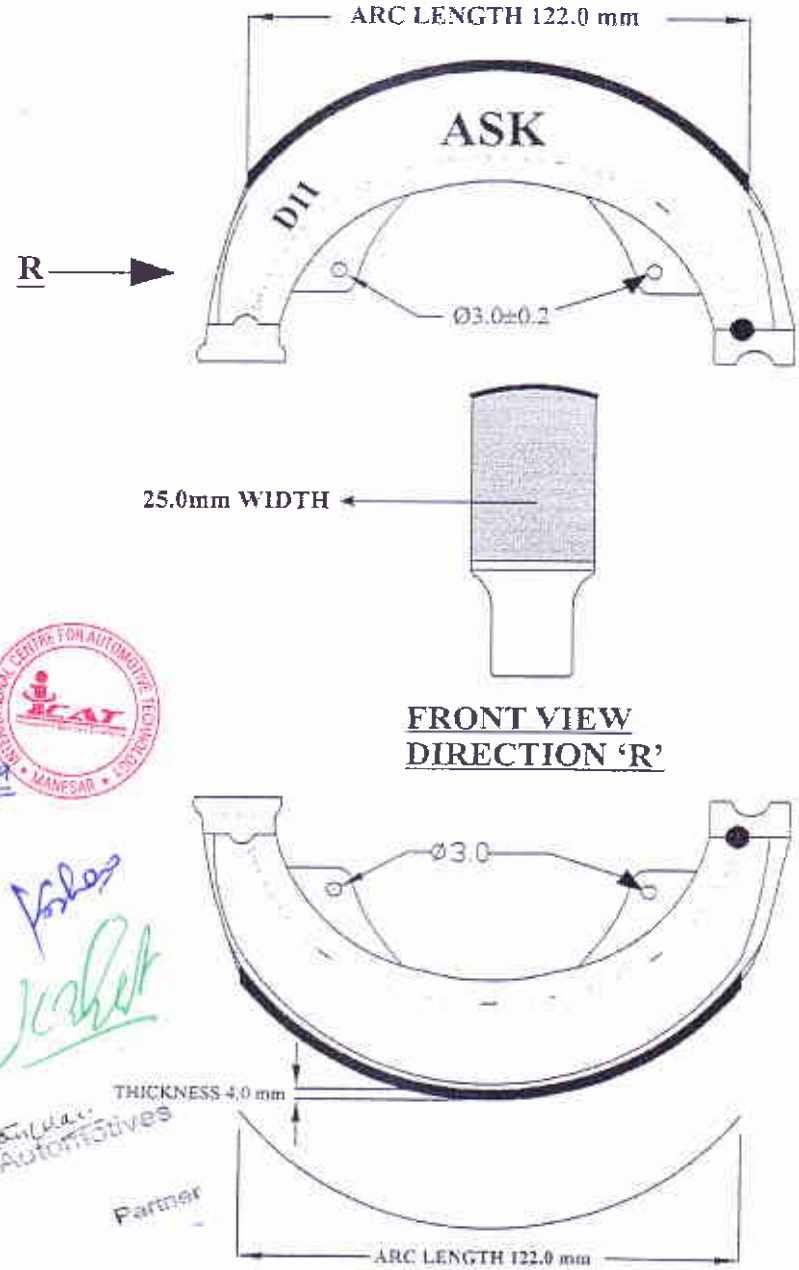
Partner

C	T	0	V	K	0014

Date : 22/01/2015

Drawing No.02

KUKU AUTOMOTIVES	Model Name :- KUKU Grezzi	QTY.:-1	Drawing No. KG - FBBS - 001	DRAWN BY SHELLY TANWAR	SIGN.	
	Part Name:- Brake Shoes Dimensions	SCALE: 1:1	DATE 08/12/2014	APPROVED BY SANJAY YADAV	SIGN.	SHEET 1 of 1



INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY ICAT MANESAR

For Kuku Automotives

Partner

Note : -
All Parameters Are In mm Unless Or Otherwise Stated.

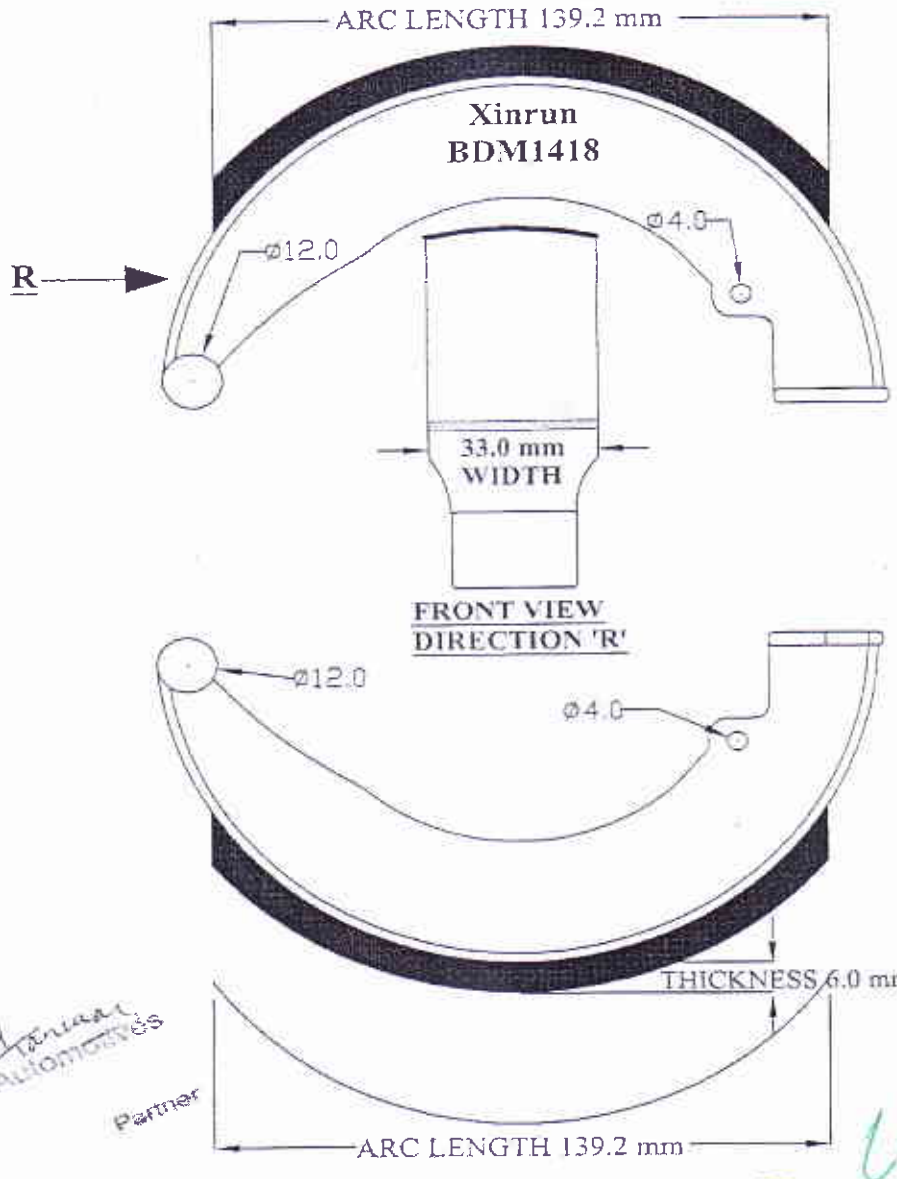
MAKE COMPANY NAME :- ASK AUTOMOTIVE PVT. LTD.
Plot No. 28, Sector-4, IMT Manesar, Gurgaon (Haryana) - 122050 INDIA

C	T	0	V	K	0014	Date : 22/01/2015	Drawing No.03

KUKU AUTOMOTIVES

Model Name :- KUKU Group | QTY :- 1 | Drawing No. :- KG - BBRS - 001 | DRAWN BY :- SHELLY TANWAR | SIGN. :-

Part Name :- Brake Shoes Dimensions | SCALE :- 1:1 | DATE :- 08/12/2014 | APPROVED BY :- SANJAY YADAV | SIGN. :- | SHEET :- 1 of 1



Shelly Tanwar
For Kuku Automotives
Partner

Note :-
All Parameters Are In mm Unless Or Otherwise Stated.

MAKE COMPANY NAME :- CHANGZHOU XINRUN PIPE FITTINGS CO. LTD.
ADDRESS : WUJIN DISTRICT OF LUOYANG TOWN, CHANGZHOU,
JIANGSU PROVINCE, EAST WEST JIA NUMBER 150

NON TRANSFERABLE

TEST REPORT

C	T	0	C	K	0212

Date: 30.01.2015

1.0 NAME AND ADDRESS OF THE CUSTOMER : **M/s. Kuku Automotives**
A-5 Yudistar Marg, C-Scheme Jaipur, RJ 302001

2.0 CUSTOMER REFERENCE : CVTNBKUKUJ12T37209
Dated:- 04.12.2014

3.0 DESCRIPTION OF TEST COMPONENT/S AS INSTALLED ON VEHICLE :

Name of the test	: **Horn Installation test**
Application on vehicle Model	: "Kuku Greens", Category :- E-Rickshaw
Max output power /Motor Id.	: 1.17 KW/000520140621152
Chassis No.	: MC7KGCB11R14J0001
Horns marked as	: CD1823,Type 2A
Drawing No.	: KG-HP-001
The Manufacturing Plant address	: **M/s. PRANKANT ELECTRONICS PVT. LTD.** 5B, Sanjay Memrial Industrial Estate, 20/2 Mathura Road, Faridabad-121006 INDIA

TAC No. vide which the horn as component is certified: CD1823 dated 28.10.2013

4.0 OBJECTIVE, TEST REQUIREMENTS & TEST PROCEDURE :

To conduct the horn installation test on automotive vehicle specified in Sr. No. 3.0 submitted by M/s. Kuku Automotives as per Clause No. 6.0 of IS: 15796 : 2008 .

5.0 TEST RESULTS :

S.No.	Requirement as per Standard	Measured Sound Pressure Level in dB(A) at test voltage (V)	Remarks
1	83 dB (A) to 112 dB (A) at 13 ± 0.5 V	96.9 dB (A) at 12.68 V	**Satisfactory**

6.0 CONCLUSION :

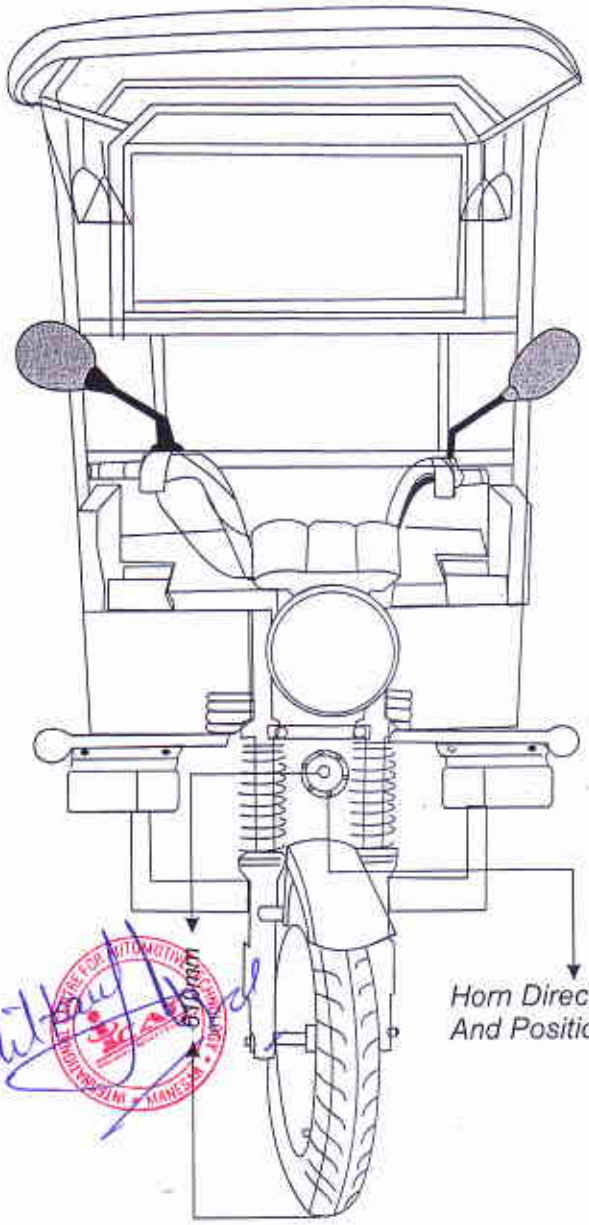
The E-Rickshaw model **" Kuku Greens "** fitted with horn as specified in Sr. No. 3.0 meets the horn installation test requirements as per Clause No. 6.0 of IS: 15796 : 2008.

Prepared By	Checked By		Department Head	
UDIT KAUL	MAHENDAR PAL		S.K.KALIA	Page 1 of 1 + Drwg(01) [37209]

Test Report No:- CTDCKO212 dated 30.1.15

HORN - INSTALLATION

Horn Installation



Horn Direction
And Position Installation

Horn Make:- PRAKANT ID:- E08 0 000 TAC No:- CD1823

QTY.:-1	MATERIAL:	DATE:- 05/12/2014
SHEET :-1/1	Model Name - KUKU Greens	
SCALE: 1:1	Part Name-HORN INSTALLATION	
	Drawing No. :- KG - HP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN.
DRAWN BY:	SHELLY TANWAR	Shelly
APPROVED BY:	SANJAY YADAV	

For Kuku Automotives

Partner

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

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Non - Transferable

TEST REPORT

C	T	0	C	K	0175

Date: 28.01.2015

1.0 NAME AND ADDRESS OF THE CUSTOMER : **M/s. Kuku Automotives,**
A – 5, Yudistar Marg,
C-Scheme Jaipur 302001, R.J., India.

2.0 REFERENCE : **Docket No.:** CVTNBKUKUJ12T37209

3.0 DESCRIPTION OF TEST COMPONENT :

E-Rickshaw [**G.S.R.709(E)**], Fitted with RH/LH Main Exterior Rear View Mirror assemblies.

Drawing No. : **KG-MP-001**
Vehicle Model : **KUKU Greens**
Motor No. : BM1418W-750/48, 000520140621152
Chassis No. : MC7KGCB11R14J0001
Max. Design Speed : 24.20 km/hr

Sr. No.	Component	Test Agency	Name of Manufacturer	Report Reference Nos.	Part No./ Identification No.
1.	RH/LH Main Exterior Rear View Mirror assemblies	**A.R.A.I, Pune & ICAT, Manesar**	M/s. Fiem Industries Ltd., Sonepat	**COP Report No. :** CT0CJ1941 dated 26.09.2014 **TAC No. :** A91637 **Test Report No.** : SHL/070/2004-05/ 154 /0069	FM-556 00 L A91637

4.0 OBJECTIVE OF THE TEST :

To carry out the RVM Installation tests as per AIS-002 (Part 2) (Rev. 1): 2011.

5.0 CONCLUSION :

The **E-Rickshaw** specified in **Sr. No. 3.0** of this test report met all the test requirements of RVM installations when tested as per AIS-002 (Part 2) (Rev. 1):2011. The Test Requirement and Results are given at Annexure - I.

Prepared By	Checked By		Department Head	
HARISH JOSHI	SAMIR SHIKALGAR		S.K. KALIA	CK0175

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Phone : 0124-4586111, Fax : +91-124-2290005. E-mail: team@icat.in, Website : www.icat.in

(An ISO 9001, ISO 14001 and OHSAS 18001 certified, scope wise NABL accredited and BIS recognised Test House)

C	T	0	C	K	0175

Date: 28.01.2015

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Annexure- I

1.0 TEST REQUIREMENTS AND RESULTS:-

1.1 **Clause No.- 16.1.1** :-The rear-view mirrors installed on the vehicle shall be of "Class L" as per AIS-001 (Part 2) (Rev. 1) : 2011.

The rear view mirrors installed on the vehicle is of "Class L" as per ***AIS-001 (Part 2) (Rev.1): 2011****.*

1.2 **Clause No.- 16.1.2 :-** Rear-view mirrors shall be fixed in such a way that they remain steady under normal conditions of use.

When checked both the mirrors were remained steady under normal condition of use.

1.3 **Clause No.- 16.2.1** :- All L category vehicles without body work partly or wholly encloses the driver, with a maximum design speed not exceeding 50 km/h shall be fitted with at least one rear-view mirror. This rear-view mirror shall be on the right side of the vehicle.

When checked two mirrors, one on left side and one on right side were fitted on the vehicle.

1.4 **Clause No.- 16.3.1 :-**Rear-view mirrors shall be mounted or adjusted in such a way that the distance of the centre of the reflective surface, as measured in a horizontal plane, is at least 280 mm outward from the longitudinal vertical plane passing through the centre of the steering head of the vehicle.
Before the measurement, the handlebar shall be placed in the straight ahead position and the mirror(s) shall be adjusted to its (their) normal position.

The distance between the center of the reflecting surface of mirror and the longitudinal vertical plane of the vehicle was found to be 770mm [370 mm (RH) + 400 mm (LH)].

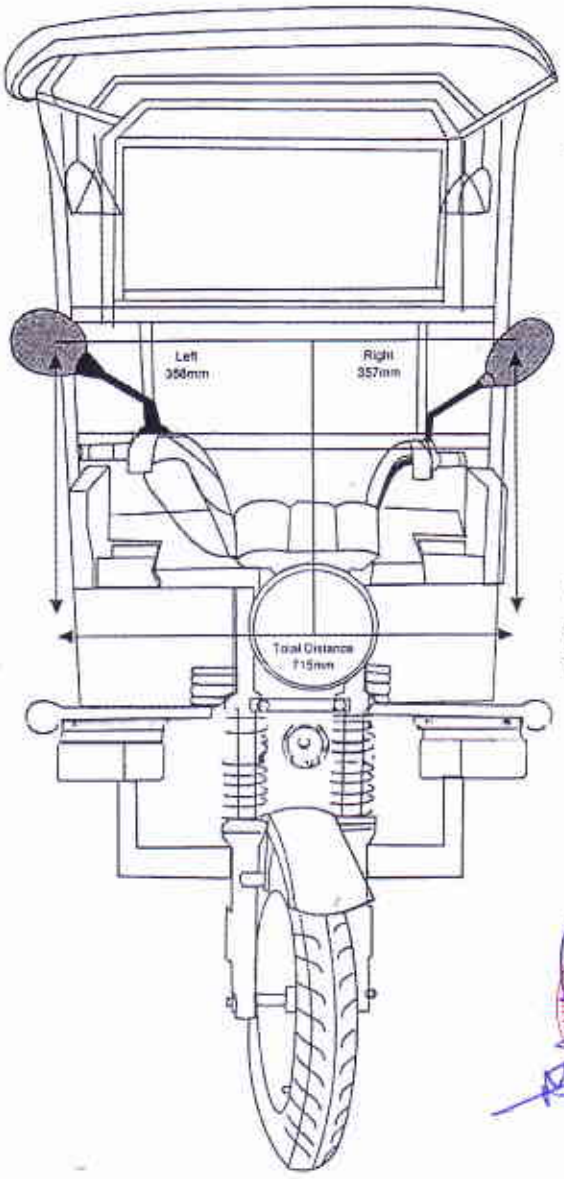
1.5 **Clause No.- 16.4.1 :-** Rear-view mirror(s) shall be such that the driver is able to adjust it (them) in the normal driving position.

The Rear View Mirrors are fitted in such a way that driver is able to adjust them in the normal driving position.

Prepared By	Checked By		Department Head	
HARISH JOSHI	SAMIR SHIKALGAR		S.K. KALIA	Page 2 of 2 + Dwg. (1)

REAR VIEW MIRROR POSITION LAYOUT

MIRROR View



TR No. CTOCK 0175 dtd. 28/01/2015

Mirror Make :- Fiem Industries Ltd ID:- FM-556 00 L TAC No. A91637

NOTES:-
1. *VEHICLE DRAWN IN LADEN CONDITION.*
2. *ALL DIMENSIONS ARE IN MM.*
3. *SUBJECT TO CHANGE WITHOUT NOTICE.*
4. *CAUTION - DO NOT WELD OR DRILL IN FRAME.*

QTY.:-1	MATERIAL:	DATE:- 05/12/2014
SHEET :-1/1	Model Name - KUKU Greens	
SCALE: 1:1	Part Name-Rear View Mirror Installation	
	Drawing No. :- KG - MP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN
DRAWN BY:	SHELLY TANWAR	Shelly
APPROVED BY:	SANJAY YADAV	

For Kuku Automotives

Partner

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

[A Division of NATRiP Implementation Society (NATIS), Govt. of India]

Non-Transferable

TEST REPORT

C	T	0	C	K	0232

Date: 05.02.2015

1.0	**NAME AND ADDRESS OF THE CUSTOMER**	**M/s. Kuku Atomotives,** Plot no. 108, Behind BSNL Training Centre, Road No. 15, VKI, Jaipur (Rajasthan)
2.0	**MANUFACTURING ADDRESS**	Plot no. A-5, Yudistar Marg, C-scheme, Jaipur- 302001, Rajasthan
3.0	**CUSTOMER LETTER REF**	IOCS No. CVTNBKUKUJ12T37209 dated 04-Dec-2014

4.0 DESCRIPTION OF TEST VEHICLE:

Vehicle Category : E-rickshaw, Passenger Carrier
Vehicle Model : Kuku Greens
Motor Details : Make: Unite Motor Company, ID No.: BM1418
Controller Details: Make: XINRUN, ID No.: BC1418
Battery Details : Make: Naveen Batteries, Quantity: 4 Nos., Rating: 12V-52Ah (C_5) each, Type: Lead Acid
Chassis No. : MC7KGCB11R14J0001
Working voltage : 48VDC

5.0 OBJECTIVE OF THE TEST:

To validate the battery operated vehicle for construction and functional safety requirements as per **AIS: 038 as published in September 2003.**

6.0 TEST RESULTS:

Please refer the Test requirements and Results in **Annexure-I** of this report.

7.0 CONCLUSION:

Battery operated vehicle model **"Kuku Greens"** specified in Sr. No. **3.0** above, submitted by **M/s. Kuku Atomotives,** met all the test requirements of construction and functional safety when tested as per **AIS: 038 as published in September 2003.**

Note: This report is to be read along with **Report No. CT0VK0014 dt. 22.01.2015.**

Prepared By	Checked By		Department Head	
ADITI SETHI	MAHENDAR PAL		S.K. KALIA	
Asst. Manager	Sr. Manager		Sr. General Manager	

Office Address : Plot No.-26, Sector-3, HSIIDC, IMT-Manesar, Gurgaon-122050, Haryana (India)
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Annexure – I

1.0 TEST REQUIREMENTS AND RESULTS:

Cl. No.*	Test Requirements	Observations/Results
3.1 Traction battery:		
3.1.1	Installation of the traction battery in the vehicle shall not allow any potential dangerous accumulation of gases.	Proper ventilation provided. **Satisfactory.**
3.1.2	Battery compartments containing battery modules, which may produce hazardous gases, shall be safely ventilated.	Proper ventilation provided. **Satisfactory.**
3.1.3	The traction battery and the power train shall be protected by properly rated fuse or circuit breakers. The components on the vehicle shall be as per the specifications declared by the manufacturer as per information provided in AIS 007.	Protection provided with installation of MCB of the rating 63A. **Satisfactory.**
3.1.4	Mounting of Batteries: The mounting of batteries in the battery operated vehicle shall be such that batteries / battery packs are not displaced from their place and there is no spillage of electrolyte when vehicle is driven on gradient or any other type of road. This condition shall be deemed to be satisfied if no spillage of electrolyte is observed while conducting various tests for type approval.	Horizontally clamped and fixed to vehicle body. No displacement or spillage possible. AIS048 (Report No.: ARAI/ AED/ DT/ OC-1314-7821/ 27 dated 29.04.2014) approved and proper fitment in the vehicle ensured, therefore, spillage not possible. Battery details: Make: Naveen Batteries Type: Lead Acid Traction Battery Battery Capacity: 12V, 52Ah (C5) **Satisfactory.**
3.1.5	Creepage distance measurement for traction batteries: This clause deals with additional leakage current hazard between the connection terminals of a traction battery module including any conductive fittings attached to them and any conductive parts, due to the risk of electrolyte spillage in normal operating conditions. It does not apply to traction batteries, for which electrolyte leakage will not occur under normal operating conditions e.g. sealed traction batteries. Creepage distance between two battery connection terminals should be greater than or equal to 0.25U+5 i.e. 8mm Creepage distance between live parts and electrical chassis should be greater than or equal to 0.125U+5 i.e. 6.5mm	Creepage distance between two battery terminals (approx. 40mm) and between live parts and electrical chassis (approx. 60 mm) was measured and found greater than minimum requirement. **Satisfactory.**

Annexure – I (Contd.)

Cl. No.*	Test Requirements	Observations/Results
3.2 Protection Against Electric Shock:		
3.2.1	Protection against direct contacts with live parts of power train:	
3.2.1.1	If the working voltage of the electric circuit is lower than 60 V DC or 25 V AC, requirements specified in para 3.2.1 are not applicable.	Working voltage: 48VDC
3.2.1.2	Direct contact with live parts of the electrical power train whose maximum voltage is at least 60 V DC or 25 V AC shall be prevented either by insulation or by the use of covers, protection grills, perforated metal sheets, etc. These protections shall be reliably secured and shall be mechanically resistant. They shall not be able to be opened, dissembled or removed without the use of tools.	**Not Applicable.**
3.2.1.3	Live parts in passenger and load compartments, shall be protected by enclosures having a protection degree of at least IPXXD.	**Not Applicable.**
3.2.1.4	Enclosures in other areas of the vehicle shall have a protection degree of at least IPXXB.	**Not Applicable.**
3.2.1.5	In the drive train compartment the access to live parts shall only be possible with voluntary action i.e. with the use of physical tools like screw driver to open the same.	**Not Applicable.**
3.2.1.6	After opening the cover, the access to the parts of the coupling system shall be protected with IPXXB protection.	**Not Applicable.**
3.2.1.7	Protection degrees IPXXB and IPXXD are related respectively to the contact of a jointed test finger and a test wire with hazardous parts.	
3.2.1.8	Vehicle markings: Protection covers of live parts shall be marked by a symbol as shown in standard.	**Not Applicable.**

Annexure – I (Contd.)

Cl. No.*	Test Requirements	Observations/Results
3.2.2	Protection against indirect contacts with exposed conductive parts of power train:	
3.2.2.1	If the working voltage of the electric circuit is lower than 60 V DC or 25 V AC, no requirements are necessary under clause 3.2.2.	Working voltage: 48VDC
3.2.2.2	Insulation used shall ensure protection against indirect contacts and additionally, the exposed conductive parts of the on-board equipment shall be electrically connected together. This potential equalization is obtained by connecting the exposed conductive parts together either by a protective conductor e.g. wire, ground truss, or directly by the vehicle metallic chassis. Two exposed conductive parts welded together are considered as having no discontinuity points. If there is some discontinuity, this point shall be by-passed by potential equalization.	**Not Applicable.**
3.2.3	Insulation Resistance of traction batteries:	
3.2.3.1	The insulation resistance measurement is performed after maintaining the vehicle for a conditioning time of 8 hours with the following conditions: Temperature: 20 to 35°C Humidity: 90% + 10/-5%	Vehicle maintained at temperature (21°C to 25°C) and humidity (87% to 96%) conditions as specified.
3.2.3.2	Using a measuring DC voltage equal to the nominal voltage of the traction battery, insulation resistances (IR) between any exposed conductive part and each polarity of the traction battery shall have a minimum value of 500 Ω /V of the nominal voltage (NV).	IR/NV = 46250 Ω/V **Satisfactory.**
3.2.3.3	Resistance of the Protective Conductor: The potential equalization resistance between any two exposed conductive parts shall be lower than 0.1 Ω. This test shall be performed by a current of at least 0.2 A.	Single exposed conducting part is battery's terminal. Other conducting parts at equalized potential such as motor terminals, controller terminals are insulated or painted. **Not Applicable.**

Annexure – I (Contd.)

Cl. No.*	Test Requirements	Observations/Results
3.2.4	Connection of the vehicle to mains network:	
3.2.4.1	In no case the vehicle shall be capable to move by its own means when it is electrically connected to an energy supply network or to an off-board charger.	Vehicle was connected to power supply through charger, no involuntary movement observed. **Satisfactory.**
3.2.4.2	The components used when charging the battery from an external source shall allow the charging current to be cut without physical damage in case of disconnection. This shall be checked by reconnection and ensuring that there is no fault in the system.	Checked by removing and inserting the charger from and into plug socket, keeping indicators in ON condition. No fault or effect on indicators observed. **Satisfactory.**
3.2.4.3	The coupling system parts likely to be live shall be protected against any direct contact in all operating conditions.	Coupling parts are protected by insulation covers. When charging the vehicle, female connector provided at charging point fits into male connector of charger, therefore, no direct contact is possible during charging or without charging. **Satisfactory.**
3.2.4.4	For on-board charger all exposed conductive parts, shall be electrically linked through a conducting wire plugged to earth when charging.	Off-board charger only. **Not Applicable.**

Annexure – I (Contd.)

Cl. No.*	Test Requirements	Observations/Results
3.3 Functional Safety Requirements:		
3.3.1	Power ON procedure:	
3.3.2	The power ON procedure shall be applied via a key switch.	Vehicle is switched ON with the help of key. **Satisfactory.**
3.3.3	It shall not be possible to remove this key in any position that energizes the drive train or that makes active driving possible.	It is not possible to switch ON vehicle without key and in no way, key can be removed while vehicle is in active driving mode. **Satisfactory.**
3.3.4	Running and Stopping Conditions:	
3.3.5	At least a momentary, optical or audible indication shall be given to the driver when: a) the vehicle is in "active driving possible mode" b) At least one further action is required to place the vehicle in "active driving possible mode". There shall also be an indication to the driver when state of charge of the battery reaches a level where re-charging is recommended. When this condition is reached, the user shall be warned to perceive this situation quickly enough to be able to drive the vehicle, on its own power, at least out of the traffic zone. The manufacturers shall provide the information regarding the state of charge after the warning indication comes on. There shall be an additional indication indicating that the state of charge of battery has reached a level at which driving the vehicle further may cause damage to the battery. This indication is not necessary if the emergency power reduction (para 3.3.12 below) takes into account this state of charge of battery. This shall be declared by the manufacturer.	a) Optical indication: Red LEDs in battery state of charge indicator lit up as soon as vehicle is switched ON. b) Accelerator handle to be rotated and driver to be seated in driving seat to place the vehicle in active driving mode after vehicle is switched ON. When battery SoC indicator reaches 30% mark (red zone in battery SoC indicator), re-charging is recommended. When state of charge of battery reaches 20% mark, driving the vehicle is not recommended, it may cause damage to the battery, vehicle speed reduces to approx. zero at this mark. This information is declared by customer. **Satisfactory.**

Annexure – I (Contd.)

Cl. No.*	Test Requirements	Observations/Results
3.3.6	Unintentional acceleration, deceleration and reversal of the drive train shall be prevented. In particular, a failure (e.g. in the power train) shall not cause more than 0.1 m movement of a standing unbraked vehicle on level road.	Drive train consists of motor and controller. If any of the components fails, vehicle comes to OFF position. Movement checked by observing vehicle in OFF condition in unbraked condition on level road. No movement observed. **Satisfactory.**
3.3.7	When leaving the vehicle, the driver shall be informed by an optical or audible signal if the drive train is still in the active driving possible mode. This condition shall be deemed to be satisfied if the indication specified in 3.3.5 (a) above is not momentary and continues to be displayed.	Red LEDs in battery indicator are visible when driver leaves the vehicle unattended in active driving mode. **Satisfactory.**
3.3.8	Reversing:	
3.3.9	Reversing shall be possible only after a specific action. a) The combination of two different actuations for example gear and clutch, Or b) An electric switch, which allows reverse to be engaged only when the vehicle is moving at a forward speed not exceeding 5 km/h. It shall not be possible for the vehicle to move in reverse direction, if the switch is operated at any vehicle is moving forward at a speed beyond 5 km/h. The device shall have only one stable position for achieving the reverse motion of the vehicle.	Switch ('R" symbol marked) provided to activate reversing mode. Vehicle was driven in forward direction at a speed of 10km/hr and reverse switch was pressed, the vehicle speed reduced, came to zero and reverse was engaged after coming to a stable position. **Satisfactory.**
3.3.10	The state of the drive direction control unit shall be easily identifiable.	State of drive direction control unit is clearly distinguished as bulb provided at front panel glows as soon as the reverse switch is pressed. **Satisfactory.**
3.3.11	The maximum speed achieved in reverse direction shall not be more than 20 km/h.	Reverse speed measured is 12.75 km/h, verified by measuring tyre RPM in reverse direction at full acceleration using worst case criteria. **Satisfactory.**

Annexure – I (Contd.)

Cl. No.*	Test Requirements	Observations/Results
3.3.12	Emergency power reduction:	
3.3.13	If the vehicle is equipped with a device to limit the performance in an emergency (e.g. overheating of a component) the user shall be informed by an obvious signal indicating state of limited performance.	MCB provided to switch OFF the vehicle in emergency conditions. **Satisfactory.**
3.3.14	On board charger:	
3.3.14.1	The charger socket of the on-board charger shall have the time rating in addition to the ampere rating. The time rating shall be 5 h or the recommended time for charging fully discharged battery, whichever is higher. The charging socket shall be capable of withstanding the in-rush current and the continuous current rating of the socket shall be commensurate with the charging current.	Off board charger provided. **Not Applicable.**
3.3.14.2	The rated maximum and continuous duty specification of the power socket in terms of current, voltage etc. shall be declared by the manufacturer. These values shall be compatible with the specification of the onboard charger.	Off board charger provided. **Not Applicable.**
3.3.14.3	On-board charger shall have soft start facility, limiting the initial in-rush current. The manufacturer shall specify the initial rush current and the time duration from the mains to the charger.	Off board charger provided. **Not Applicable.**
3.3.14.4	The charger shall have at least indication of 'charging in process' and 'charging is over. These conditions are deemed to be satisfied if the indicator for State of Charge of battery provided on vehicle takes care of this requirement.	Off board charger provided. **Not Applicable.**
3.4 On-board Indicators		
3.4.1	All the indicators meant for the driver referred above shall be suitably located so as to be visible to the driver easily (e.g. on the dashboard). Additionally, the battery-operated vehicle shall have the battery state of charge indicator. For additional indications of temperatures like motor temperature, the existing water temperature symbol may be suitably modified.	All indicators provided at front panel and are suitably located and visible to driver easily. Battery indicator also provided in front panel. **Satisfactory.**

Annexure – I (Contd.)

Cl. No.*	Test Requirements	Observations/Results
3.5 Protection against water effects		
	The test as per 3.5.1, 3.5.2 and 3.5.3 shall be performed. After each exposure (vehicles still wet), the vehicle shall then comply with the insulation resistance test as in para 3.2.3.2 above, at normal environmental condition, but keeping the power equipment connected to the traction battery (main switch closed), with the requirements of at least 100 W/V.	Results to be referred from report no. CT0VK0014 dt. 22.01.2015 **Satisfactory.**
3.5.1	Washing:	
	This test is intended to simulate a normal washing of battery operated vehicles, but not specific cleaning using high water pressure or underbody washing. The vehicle manufacturer shall specify detailed conditions for such specific cleaning or washing in the owner's manual. The critical areas of the vehicle regarding this test are border lines i.e. a seal of two parts as flaps, glass seals, outline of opening parts, outline of front grille, seals of lamps. In the case of open vehicles such as 3-wheelers without doors and windows, or 2-wheelers etc the manufacturer shall specify the procedure for normal washing also. In such cases, the washing test shall be conducted by taking into account the above recommendation. The test uses a hose nozzle according to IPX5 as specified in IEC 60529 (Refer Annexure-3 for details). Using fresh water with a flow rate of 12.5 l/min, all borderlines shall be exposed and followed in all directions with the water stream at a speed rate of 0.1 m/s, keeping a distance of 3 m between the nozzle aperture and the borderline.	Results to be referred from report no. CT0VK0014 dt. 22.01.2015 **Satisfactory.**

Annexure – I (Contd.)

Cl. No.*	Test Requirements	Observations/Results
3.5.2	Flooding:	
	This test is intended to simulate the driving of a battery-operated vehicle on flooded streets or in water puddles. The vehicle shall be driven in a wade pool, 10 cm in depth, over a distance of 500 m at a speed of 20 km/h resulting in a time of approximately 1.5 min. If the wade pool used is less than 500 m in length, so that it has to be driven through several times, the total time including the periods outside the wade pool shall be less than 10 min.	Results to be referred from report no. CT0VK0014 dt. 22.01.2015 **Satisfactory.**
3.5.3	Heavy Rainstorm:	
	This test is intended to simulate a sudden heavy rainstorm e.g. a thunderstorm, when opening parts especially to access to the passenger, load and motor compartments are open except those requiring one or more tools. In case of voltage class B equipment shielded from exposure to water, this test of the whole vehicle may be replaced by equivalent tests on the components individually. The critical areas of the vehicle regarding this test are those accessible with opened opening parts. This test uses a spray nozzle according to IPX3 as specified in IEC 60529. Using fresh water with a flow rate of 10 l/min, all surfaces with normally open opening parts shall be exposed for 5 min, possibly through a regular movement of the spray nozzle. Note : Voltage class B equipment is an equipment with nominal voltage (U) DC: 60 V < U <= 1500 V AC: 25 V rms < U < = 1000 V rms – 15 to 150 Hz	Results to be referred from report no. CT0VK0014 dt. 22.01.2015 **Satisfactory.**

***Note: Cl. No. as referred from AIS 038 as published on September 2003.**

ICAT/CMVR/E-rickshaw 2014-506-1

Table 13 of AIS-007 (Revision 4)

09 FEB 2015

TECHNICAL SPECIFICATIONS - BATTERY OPERATED VEHICLES

1.0	**General description of vehicle**	
1.1	Vehicle Model	KUKU Greens
1.2	Vehicle Type	Special Purpose battery Operated Three Wheeler-E Rickshaw
1.3	Drawing and /or photographs of the vehicle	KG-VD-001
2.0	**Description of The Traction Battery**	
2.1	Trade Name and Mark of the Battery	**Naveen Batteries, AnchorNB800 (ID:-DNCSJ14B-479)**
2.2	Kind of Electro – Chemical Couple	PB & PBO2
2.3	Nominal Voltage (V)	48V DC (12X4)
2.4	Battery Maximum Thirty Minutes Power (Constant Power Discharge) (kW)	2.8±.3 KW
2.5	Battery Performance in 2 h Discharge (Constant Power or Constant Current)	52Ah
2.5.1	Battery Energy (kWh)	.85kwh
2.5.2	Battery Capacity , Ah in 2 h	52Ah at 5C
2.6	End of Discharge Voltage Value (V)	42V
2.7	Provision of ventilation for battery Yes / No	Yes
2.7.1	Brief description of the ventilation system adopted in the vehicle. (Refer AIS-038/2003 Clause 3.1.1). Provide drawing if necessary.	Provided
2.7.2	Brief description of the ventilation system adopted in the battery compartment. (Refer AIS-038/2003, Clause 3.1.2). Provide drawing if necessary.	Enclosed
2.8	On-board Indication of battery state of charge	LED display
2.8.1	Details of indication when state of charge of the battery reaches a level when the manufacturer recommends re-charging.	Red Zone Indication below 30%.
2.8.1.1	Indication format.	Numerals with LED
2.8.1.2	Relationship of state of charge indicator and the indication.	N.A.
2.8.1.3	Make	Changzhou Xinrun Pipe Co. Ltd.
2.8.1.4	Model	NA

Manufacturer :Kuku Automotives	Document No : KA/TA/T13/14.11	Test Agency : International Centre for Automotive Technology	Cert No :
Signature: Shelly Tanwar		Signature	
Name: Shelly Tanwar	Sheet No:	Name: S. K. Kalia	
Designation: Marketing Head	Date: 03/12/2014	Designation: Sr. General Manager	Page No 1 of 5
		Date of Issue	

For K... Partner

Table 13 of AIS-007 (Revision 4)

2.8.2	Indication of state of charge of battery reaches a level at which driving vehicle further may cause damage to batteries	20% Charge State where the batteries can go into deep discharge state and take extra time for Re Charging
2.8.2.1	Indication format.	Red Indication
2.8.2.2	Relationship of state of charge indicator and the indication.	N.A.
2.9	Battery Mass (kg)	Set of 4 batteries Total-108kg with acid
2.10	Brief description of maintenance procedure, if any	Electrolyte top up at regular intervals
3.0	**Description of The Drive Train**	
3.1	General	Motor direct coupled with differential
3.1.1	Make	Changzhou Xinrun Pipe Co.Ltd. China
3.1.2	Type	Brushless DC Motor
3.1.3	Use : Mono motor / multi motors (number)	Mono motor
3.1.4	Transmission Arrangement parallel / transaxial / others to precise	Tranaxial
3.1.5	Test Voltage (V)	48V
3.1.6	Motor Nominal Speed (Min $^{-1}$)	3000RPM
3.1.7	Motor Maximum Speed, Min $^{-1}$ or by default reducer outlet shaft / gear box speed (specify gear engaged)	2800 RPM
3.1.8	Maximum Power Speed (Min $^{-1}$) and (km/h)	24.25 km/h
3.1.9	Maximum Power (kW)	1.17 KW
3.1.10	Maximum Thirty Minutes Power (kW)	1.12KW
3.1.11	Maximum Thirty Minutes speed km/h (Reference in AIS-039/2003 and AIS-040/2003)	24.25Km/h
3.1.12	Flexible Range (where P>90% of Max. Power)	80±5Km
3.1.13	Speed at the beginning of the range (Min $^{-1}$)	22km/h
3.1.14	Speed at the end of the range (Min $^{-1}$)	12km/h
3.2	Traction Motor	
3.2.1	Make	**SHANGHAI MAINBON INDUSTRY CO., LTD.** (Unite Motor Co.) 1212,578 TianbaoRoad,Shanghai 200 086, CHINA **ID:- BM1418W**
3.2.2	Working Principle	BLDC
3.2.2.1	Direct current / alternating current / number of phases	Direct current 3 Phase
3.2.2.2	Separate excitation / series / compound	Series
3.2.2.3	Synchron / asynchron	NA

ICAT/CMVR/E-rickshaw 2014=506

09 FEB 2015

Table 13 of AIS-007 (Revision 4)

3.2.2.4	Coiled rotor / with permanent magnets / with housing	With Permanent Magnet
3.2.2.5	Number of Poles of the Motor	8 Poles
3.2.3	Motor power curve (kW) with motor RPM (min^{-1}) / vehicle speed in (km/h)	NA
3.3	Power Controller	
3.3.1	Make	**Changzhou Xinrun Pipe Co. Ltd.**(Add:- Wujin district of Luoyang town, Changzhou Jiangsu province, east west, jia number 150) **ID:- BC1418**
3.3.2	Type	Electronic
3.3.3	Control Principle : vectorial / open loop / closed / other (to be specified)	Closed loop
3.3.4	Maximum effective current supplied to the Motor (A)	30 AMP
3.3.5	Voltage range use (V to V)	41V to 52V
3.4	Cooling System motor : liquid / air controller : liquid / air	Air Air
3.4.1	Liquid cooling equipment characteristics	N.A.
3.4.1.1	Nature of the liquid , circulating pumps, yes / no	N.A.
3.4.1.2	Characteristics or make(s) and type(s) of the pump	N.A.
3.4.1.3	Thermostat : setting	N.A.
3.4.1.4	Radiator : drawing(s) or make(s) and type(s)	N.A.
3.4.1.5	Relief valve : pressure setting	N.A.
3.4.1.6	Fan : Characteristics or make(s) and type(s)	N.A.
3.4.1.7	Fan : duct	N.A.
3.4.2	Air-cooling equipment characteristics	N.A.
3.4.2.1	Blower : Characteristics or make(s) and type(s)	N.A.
3.4.2.2	Standard air ducting	N.A.
3.4.2.3	Temperature regulating system yes / no	N.A.
3.4.2.4	Brief description	N.A.
3.4.2.5	Air filter : make(s) type(s)	N.A.
3.4.3	Maximum temperatures recommended by the manufacturer:	N.A.
3.4.3.1	Motor Outlet : °C	100°C
3.4.3.2	Controller inlet : °C	40°C
3.4.3.3	At motor reference point(s) °C	On body 100°C
3.4.3.4	At controller reference point(s) °C	On cover vent
3.5	Insulating Category :	Class E
3.5.1	International Protection (IP)-Code :	N.A.

Table 13 of AIS-007 (Revision 4)

3.6	Lubrication System Principle Bearings : friction / ball Lubricant : grease / oil Seal : yes / no Circulation : with / without	N.A.
4.0	**Charger** :	
4.1	Charger : on board / external	External
4.1.1	Trademark , model, rating	Classic electro, Model – **TONA CHARGER, (ISI70017)**
4.2	Description of the normal profile of charging system	SMPS based, CVCC type
4.3	Specifications of mains	
4.3.1	mains : single phase/ three phase :	Single face
4.3.2	Nominal Voltage (V) & frequency (Hz) with tolerances:	230±20V&50Hz±10Hz
4.4	Reset period recommended between the end of the discharge and the start of the charge	20minutes
4.5	Recommended duration of a complete charge	8 to 10 hrs
4.6	In case of on-board charger	
4.6.1	Continuous rating of charger socket (A) :	NA
4.6.2	Time rating (h) of charger socket, if any :	NA
4.6.3	Whether soft-start facility Yes / No :	NA
4.6.4	Maximum initial in-rush current (A)	NA
5.0	**Electrical details of vehicle for functional safety**	
5.1	Schematic diagram showing the electrical layout giving all major electrical items along with their physical location in the vehicle. It shall include batteries, power-train components, protection fuses, circuit breakers etc. (Reference in AIS-038/2003 Clause 3.1.3)	Sketch
5.2	Specifications of circuit breakers/ fuses used for protection of batteries / power-train (Reference in AIS-038/ 2003 Clause 3.1.3)	MCB
5.2.1	IS / IEC specifications	8828 , CM/L-8261977
5.2.2	Rating (A)	32Amp
5.2.3	Opening time (ms)	50 milliseconds
5.3	Working voltage V (Reference in AIS-038/ 2003 Clause 3.2)	48V.DC
5.4	Schematic highlighting physical location of live parts having working voltage greater than 60 V DC or 25 V AC (Reference in AIS-038/ 2003 Clause 3.2.1.2)	NA
5.5	Electric cables / connectors / wiring harness (Reference in AIS-038/ 2003 Clause 3.2.2.2)	
5.5.1	IEC protection class	Class A
5.5.2	Insulation material used	PVC/nylon
5.5.3	Conduits provided Yes / No	NO

Manufacturer :Kuku Automotives	Document No : KA/TA/T13/14.11	Test Agency : International Centre for Automotive Technology	*Cert No*
Signature: Sally Tanwar, For Kuku Automotives, Partner		Signature	
Name: Sally Tanwar	Sheet No:	Name: S. K. Kalia Designation: Sr. General Manager	
Designation: Marketing Head	Date: 03/12/2014	*Date of Issue*	Page No 4 of 5

Table 13 of AIS-007 (Revision 4)

5.6	List of exposed conductive parts of on-board equipment. (Reference in AIS-038/ 2003 Clause 3.2.2.3)	Connector used
5.6.1	Any potential equalization resistance used to electrically connect these parts Yes/ No	NA
5.6.2	If yes, give details	NA
5.7	List of failures due to which the vehicle will come to standstill (Reference in AIS-038/ 2003 Clause 3.3.6)	Loose connection
5.8	List of conditions under which the performance of vehicle is limited and how. (Reference in AIS-038/ 2003 Clause 3.3.13)	Battery Low Loose connection of couplers
5.9	Declaration regarding Design guidelines followed with respect to various requirements.	NA
6.0	Electrical energy consumption of Vehicle in W-h/km, as per Clause 5.5.1 of AIS-039	NA

Non-Transferable

TEST REPORT

C	T	0	C	K	0174

Date: 04.02.2015

1.0 NAME AND ADDRESS OF THE CUSTOMER : **M/s. KUKU AUTOMOTIVES**
A-5, YUDHISTER MARG,
NEAR YOJANA BHAVAN,
C-SCHEME,
JAIPUR - 302001, RAJASTHAN

2.0 CUSTOMER LETTER REF CVTNBKUKUJ12T**37209** dt 04-Dec-2014

3.0 DESCRIPTION OF TEST VEHICLE :
Model: **KUKU GREENS**
Category : **E-rickshaw**
Drawing No: **KG-LP-001**
Motor Id: **000520140621152**
Chassis No. : **MC7KGCB11R14J0001**

4.0 OBJECTIVE, TEST PROCEDURE & TEST REQUIREMENTS:
To carry out Installation Requirements of Lighting and Light – Signaling Devices as per AIS: 009 - Rev. 1.0: 2011 as amended up to September 2012.

5.0 TEST RESULTS:
Please refer Test Results at Annexure -I of this report & Photographs of light and light signaling devices are attached as Annexure-II.

6.0 CONCLUSION:
E-rickshaw model "**KUKU GREENS**" specified in 3.0 above meets the installation test requirements of lighting and light signaling devices as per AIS: 009 - Rev. 1.0: 2011 as amended upto September 2012.

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 1 of 15 + Drwg (01) [37209]

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I

1.0 GENERAL REQUIREMENTS (Cl. No. 5.0)

Sr. No.	Components	Mandatory Nos.	Observed on vehicle	ID. On the sample	Manufacturer , TAC No & COP details	Colour
1.	**Headlamp**					
	Driving	One	One	Lumax 209-102-00	M/s. Lumax C91336 & CC0CI0576 Dtd: 04.04.2013	White
	Passing					White
2.	**Direction Indicator**					
	Front	Two	Two	35632M80 110L	M/s. Lumax C90904 & CC0CI0576 Dtd: 04.04.2013	Amber
	Rear	Two	Two	E9 11101	M/s. Neolite C80322 & CC0CI1664 Dtd: 07.10.2013	Amber
3.	**Stop lamp**	Two	Two	E9 11101	M/s. Neolite C80322 & CC0CI1664 Dtd: 07.10.2013	Red
4.	**Position lamp/parking**					
	Front	Two	Two	35632M80 110L	M.s. Lumax C90904 & CC0CI0576 Dtd: 04.04.2013	White
	Rear	Two	Two	E9 11101	M/s. Neolite C80322 & CC0CI1664 Dtd: 07.10.2013	Red
5.	**Reverse lamp**	One	Two	E9 11101	M/s. Neolite C80322 & CC0CI1664 Dtd: 07.10.2013	White
6.	**Retro Reflector- Non triangular**					
	Rear	Two	Two	Neo 541-A E9 11101	M/s. Neolite C80320 & CC0CI1664 Dtd: 07.10.2013	Red
7.	**Rear Registration plate Illumination lamp**	One	One	Lumax 01090040	M/s. Lumax C91263 & CCOCI0473 Dtd: 25.03.2013	White

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 2 of 15 + Drwg (01) [37209]

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I (Cntd...)

2.0 GROUPING, COMBINING AND RECIPROCAL INCORPORATION OF LAMP

Sr. No.	Lamp	Grouping	Combining	Incorporated with
1	Driving Beam Head Lamp	---	---	Passing Beam Head Lamp
2	Passing Beam Head Lamp	---	---	Driving Beam Head Lamp
3	Front Direction Indicator lamp	Front Position Lamp	---	---
4	Rear position Lamp	Rear Direction Indicator + Reflex Reflector + Reversing Lamp	---	Stop Lamp
5	Reversing Lamp	Stop Lamp + Rear Direction Indicator+ Rear position Lamp+ Reflex Reflector	---	---
6	Reflex Reflector	Rear Direction Indicator + Stop Lamp+ Rear position Lamp+ Reversing Lamp	---	---
7	Rear Registration Plate Lamp	---	---	---
8	Front position Lamp	Front Direction Indicator Lamp	---	---
9	Stop Lamp	Rear Direction Indicator + Reversing Lamp+ Reflex Reflector	---	Rear position Lamp

Alignment of lamps	
The lamps aligned towards the front	**The lamps aligned towards the rear**
Headlamp driving beam Headlamp Passing Beam Front Direction Indicator Front Position Lamp	Stop Lamp Rear Position Lamp Rear Direction Indicator Reversing Lamp Rear Registration Plate Lamp

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 3 of 15 + Drwg (01) [37209]

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I (Cntd...)

3.0 General Specifications

Sr. No.	Cl. No.	Description	Remarks
1.	5.3	Reference axis of all light-signaling devices when fitted to the vehicle shall be parallel to horizontal bearing plane of the vehicle.	Satisfactory
2.		Reference axis shall be parallel to longitudinal median plane of the vehicle in the case of all other signaling devices. In each direction a tolerance of 3° is allowed.	Satisfactory
3.	5.5.2.1 & 5.5.2.2	Lamps constituting a pair and having the same function shall be mounted symmetrically in relation to the median longitudinal plane	Satisfactory
4.	5.6.1	Lamps may be grouped, combined or reciprocally incorporated with one another provided that all requirements regarding color, position, orientation, geometric visibility, electrical connections and other requirements, if any, are fulfilled.	Satisfactory All lamps are meeting requirements.
5.	5.6.2 & 5.6.2.1	Either the total area of the projection of the distinct parts on a plane tangent to the exterior surface of the transparent material and perpendicular to the reference axis shall occupy not less than 60 per cent of the smallest quadrilateral circumscribing the said projection, or the distance between two adjacent/tangential distinct parts shall not exceed **15 mm** when measured perpendicularly to the reference axis.	Satisfactory
6.	5.8	In the absence of specific instructions, no lamps other than Direction-indicator lamps and the vehicle-hazard warning signal shall be flashing lamps.	Satisfactory
7.	5.9	No red light shall be visible towards the front and no white light shall be visible towards the rear. Other than reverse lamp.	Satisfactory
8	5.10	The electrical connections shall be such that the front position lamp or the passing beam headlamp, if there is no front position lamp, the rear position lamp and the rear-registration-plate illuminating device cannot be switched on or off otherwise than simultaneously.	Rear position lamp and the Rear-registration-plate illuminating lamp can be switched Off –On simultaneously.
9	5.11.1.	The headlamp may optionally automatically be on when the motor is running. If installed, the daytime running lamp shall automatically be ON when the engine is running	Not Applicable
10	5.12.1	**Tell-tale** Every tell-tale lamp shall be readily visible to a driver in the normal driving position.	Satisfactory

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 4 of 15 + Drwg (01) [37209]

ANNEXURE I (Cntd...)

4.0 INDIVIDUAL SPECIFICATIONS (Cl. No. 6.0)

4.1 Driving Beam Head Lamp

Sr. No.	Cl. No.	Description	Remarks
1.	6.1	**Presence** – Mandatory	Yes, Satisfactory
2.	6.1.1	**Number:** One or Two	01, Satisfactory
3.	6.1.1.1	Driving beam headlamp of Class A,B, C, D or E of AIS-010 (Part2) (Rev. 1) or Driving beam headlamp class A of AIS-010 (Part 1)(Rev.1)	Satisfactory
4.	6.1.3, 6.1.3.1.2 & 6.1.3.2	**Position** **Width:** A driving beam headlamp, that is reciprocally incorporated with another front lamp, shall be fitted in such a way that its reference centre lies within the median longitudinal plane of the vehicle. However, when the vehicle is also fitted with an independent passing beam headlamp, or a passing beam headlamp that is reciprocally incorporated with a front position lamp alongside the driving beam headlamp, their reference centers shall be symmetrical in relation to the median longitudinal plane of the vehicle	Satisfactory Driving beam & Passing beam are reciprocally incorporated with its reference centre on median longitudinal plane of the vehicle
		The length: at the front of the vehicle. This requirement is regarded as satisfied if the light emitted does not cause discomfort to the driver either directly or indirectly by means of the rear-view mirrors and/or reflective surfaces on the vehicle.	Satisfactory
5.	6.1.4	**Geometric Visibility** Forming an angle of not less than 5° with the axis of reference of the headlamp.	Satisfactory
6.	6.1.5 & 6.1.6.	**Orientation** Forwards. The lamp(s) may move with the steering angle. May not be "combined" with any other lamp.	The lamp moves in line with steering Satisfactory
7.	6.1.7	**Electrical Connections:** The driving beam headlamps shall switched on simultaneously. When switching from the passing to the driving beams all of the driving –beam headlamps shall be lit. When switched from driving beam to the passing beam all of the driving-beam headlamps shall be switched off simultaneously. The passing beam(s) may remain illuminated with the driving beam(s).	Driving beam and Passing beam are in line with requirements. Satisfactory
8.	6.1.8	Tell-tale: Circuit-closed tell-tale mandatory. Non flashing Blue signal lamp.	Blue color tell-tale Satisfactory
9.	6.1.9	Other requirements: The maximum intensity of the driving-beam headlamps which can be switched on at the same time shall not exceed 225,000 cd. (Component type approval value.)	Satisfactory

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I (Cntd...)

4.2 Passing – Beam Head Lamp

Sr. No	Cl. No.	Description	Remarks
1.	6.2.1	**Presence** – Mandatory	Yes, Satisfactory
2.	6.2.1.1	**Number** : One or Two Passing beam headlamp of AIS-010 (part2) (Rev.1) or Passing beam headlamp class A of AIS-010(Part 1)(Rev. 1)	01, Satisfactory
3.	6.2.3.1, 2,	**Position** **Width:** A passing beam headlamp, that is reciprocally incorporated with another front lamp, shall be fitted in such a way that its reference centre lies within the median longitudinal plane of the vehicle.	Satisfactory
4.	6.2.3.2	**Height:** Not less than **500 mm** and not more than **1200 mm** above the ground.	**Min: 708 mm** **Max: 887mm**
5.	6.2.3.3	**Length:** At the front of the vehicle and fitted in such a way that the light emitted does not cause discomfort to the driver either directly or indirectly through the rear-view mirrors and/or other reflecting surfaces of the vehicle.	Satisfactory
6.	6.2.4	**Geometric Visibility** α = 15°upwards and 10°downwards, β = 45° to the left and to the right for a single lamp	Satisfactory
7.	6.2.5.1	**Orientation:** Forwards. The lamp(s) may move in line with the steering angle.	Moving in line with steering.
8.	6.2.5.2	The vertical inclination of the passing beam headlamp shall remain between - 0.5 and - 2.5 per cent.	In-line with the requirements
9.	6.2.5.4	**Condition A (rider alone):** A mass of 75 kg ± 1 kg, simulating the rider, shall be placed on the vehicle in such a way as to reproduce the axle loads declared by the manufacturer for this loading condition. The vertical inclination (initial aiming) of the passing beam headlamp shall be set, following the manufacturer's instructions, between -1.0 and -1.5 per cent.	Vertical inclination set -1.0% and found satisfactory.
10.		**Condition B (fully laden vehicle):** Masses, simulating the manufacturer's maximum total mass, shall be placed on the vehicle in such a way as to reproduce the axle loads declared by the manufacturer for this loading condition. Before making the measurements, the vehicle shall be rocked 3 times up and down and then moved backwards and forwards for at least a complete wheel revolution.	Found within the limits of vertical inclination. Satisfactory

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 6 of 15 + Drwg (01) [37209]

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I (Cntd...)

Sr.No	Cl. No.	Description	Remarks
11.	6.2.6	May not be "**combined**" with any other lamp.	**Not combined**
12.	6.2.7	**Electrical Connections :** The passing -beam headlamps shall switch on simultaneously. The control for changing over to the passing beam(s) shall switch off the driving beam(s) simultaneously.	Satisfactory
		Passing beam headlamps with a light source approved in accordance with AIS-034 (Part 1) (Rev.1) shall remain switched on when the driving-beam is illuminated.	Not Applicable
13.	6.2.8	**Tell tale :** Optional non-flashing green signal lamp	**Panel Illumination**

4.3 Direction – Indicator lamp

Sr.No	Cl. No.	Description	Remarks
1.	6.3	**Presence:** Mandatory	Yes, Satisfactory
2.	6.3.1	**Number:** Two per side. **Arrangement:** Two front indicators & Two rear indicators	**02**-FDI **02**-RDI
3.	6.3.3.1	**Position** **Width:** The edges of the apparent surfaces in the direction of reference axes furthest from longitudinal median plane shall not be more than **300 mm** from the extreme outer edge of the vehicle.	**Front: 139mm** **Rear : 38mm** Satisfactory
4.		The inner edges of apparent surfaces in the direction of reference axes shall be at least **500 mm** apart	**Front: 540mm** **Rear: 753 mm**
5.	6.3.3.2 & 6.3.3.3	**Height:** Not less than **350 mm** nor more than **1500 mm** in case of L5 category above the ground.	**FDI:** **641 mm – 702mm** **RDI:** **633mm – 700mm** Satisfactory
6.		**Length:** The forward distance between the centre reference of the rear indicators and the transverse plane which constitutes the rearmost limit of the vehicle's over-all length shall not exceed **300 mm.**	**40 mm** Satisfactory
7.	6.3.4	**Geometric Visibility** 45° inwards 80° outwards for L5 category. Vertical angles: 15° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5°,however, if the height of the lamps is less than **750 mm.**	Satisfactory

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 7 of 15 + Drwg (01) [37209]

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I (Cntd...)

Sr.No	Cl. No.	Description	Remarks
8.	6.3.5, 6.3.6. & 6.3.7.	**Orientation** The front direction-indicators may move in line with the steering angle.	Do not move in line with the steering angle.
		Shall not be "combined" with any other lamp.	Satisfactory.
		Shall not be "reciprocally incorporated" with any other lamp;	Satisfactory.
9.	6.3.8, 6.3.8.1, & 6.3.8.2	**Electrical connections** Direction-indicator lamps shall switch on independently of the other lamps.	Satisfactory
		All direction-indicator lamps on one side of a vehicle shall be switched on and off by means of one control. If the front direction indicator lamp and amber colored front position lamp are grouped and condition of 7.7.4. Of AIS-010 (Part 3)(Rev. 1) are not met, the electrical connections shall be such that the front position shall be switched off during the entire period (both ON and OFF cycle) of activation of the direction indicator lamp.	Satisfactory
10.	6.3.9	"Circuit-closed" tell-tale Mandatory. This may be optical or auditory or both. If it is optical it shall be (a) flashing green lamp(s), which, in the event of defective operation of any of the direction-indicators, is extinguished, remains alight without flashing, or shows a marked change of frequency.	Flashing green lamp(s) tell-tale provided. Frequency increases in case of malfunction. Satisfactory
11.	6.3.10.1	Other Requirements In the case of all vehicles the direction indicator lamps of which are supplied with direct current, the light flashing frequency shall be 90 ± 30 times per minute;	**98** times/minute Satisfactory
12.	6.3.10.4.	In the event of failure, other than a short circuit, of one direction indicator lamp, the other(s) direction-indicator lamp(s) indicating the same direction shall continue to flash or remain alight, but the frequency in this condition may be different from that prescribed.	Frequency increases at fused condition Satisfactory

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 8 of 15 + Drwg (01) [37209]

ANNEXURE I (Cntd...)

4.4 Stop Lamp

Sr. No	Cl. No.	Description	Remarks
1.	6.4.1.3	**Presence:** Mandatory **Number:** Two	Yes, 02 Satisfactory
2.	6.4.3, & 6.4.3.1	**Position** **Width:** If there is only one stop lamp its centre of reference shall lie within the median longitudinal plane of the vehicle, or if there are two stop lamps they shall be symmetrical to the median longitudinal plane of the vehicle.	Satisfactory
3.	6.4.3.1.1 , 6.4.3.1.2, & 6.4.3.2.	In the case of L5 category vehicles with two rear wheels: At least **600 mm** between the two lamps. The distance may be reduced to **400 mm** of the maximum width if the vehicle is less than **1400 mm.**	**753 mm** Satisfactory
		In the case of L5 category vehicles with two rear wheels and two wheelers fitted with side cars, the edges of the illuminating surfaces furthest from the median longitudinal plane of the vehicle shall not be more than **300 mm** from the outermost part of the vehicle,	**40 mm**
		in height: not less than **250 mm** nor more than **1500 mm** above the ground;	Min: **490 mm** Max: **557 mm**
4.	6.4.4.	**Geometric visibility** **Horizontal angle:** 45° to left and to right for a single lamp; 30° for L5 category vehicles inwards for each pair of lamps; **Vertical angle:** 15° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5°, however, if the height of the lamp is less than **750 mm.**	Satisfactory
5.	6.4.5.	**Orientation** Towards the rear of the vehicle.	Satisfactory
6.	6.4.6.	**Electrical connections** Shall light up at any service brake application The stop lamps need not function if the device which starts and/or stops the engine is in a position which makes it impossible for the engine to operate.	Satisfactory
7.	6.4.7.	**"Circuit-closed" tell-tale** Tell-tale optional; where fitted, this tell-tale shall be an operating tell-tale consisting of a non-flashing warning light which comes on in the event of the malfunctioning of the stop lamps.	No tell tale provided Satisfactory

ANNEXURE I (Cntd...)

4.5 Rear-registration-plate illuminating device

Sr.No.	Cl. No.	Description	Remarks
1.	6.5.1.	**Presence:** Mandatory	Yes, Satisfactory
		Number One, The device may consist of several optical components designed to illuminate the space reserved for the registration plate.	One, Satisfactory
2.	6.5.2.	**Arrangement** Such that the device illuminates the space reserved for the rear registration plate.	Satisfactory
3.	6.5.3, 6.5.3.1, 6.5.3.2 6.5.3.3, 6.5.4.& 6.5.5	**Position** in width , in height, in length, Geometric visibility & Orientation. Such that the device illuminates the space reserved for the rear registration plate	Satisfactory
4.	6.5.6	**Tell tale:** Optional Its function shall be performed by the tell-tale prescribed for the position lamp.	Same as Position Lamp

4.6 Front Position Lamp:

Sr. No	Cl. No.	Description	Remarks
1.	6.6.1	**Presence** : Mandatory	Yes, Satisfactory.
2.	6.6.1.1	**Number** : Two	Two, Satisfactory.
3.	6.6.3.1.	**Position** **Width**: An independent front position lamp may be fitted above or below, or to one side of another front lamp: if these lamps are one above the other, the reference centre of the front position lamp shall be located within the median longitudinal plane of the vehicle; if these lamps are side by side, their reference centers shall be symmetrical in relation to the median longitudinal plane of the vehicle;	Front position lamp is combined with Front Direction Indicator. Reference centers are symmetrical in relation to the median longitudinal plane of the vehicle
4.	6.6.3.1.1.	The edges of the apparent surfaces in the direction of reference axes furthest from longitudinal median plane of vehicle shall not be more than **300 mm** from the extreme outer edge of the vehicle	**248mm** Satisfactory
5.	6.6.3.1.2.	The distance between the inner edges of the apparent surfaces in the direction of reference axes shall be minimum of **400 mm** when overall width of vehicle does not exceed **1400 mm** and minimum of **600 mm** when overall width of vehicle exceeds **1400 mm.**	**422 mm** Satisfactory

ANNEXURE I (Cntd...)

Sr.No.	Cl. No.	Description	Remarks
6.	6.6.3.2. & 6.6.3.3.	**Height:** not less than **350 mm** not more than **1200 mm** above the ground. **Length:** at the front of the vehicle.	**Min : 641 mm** **Max: 702mm** Satisfactory
7	6.6.4.	Geometric visibility Horizontal angle: 80° to left and to right for a single lamp: The horizontal angle may be 80° outwards and 45° inwards for each pair of lamps. Vertical angle: 15° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5°, however, if the height of the lamp is less than **750 mm**	Satisfactory
8	6.6.5	**Orientation** Forwards. The lamp(s) may move in line with the steering angle.	Does not move in line with the steering angle.
9	6.6.6.	"Circuit-closed" tell-tale Mandatory. Non-flashing green signal lamp. This tell-tale shall not be required if the instrument illumination lighting can be switched on or off only simultaneously with the position lamp(s).	Panel illumination is provided.

4.7 Rear position lamp

Sr.No.	Cl. No.	Description	Remarks
1	6.7.1, & 6.7.1.3.	**Presence** : Mandatory **Number** :Two	Yes Two, Satisfactory
2	6.7.3.1 & 6.7.3.1.1.	**Position** **Width:** The reference centre shall be located on longitudinal median plane of the vehicle if there is only one rear position lamp or, if there are two rear position lamps; these shall be symmetrical to longitudinal median plane of the vehicle.	Satisfactory
3	6.7.3.1.2	In the case of vehicles with two rear wheels, and two wheelers fitted with side car, the edges of the apparent surfaces in the direction of the reference axes furthest from longitudinal median plane of vehicle shall not be more than **300 mm** from the extreme outer edge of the vehicle.	**139 mm** Satisfactory
4	6.7.3.1.3	In the case of L5 category vehicles, the distance between the inner edges of the apparent surfaces in the direction of reference axes shall be minimum of **400 mm** when overall width of the vehicle does not exceed **1400 mm** and minimum of **600 mm**. when overall width of the vehicle exceeds **1400 mm.**	**753 mm** Satisfactory

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I (Cntd...)

Sr.No.	Cl. No.	Description	Remarks
5	6.7.3.2 & 6.7.3.3.	**Height:** not less than **250 mm** nor more than **1500 mm** above the ground **Length:** at the rear of the vehicle.	**Min: 490 mm** **Max: 557mm** Satisfactory
6	6.7.4,	**Geometric visibility** Horizontal angle: 80° to left and to right for a single lamp: the horizontal angle may be 80° outwards and 45° inwards for each pair of lamps. Vertical angle: 15° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5°, however, if the height of the lamp is less than **750 mm.**	Satisfactory
7	6.7.5	**Orientation** Rearwards.	Satisfactory
8	6.7.6.	Circuit-closed- tell-tale Optional: Its function shall be performed by the device prescribed for the front position lamp.	Same as Front Position Lamp

4.8 Rear retro-reflector, non-triangular

Sr.No.	Cl. No.	Description	Remarks
1.	6.8.1 & 6.8.1.2.	**Presence** : Mandatory **Number** Two	Yes Two, Satisfactory
2.	6.8.3 & 6.8.5.	**Position** in height: not less than **250 mm** nor more than **900 mm** above the ground;	**Min: 562 mm** **Max: 628 mm** Satisfactory
		Orientation: Rearwards	Satisfactory
3.	6.8.4.	**Geometric visibility** Horizontal angle: 30° to left and to right for a single reflector; 30° outwards and 10° inwards for each pair of reflectors. Vertical angle: 15° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5°, however, if the height of the lamp is less than **750 mm.**	Satisfactory

Prepared By	Checked By		Department Head	
HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 12 of 15 + Drwg (01) [37209]

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I (Cntd...)

Sr.No.	Cl. No.	Description	Remarks
4	6.8.6& 6.8.6.2	**Position** **Width:** L5 category vehicles, the edges of the illuminating surfaces furthest from longitudinal median plane of vehicle shall not be more than **300 mm** from the extreme outer edge of the vehicle.	**40 mm**
		The distance between the inner edges of the illuminating surfaces shall be minimum of **400 mm** when overall width of the vehicle does not exceed **1400 mm** and minimum of **500 mm** when overall width of the vehicle exceeds **1400 mm.**	**798 mm**

4.9 Vehicle-Hazard Warning signal (Not Applicable)

Sr.No.	Cl. No.	Description	Remarks
1	6.9.1	Optional	**Not Provided**
2		The signal shall be given by simultaneous operation of the Direction-indicator lamps in accordance with the requirements of Cl. No 6.3 of AIS 009 (rev-1):2011	Not applicable
3	6.9.2	**Electrical connections** The signal shall be given by means of a separate control enabling all the direction-indicators to be supplied with current simultaneously.	Not applicable
4	6.9.3	**"Circuit-closed" tell-tale** Mandatory. Flashing red signal lamp or, in the case of separate tell-tales, the simultaneous operation of the tell-tale prescribed in 6.3.9 of AIS -009 (REV-01):2011	Not applicable
5	6.9.4.	**Other requirements** Light flashing 90 ± 30 times per minute. Operation of the lamp-signal control shall be followed within not more than one second by the appearance of the light and within not more than one-and-one-half seconds by the first extinction of the light.	Not applicable

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HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 13 of 15 + Drwg (01) [37209]

C	T	0	C	K	0174

Date: 04.02.2015

ANNEXURE I (Cntd...)

4.10 Reversing lamp

Sr.No.	Cl. No.	Description	Remarks
1	6.16.1	**Presence** : Mandatory **Number:** one or two	Yes Two , Satisfactory
2	6.16.2	**Arrangement:** no individual specification	ok
3	6.16.3.1, 6.16.3.2, 6.16.3.3	**Position** **Width:** In case of two reversing lamps, they shall be mounted at rear, symmetrical with respect to longitudinal median plane of the vehicle. If there is only one, it may be mounted to one side of the vehicle at rear. **Height:** minimum 250 mm, maximum 1200 mm above the ground. **Length:** at the rear of the vehicle.	Satisfactory **Min : 561mm** **Max: 631 mm**
4	6.16.4	Geometric Visibility Defined by angles α and β as specified in 2.11 α = 15° upwards and 5° downwards; β = 45° to the right and to the left if there is only one reversing lamp; β = 45° outwards and 30° inwards if there are two reversing lamps.	Satisfactory
5	6.16.5	Alignment: towards the rear	Satisfactory
6	6.16.6	a) May be grouped with any other rear lamp. b) May not be combined with any other lamp. c) May not be reciprocally incorporated with another lamp.	Grouped with Rear Positioning lamp, stop lamp, Rear Direction indicator Lamp &reversing lamp
7	6.16.7	Electrical Connections Reversing lamp shall light up on engagement of reverse gear. However, it need not light up before the engine is started.	Satisfactory
8		Circuit-closed tell-tale Optional.	Provided White color tell-tale.

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HARSHA SINGH	MAHENDAR PAL		S.K. KALIA	Page 14 of 15 + Drwg (01) [37209]

C	T	0	C	K	0174

Date: 04.02.2015

ANNEEXURE II

1.0 Photographs of E-Rickshaw Model- "KUKU GREENS"

FRONT	REAR
	

SIDE

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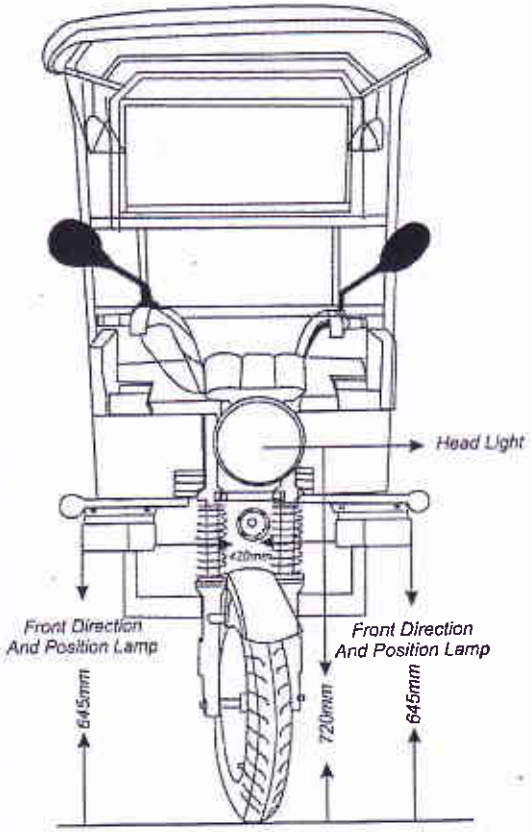
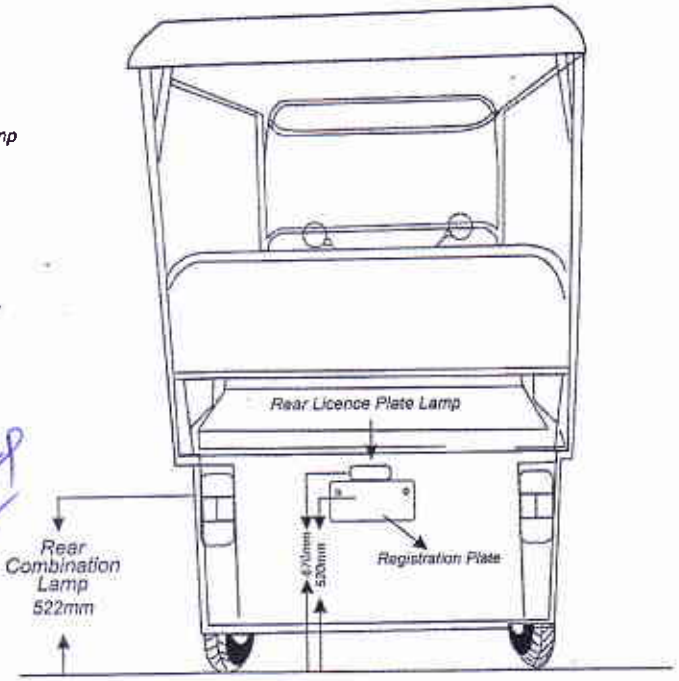
LIGHTING INSTALLATION

Front Side Lighting Installation



Back View



Rear Side Lighting Installation

TRN: CTOCK 0174
dtd: 4-2-15

Head Light:- **Make:- Lumax** **ID:-2091-02-00** **TAC No.:- C91336**	**Rear Combination lamp** **Make:- NEOLITE** **ID:- NEO541A** **TAC No:- C90688**	**Front Combination Lamp** **Make:- Lumax** **ID:- 35632M80110L LH** **ID:-.35612M80110R RH** **TAC No:- C90904**	**Registration Plate Lamp** **Make:- Lumax** **ID:- 01090040** **TAC No:- C91263**

QTY:-1	MATERIAL:-	DATE:- 05/12/2014
SHEET :-1/1	Model Name :- KUKU Greens	
SCALE: 1:1	Part Name-LIGHTING INSTALLATION	
	Drawing No. :- KG - LP - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN
DRAWN BY:	SHELLY TANWAR	Shelly
APPROVED BY:		

NOTES:-
1. VEHICLE DRAWN IN LADEN CONDITION.
2. ALL DIMENSIONS ARE IN MM.
3. SUBJECT TO CHANGE WITHOUT NOTICE.
4. CAUTION - DO NOT WELD OR DRILL IN FRAME.

For Kuku Automotives

Partner

Non - Transferable

TEST REPORT

C	T	0	C	K	0217

Date: 04.02.2015

1.0 NAME AND ADDRESS OF THE CUSTOMER : **M/s Kuku Automotives**
A-5 Yudistar Marg, C Scheme Jaipur,
Rajasthan- 302001

2.0 CUSTOMER REFERENCE : IOCS Registration No. CVTNBKUKUJ12T37209

3.0 DESCRIPTION OF TEST COMPONENT/S :

Category – E-Rickshaw, Passenger Carrier, Fitted with Hand Holds (Grab Handle)

Drawing No. : KG-HH-001
Vehicle Model : **Kuku Greens**
Motor No. : BM1418W-750/48 000520140621152
Chassis No. : MC7KGCB11R14J0001

Manufacturing Plant Address is same as mentioned in Sr. No. **1.0** above.

Sr. No.	Component (s)	Type	Material	Make
1	Hand Holds -04 Nos.	Grab Handle	Polypropylene	Auto Wire

4.0 OBJECTIVE OF THE TEST :

To carry out the Hand Hold Installation tests as per AIS: 046/2005 with its Amendment No. 1, February 2008.

5.0 CONCLUSION :

The E-Rickshaw specified in Sr. No. 3.0 of this test report met all the applicable test requirements of Hand Hold installations when tested as per AIS: 046/2005 with its Amendment No. 1, February 2008. The Test Results are given at Annexure-I.

Prepared By	Checked By		Department Head	
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Annexure – I

1.0 TEST REQUIREMENTS AND RESULTS:

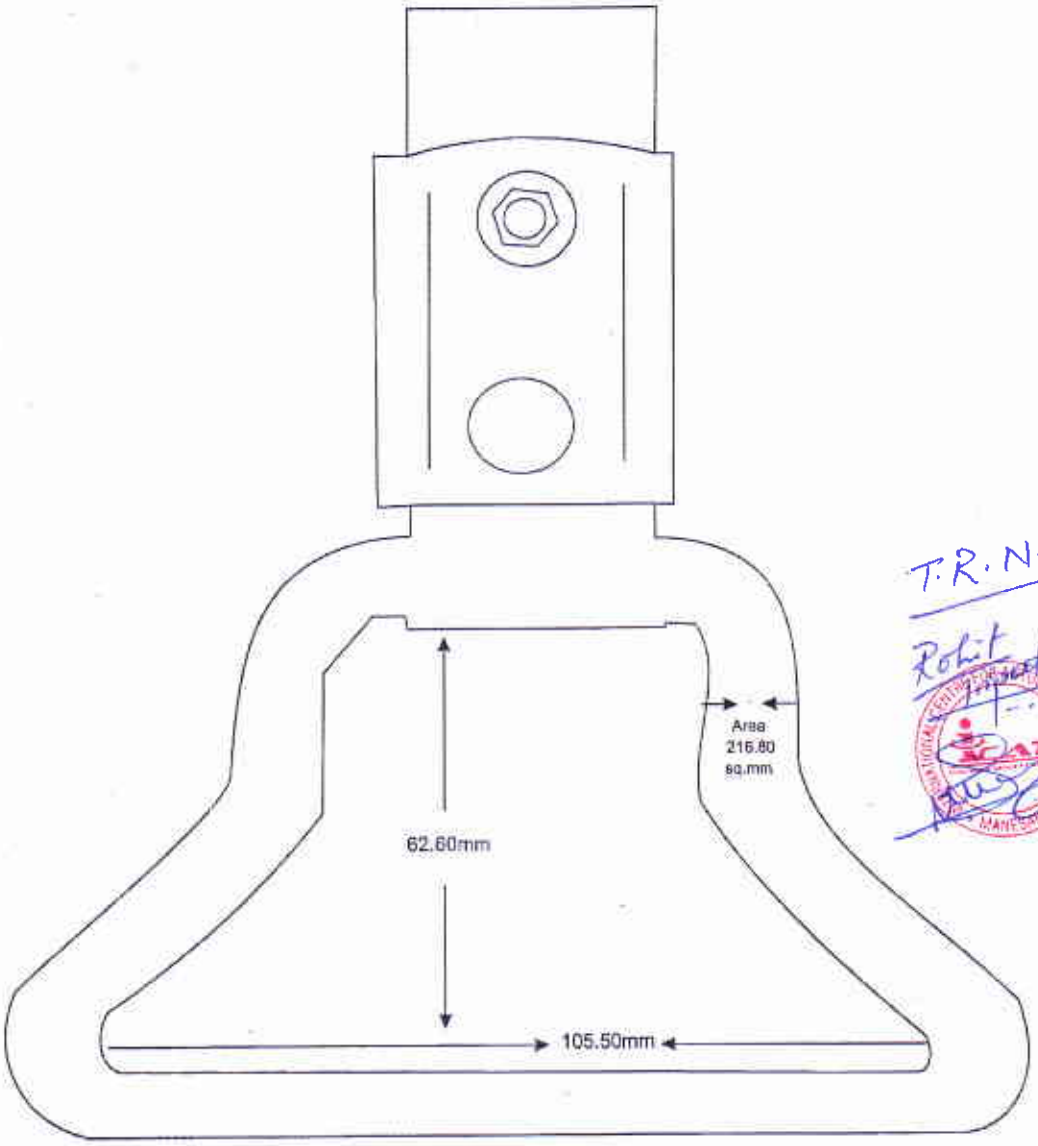
Sr. No.	TEST REQUIREMENTS	TEST RESULTS/ REMARKS
1.0	**General Requirements:-**	
1.1	The hand hold holds shall be in the *Grab-handle, Strap or Hand-rail form* depending on its intended purpose. [Clause No. 4.1]	Complied *(Grab Handle type)*
1.2	The hand holds shall be fitted for all the occupants sitting outboard except Driver. [Clause No. 4.1.1]	Complied
1.3	The fitment shall be such that it is convenient for the passenger (s) to make use of it in his normal sitting / standing position and during ingress & egress from the vehicle. [Clause No. 4.1.2]	Complied
1.4	The hand holds shall be a section enabling passengers to grasp then easily and firmly. [Clause No. 4.1.3]	Complied
1.5	The hand holds shall be such that it can be easily identifiable & having a slip free surface. [Clause No. 4.1.4]	Complied
1.6	The hand holds shall be so designed and installed as to present no risk of injury to passengers. [Clause No. 4.1.5]	Complied
2.0	**Dimensional Requirements:-**	
2.1	The length of the hand hold (L) shall be at least 100 mm to accommodate a hand of passenger. [Clause No. 4.2.1 (a)] L: Length of the Hand Hold	**L_1=105.55 mm** **L_2=105.61 mm** **L_3=105.61 mm** **L_4=105.74 mm** Complied
2.2	The clearance between hand-hold(s) (C) and the adjacent part of vehicle body or wall shall be of at least 25 mm. [Clause No. 4.2.1 (b)] C: Clearance of the Hand Hold	**C_1= 62.63 mm** **C_2= 62.87 mm** **C_3= 62.91 mm** **C_4= 63.19 mm** Complied
2.3	The cross sectional area measured at the middle of the length of the hand holds other than strap shall be between 130mm^2 and 1500 mm^2, enabling passenger to grasp them easily and firmly. [Clause No. 4.2.1 (c)]	**Area$_1$ = 216.80 mm^2** **Area$_2$ = 215.35 mm^2** **Area$_3$ = 218.25 mm^2** **Area$_4$ = 217.85 mm^2** Complied

Prepared By	Checked By		Department Head	
Rohit Tripathy				
ROHIT TRIPATHY	SAMIR SHIKALGAR		S.K. KALIA	

Annexure – I *(Contd...)*

Sr. No.	TEST REQUIREMENTS	TEST RESULTS/ REMARKS
2.4	In case of straps, width measured at the middle of the length of the strap shall be 40±5 mm. [Clause No. 4.2.1 (d)]	**NA**
3.0	**Strength Requirements:-**	
3.1	The grab-handle for individual passenger shall be designed in such a way that they shall be able to withstand, without snapping under installed condition, without snapping, a traction force of **70 kgf**, applied statically in the direction of application to the center surface of the grab handle. The compliance of the strength of the grab handle is to be demonstrated, either when installed on the vehicle or on separately on the test fixture, simulating vehicle installation condition. [Clause No. 4.3.1]	Withstood a traction force of 70 kgf without snapping. **Satisfactory.**

DIMENSIONAL DRAWING FOR HAND HOLD



T.R. No. CTOCK0217

Rohit Tripathy

QTY.:-1	MATERIAL:- Poly Propellene	DATE:- 05/12/2014
SHEET :- 1/1	Model Name - KUKU Greens	
Make:- Auto Wire	Part Name - HAND HOLD	
SCALE: 1:1	Drawing No. :- KG - HH - 001	
KUKU AUTOMOTIVES		
	NAME	SIGN
DRAWN BY:	SHELLY TANWAR	Shelly Tanwar
APPROVED BY:	SANJAY YADAV	

For Kuku Automotives

Partner

NOTES:-
1. All Dimensions in mm
2. Tolerance ± 1.00 mm