TÜV Rheinland (China) Ltd.
Member of TÜV Rheinland Group

TÜVRheinland®
Precisely Right.

CARGOBIKE AB
Peter, General Manager
-
VINTERGATAN 11,
SE-MALMO 21120
Sweden

Date : 24.04.2017
Our ref. : HS ZC10
Your ref.: P

Ref : AE Certificate of Conformity EMC

Type of Equipment : EPAC
Model Designation : See Certificate
Certificate No. : AE 50375891 0001
Report No. : 50076361 001

Dear Peter,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body

Dong Hu

Enclosure

证书的详细资料请登陆www.certipedia.com查阅，或拨打我司客服热线800 999 3668 / 400 883 1300咨询

TÜV Rheinland (China) Ltd.
莱茵检测认证服务（中国）有限公司
Unit 707, AVIC Bldg., No. 10B, Central Road, East 3rd Ring Road, Chaoyang District, Beijing, 100022, P.R.China
北京市朝阳区东三环中路乙10号艾维克大厦707室
邮编：100022
Tel: (8610)6566 6660
Fax: (8610)6566 6667
e-mail: info@bj.chn.tuv.com
Internet: http://www.chn.tuv.com

C E R T I F I C A T E

of Conformity
EC Council Directive 2014/30/EU
Electromagnetic Compatibility

TÜVRheinland®

Registration No.: AE 50375891 0001

Report No.: 50076361 001

Holder:
CARGOBIKE AB
VINTERGATAN 11,
SE-MALMO 21120
Sweden

Product:
Bicycle
(EPAC)

Identification:
Type Designation: UB9031E
Serial No.: n.a.
Remark: Refer to test report 50076361 001 for details.

Tested acc. to: EN 15194:2009+A1

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all provisions of Annex III of Council Directive 2014/30/EU. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to the a.m. Directive.

Certification Body

TÜV Rheinland LGA Products GmbH Zertifizierstelle

Date 24.04.2017

Dong Hu

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may only be used if all relevant and effective EC Directives are complied with. CE

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Prüfbericht-Nr.: *Test Report No.:*	**15092834 001**	**Auftrags-Nr.:** *Order No.:*	1200300762	Seite 1 von 18 *Page 1 of 18*
Kunden-Referenz-Nr.: *Client Reference No.:*	60056762	**Auftragsdatum:** *Order date:*	20.01.2017	
Auftraggeber: *Client:*	CARGOBIKE AB VINTERGATAN 11, SE-MALMO 21120 SWEDEN			
Prüfgegenstand: *Test item:*	EPAC			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	UB9031E			
Auftrags-Inhalt: *Order content:*	As per client's request			
Prüfgrundlage: *Test specification:*	EN 15194:2009+A1:2011 Cycles - Electrically power assisted cycles - EPAC Bicycles			

Wareneingangsdatum: *Date of receipt:*	16.01.2017
Prüfmuster-Nr.: *Test sample No.:*	A000514669
Prüfzeitraum: *Testing period:*	24.01.2017 – 06.04.2017
Ort der Prüfung: *Place of testing:*	Bicycle Laboratory
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland Antaean (Kunshan) Co.,Ltd.
Prüfergebnis*: *Test result*:*	Pass

geprüft von / *tested by*:			**kontrolliert von** / *reviewed by*:		
17.04.2017	Nan Jiang / PE	Nan Jiang	17.04.2017	Simon Huang / Reviewer and TC	Simon Huang
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other*:
Test sample was an EPAC tricycle, applicable tests of EN 14764:2005 were conducted.

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

V04

Liste der verwendeten Prüfmittel
List of used test equipment

Prüfmittel *Test equipment*	**Prüfmittel-Nr. / ID-Nr.** *Equipment No. / ID-No.*	**Nächste Kalibrierung** *Next calibration*
Temperature recorder	KS-T006	22.09.2017
Digital avo meter	KS-E008	22.09.2017
Clamp digital avo meter	KS-E009	22.09.2017
Voltage withstand tester	KS-E004	22.09.2017
Spring hammer	KS-I005	22.09.2017
Tachometer	KS-S002	22.09.2017
Test cylinder	KS-Z019	22.09.2017
Grip dimension gauge	KS-L017	22.09.2017
Push / Pull scale	KS-P004	22.09.2017
Constant temperature and humidity test chamber	KS-T005	25.11.2017
Wheel static strength and suspension fork testing machine	KS-Z002	22.09.2017
Standard servo type universal testing machine	KS-Z015	15.04.2017
Impact testing machine	KS-I003	22.09.2017
Rim strength test machine	KS-Z047	22.09.2017
Pedal dynamic testing machine	KS-Z004	22.09.2017
Crank assembly fatigue testing machine	KS-Z026	22.09.2017
Saddle & Seat pillar fatigue testing bench	KS-Z007	22.09.2017
Luggage carrier strength testing machine	KS-Z011	22.09.2017

Prüfbericht-Nr.: 15092834 001
Test Report No.:

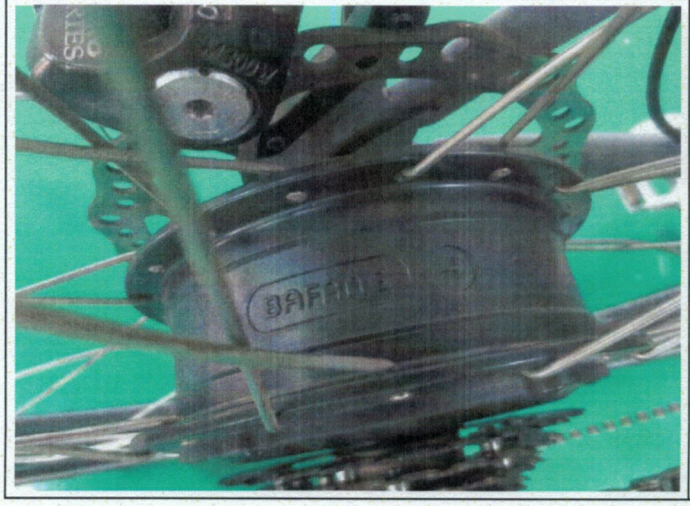
Produktbeschreibung
Product description

1	**Produktdetails** *Product details*	Motor in the rear wheel.
2	**Maße / Gewicht** *Dimensions / Weight*	Maximum saddle height: 962mm
3	**Bedienelemente** *Operating elements*	Electrically power assisted cycles.
4	**Ausstattung / Zubehör** *Equipment / Accessories*	Battery charger
5	**Verwendete Materialien** *Used materials*	Frame: Iron.
6	**Sonstiges** *Other*	Wheel size: Front: 20×1.95; Rear: 24×1.95.

1

2

3



4

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
1	**Scope**		
	This European Standard is intended to cover electrically power assisted cycles of a type which have a maximum continuous rated power of 0,25 kW, of which the output is progressively reduced and finally cut off as the vehicle reaches a speed of 25 km/h, or sooner, if the cyclist stops pedalling. Maximum continuous rated power: 250W This European Standard specifies safety requirements and test methods for the assessment of the design and assembly of electrically power assisted bicycles and sub-assemblies for systems using battery voltage up to 48 VDC or integrated a battery charger with a 230 V input. This European Standard specifies requirements and test methods for engine power management systems, electrical circuits including the charging system for the assessment of the design and assembly of electrically power assisted cycles and sub-assemblies for systems having a voltage up to and including 48 VDC or integrated a battery charger with a 230 V input. System voltage: 36V		
2	**Normative references**		
	Details see EN 15194:2009+A1:2011		
3	**Terms and definitions**		
	Details see EN 15194:2009+A1:2011		
4	**Requirements**		
4.1	General		
	Electrically power-assisted bicycles shall comply with Clause 4, 5 and 6 of the European Standard EN 14764:2005 in addition to the specific requirements in Clause 4.2 of this standard.	Details see Appendix I.	P ☒ F ☐ N/A ☐ N/T ☐
4.2	EPAC specific additional requirements		
4.2.1	Electric circuit		
	The electrical control system shall be designed so that, should it malfunction in a hazardous manner, it shall switch off power to the electric motor. If a symbol shows a function that is described by a symbol included in ISO 2575, the symbol shall be in accordance with that standard.	The electrical control system meet the requirement. No such symbols were used.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.2	Batteries		
4.2.2.1	Requirements		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
	EPAC and pack of batteries shall be designed in order to avoid risk of fire, mechanical deterioration resulting from abnormal use. Compliance is checked by the test described in 4.2.2.2.	Tested with positive result.	P ☒ F ☐ N/A ☐ N/T ☐
	During the test the EPAC and the batteries shall not emit flames, molten metal or poisonous ignitable gas in hazardous amounts and any enclosure shall show no damage that could impair compliance with this European Standard.	Tested with positive result.	
	Safety and compatibility of the combination battery/charger combination shall be ensured, according to the manufacturer's specifications.	Battery: 36V 11.6Ah; Charger: 42.0V 2.0A.	
	The battery terminals shall be protected against creating an accidental short circuit. Care shall be taken to ensure that the batteries are protected against overcharging. An appropriate overheating and short circuit protection device shall be fitted. NOTE Indication and example of solutions are given in Annex A.	Protection device provided.	
	Batteries and the charger unit shall be labelled in order to be able to check their compatibility.	Battery and charger are properly labelled.	
4.2.2.2	Test method		
	1) Battery terminals are short-circuited with the batteries in a fully charged condition. 2) Motor terminals are short-circuited; all commands are in ON position, whilst the batteries are fully charged. 3) The EPAC is operated with the electric motor or drive system locked up so as to fully discharge the battery or until the system stops. 4) The battery is charged for double the recommended charging period or for 24 hours depending upon which is the longest period. Charged period: 24 hours.		
4.2.3	Electric cables and connections		
4.2.3.1	Requirements		
	Cable and plug temperature shall be lower than that specified by the manufacturer of the cables and plugs. There shall be no corrosion on plug pins and no damage to cable and plug insulation.	Tested with positive result.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.3.2	Test method		
	Discharge the fully charged EPAC battery to the discharging limit specified by the EPAC or ESA manufacturer at the maximum current allowable by the system and record it, giving consideration to the electric motor and/or the controller and/or the battery controller. Measure the cable and plug temperatures and ensure, by examination, that there is no deterioration of the insulation on either assembly.		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
4.2.3.3	Wiring		
	a) Wire ways shall be smooth and free from sharp edges.	Checked OK.	P ☒ F ☐ N/A ☐ N/T ☐
	b) Wires shall be protected so that they do not come into contact with burrs, cooling fins or similar sharp edges that may cause damage to their insulation. Holes in metal through which insulated wires pass shall have smooth well-rounded surfaces or be provided with bushings.	Checked OK.	
	c) Wiring shall be effectively prevented from coming into contact with moving parts. Separate parts of the EPAC that can move in normal use or during user maintenance relative to each other, shall not cause undue stress to electrical connections and internal conductors, including those providing earthing continuity. Compliance with a), b), c) shall be checked by inspection.	Checked OK.	
	d) If an open coil spring is used, it shall be correctly installed and insulated. Flexible metallic tubes shall not cause damage to the insulation of the conductors contained within them. Compliance with d) shall be checked by inspection and by the following test method. If flexing occurs in normal use, the appliance is placed in its normal operational position and is supplied at rated voltage under normal operation. e) The movable part is moved backwards and forwards, so that the conductor is flexed through the largest angle permitted by its construction. For conductors that are flexed in normal use, flex movable part for 10 000 cycles at a test frequency of 0,5 Hz. For conductors that are flexed during user maintenance, flex the movable part for 100 cycles at the same frequency at (20 ± 5) °C. The wiring and its connections shall withstand the electrical strength test. The test voltage expressed in V shall be equal to (500 + 2×Vr) for 2 min and applied between live parts and other metal parts only. NOTE Vr is the rated voltage. f) The insulation of internal wiring shall withstand the electrical stress likely to occur in normal use. g) In case of integrated battery charger, electric safety of battery charger applies.	The open coil spring is not used Tested with positive result. Tested with positive result. The electrical strength test tested to voltage of 572V with positive result. Checked OK. Not integrated battery charger.	

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
4.2.3.4	Power cables and conduits		
	Conduit entries, cable entries and knock-outs shall be constructed or located so that the introduction of the conduit or cable does not reduce the protection measures adopted by the manufacturer. Compliance is checked by inspection. NOTE Power cables selection should be made referring to IEC 60364-5-52:2001, Clauses 522.1.2, 523.1523.3 and Table A 52-10.	Checked OK.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.3.5	External and internal electrical connections		
	Electrical connection shall comply with IEC 60364-5-52:2001, Clauses 526.1 and 526.2.	Checked OK.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.3.6	Moisture resistance		
	The EPAC are subjected to the test of IEC 60529 as follows: IPX4 appliances as described in Clause 14.2.4.a.	The EPAC was tested to IEC 60529 for IPX4 with positive result.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.3.7	Mechanical strength		
	EPAC shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use. Compliance is checked by: – applying impacts to the battery pack mounted on the EPAC by means of the spring hammer as specified in IEC 60068-2-75. The battery pack is rigidly supported and three impacts are applied to every point of the enclosure that is likely to be weak with an impact energy of (0,7 ± 0,05) J. After the test the battery pack shall show no damage that could impair compliance with this European Standard; – detachable battery packs are submitted to free fall at a height of 0,90 meter in three different positions. After the test the battery pack shall show no damage that could lead to emission of dangerous substances (gas or liquid) ignition, fire or overheating. NOTE It is recalled to the attention that batteries had to fulfil all relevant tests to ensure safety.	No damage shown after three impacts by the spring hammer. The battery is detachable. No damage shown after the free fall test.	P ☒ F ☐ N/A ☐ N/T ☐

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
4.2.4	Power management		
4.2.4.1	Requirements		
	When tested by the method described in 4.2.4.2 the recordings shall show that: a) assistance shall be provided only when the cyclist pedals forward. This requirement has to be checked according to the test methods described in 4.2.4.2.2 a); b) assistance shall be cut off when the cyclist stops pedalling forward such that the cut off distance does not exceed 5 m with the use of brake lever cut off switch or 2 m without the use of brake lever cut off switch. This requirement has to be checked according to the test methods described in 4.2.4.2.2 b); c) the output or assistance shall be progressively reduced (see Annex B) and finally cut off as the vehicle reaches the maximum assistance speed as designed. This requirement has to be checked according to the test methods described in 4.2.4.2; d) the assistance shall be progressively and smoothly managed.	 Pedalling forward: Assistance provided. Stopping pedalling forward: No assistance provided. Brake lever cut off switch was used. Cut off distance: N/A Checked OK. Checked OK.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.4.2	Test method - Electric motor management		
4.2.4.2 .1	Test conditions		
	a) The test may be performed either on a test track, a test bench or on a stand which keeps the motor driven wheel free of the ground. b) The test track shall be according to EN 14764:2005, Clause 4.6.8.5.1.1. c) The time-measuring device shall have an accuracy of ± 2%. d) The ambient temperature shall be between 5 °C and 35 °C. e) Maximum wind speed shall not exceed 3 m/s. f) The battery shall be fully charged according to the manufacturer's instructions.		
4.2.4.2 .2	Test procedure		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
	a) Check that there is no electric motor assistance when pedalling backwards. The test to ensure the compliance to this clause shall be adapted to the technology used. For example, pedal backwards and check the no load current point or that no torque is delivered on the driving wheel. b) Worst case conditions of gear ratio and speed shall be applied. c) Worst condition for speed is defined as 90% of cut off speed. d) Measure the distance travelled from cessation of pedalling and actuating the switch brake simultaneously (if any) to no power corresponding to no load current point provided by the electric motor by using: 1) speed versus time measurement, 2) direct or indirect torque versus distance measurement (e.g. motor current), 3) or any other appropriate method. e) Carry out the test ten times and then average.		
4.2.4.3	Start up assistance mode		
4.2.4.3 .1	Requirements		
	EPAC can be equipped with a start up assistance mode up to 6 km/h designed speed or lower values as specified by the manufacturer. Unauthorized use shall be prevented. This mode shall be activated by the voluntary and maintained action of the user either when riding without pedalling or when the user is pushing the cycle.	Measurement of the speed: 5.6km/h. Start up assistance mode is activated by maintained action.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.4.3 .2	Test method		
4.2.4.3 .2.1	Test conditions		
	a) The test may be performed either on a test track, a test bench or on a stand that keeps the motor driven wheel free of the ground. b) The speed-measuring device shall have the following characteristics: 1) Accuracy: ± 2% 2) Resolution: 0,1 km/h c) The ambient temperature shall be between 5 °C and 35 °C. d) Maximum wind speed: 3 m/s. e) The battery shall be fully charged according to the manufacturer's instructions.		
4.2.4.3 .2.2	Test procedure		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
	a) Pre-condition the EPAC by running it for 5 min at 80% of the maximum assistance speed as declared by the manufacturer, then stop. b) Activate the start up assistance mode and verify that the speed increases up to 6 km/h maximum designed speed or lower value. c) Verify that speed is going down to 0 km/h when start up assistance mode is deactivated and the current drops to a value equal to or less than no load current point when free rolling. d) Activate the start up assistance mode and maintain it for 1 min. e) Verify that speed is equal to or less than 6 km/h.		
4.2.5	Electro Magnetic Compatibility		
4.2.5.1	Emission		
	The EPAC and ESA shall conform to Annex C.	Refer to Test report: 50076361 001	P ☒ F ☐ N/A ☐ N/T ☐
4.2.5.2	Immunity		
	The EPAC and ESA shall conform to Annex C.	Refer to Test report: 50076361 001	P ☒ F ☐ N/A ☐ N/T ☐
4.2.5.3	Battery charger		
	As an EPAC is not intended to be used while charging, for integrated charger the whole EPAC plus integrated charger shall be tested. The following European standards apply for battery charger: EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3.	Test by document review of EMC test report of charger submitted from the client, Reference No.: 16016631 004 Issued by: TUV Rheinland(Guangdong) Ltd. Model of battery charger: SSLC084V42 Output: 42.0V 2.0A Manufacturer: Wuxi SANS ELECTRONIC CO.,LTD. It is the client's responsibility to ensure the compliance of the test sample with the requirements in this clause.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.6	Maximum speed for which the electric motor gives assistance		
4.2.6.1	Requirements		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
	The maximum speed for which the electric motor gives assistance may differ by ± 5% of the speed indicated on the label described within Clause 5 when determined according to the test method described in 4.2.6.2, from 25 km/h or lower values as specified by the manufacturer. During a production conformity check, the maximum speed may differ by ± 10% from the above-mentioned determined value.	Allowed max. speed range: 25(1±5%)km/h=(23.75-26.25)km/h The measured max. speed : 24.33km/h.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.6.2	Test method		
4.2.6.2 .1	Test conditions		
	a) The test may be performed either on a test track, a test bench or on a stand that keeps the motor driven wheel free of the ground. b) The speed-measuring device shall have the following characteristics: 1) Accuracy: ± 2% 2) Resolution: 0,1 km/h c) The ambient temperature shall be between 5 °C and 35 °C. d) Maximum wind speed: 3 m/s. e) The battery shall be fully charged according to the manufacturer instructions.		
4.2.6.2 .2	Test procedure		
	Any appropriate method for checking for this requirement is acceptable; one solution is to measure the cut-off speed, another being to measure the torque output. The following example describes the cut-off speed test. a) Pre-condition the EPAC by running it for 5 min at 80% of the maximum assistance speed as declared by the manufacturer. b) Record continuously the current and note the speed at which the current drops to a value equal to or less than “no load current point”. c) Whilst pedalling, ride steadily to reach a speed equal to 1,25 times (if possible by design) the maximum assistance speed as declared by the manufacturer. d) Verify that the noted value in b) is in accordance with 4.2.6.1.		
4.2.7	Maximum power measurement		
4.2.7.1	Measurement at the engine shaft		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
	The maximum continuous rated power shall be measured according to EN 60034-1 when the motor reaches its thermal equilibrium as specified by the manufacturer. NOTE Thermal equilibrium: temperatures of motor parts do not vary more than 2K per hour. In circumstance where the power is measured directly at the shaft of the electronic motor, the result of the measurement shall be decreased by 1,10 to consider the measurement uncertainty and then by 1,05 to include for example the transmission losses, unless the real values of these losses are determined.	Measurement: 250W when reaching the thermal equilibrium.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.7.2	Alternative method		
	When the power is measured at the wheel, the result of the measurement is the reading value. Annex D gives guidance on how to measure the power at the wheel.	This method was not used.	P ☐ F ☐ N/A ☒ N/T ☐
5	**Marking, labelling**		
	In addition to the requirements of EN 14764, the EPAC shall be visibly and durably marked according to EN 15194 as follows: – EPAC According to EN 15194: – XX km/h – XX W	 25km/h; 250W.	P ☒ F ☐ N/A ☐ N/T ☐
6	**Instruction for use**		
	In addition to the instructions required by the bicycles standard EN 14764, each EPAC shall be provided with a set of instructions containing information on: 1) concept and description of electric assistance; 2) recommendation for washing; 3) control and tell tales; 4) specific EPAC recommendations for use; 5) specific EPAC warnings; 6) recommendations about battery charging and charger use as well as the importance of following the instruction contained on the label of the battery charger.	Instruction was provided and checked OK.	P ☒ F ☐ N/A ☐ N/T ☐
Annex A	**(informative)** **Example of recommendation for battery charging**		
	Details see EN 15194:2009+A1:2011		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
Annex B	**(informative)** **Example of relation between speed/torque/current**		
	Details see EN 15194:2009+A1:2011		
Annex C	**(normative)** **Electromagnetic compatibility of EPAC and ESA**		
	Details see EN 15194:2009+A1:2011		
Annex D	**(informative)** **Maximum power measurement - Alternative method**		
	Details see EN 15194:2009+A1:2011		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*

Appendix I *EN 14764:2005 clauses 4, 5 and 6*

4	**Requirements and test methods**		
4.1	Brake tests and strength tests – Special requirements		
4.2	Sharp edges	Checked OK.	P
4.3	Security and strength of safety-related fasteners		
4.3.1	Security of screws	Checked OK.	P
4.3.2	Minimum failure torque		P
4.3.3	Folding bicycles		N/A
4.4	Crack detection methods		
4.5	Protrusions	Checked OK.	P
4.6	Brakes		
4.6.1	Braking-systems	Front: Disc brake; Rear: Disc brake. Asbestos content in brake-blocks is not determined.	P
4.6.2	Hand-operated brakes		
4.6.2.1	Brake-lever position	Right lever controls rear brake; Left lever controls front brake. The compliance with the legislation or custom and practice of the country in which the bicycle is to be sold is not checked.	P
4.6.2.2	Brake-lever grip dimensions	Minimum intended height of the saddle: 873mm.	P
4.6.2.3	Handbrake levers — Position of applied force	The position of applied force is 25mm from the lever end.	P
4.6.3	Attachment of brake assembly and cable requirements		P
4.6.4	Brake-block and brake-pad assemblies — Security test		P
4.6.5	Brake adjustment		P
4.6.6	Hand-operated braking-system — Strength test		P
4.6.7	Back-pedal braking system		
4.6.7.1	General		N/A
4.6.7.2	Strength test — Requirement		N/A
4.6.8	Braking performance		
4.6.8.1	General		
4.6.8.2	Test bicycle		
4.6.8.3	Secondary brake-levers		N/A
4.6.8.4	Requirements		

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4.6.8.4 .1	Braking distance	Track test was used Braking distance: Both in dry: 5.89m; Rear in dry: 12.48m; Both in wet: 4.13m; Rear in wet: 5.72m.	P
4.6.8.4 .2	Smooth, safe-stop characteristics	Cycle can smooth, safely stop.	P
4.6.8.4 .3	Ratio between wet and dry braking performance	Both brakes: 0.75; Rear brake: 1.26.	P
4.6.9	Brakes - Heat-resistance test		N/A
4.7	Steering		
4.7.1	Handlebar — Dimensions	Overall width: 625mm Differential of vertical distance: 272mm	P
4.7.2	Handlebar grips and plugs	Handlebar ends fitted with handgrips.	P
4.7.3	Handlebar stem - Insertion-depth mark or positive stop		N/A
4.7.4	Handlebar stem-extension to fork-stem - Clamping requirements		N/A
4.7.5	Steering stability		N/A
4.7.6	Steering assembly — Static strength and security tests		
4.7.6.1	Handlebar-stem - Lateral bending test	See clause 4.7.6.2	N/A
4.7.6.2	Handlebar and stem assembly — Lateral bending test	Permanent set: 0.64mm	P
4.7.6.3	Handlebar-stem — Forward bending test		N/A
4.7.6.4	Handlebar to handlebar-stem — Torsional security test		N/A
4.7.6.5	Handlebar-stem to fork-stem — Torsional security test		N/A
4.7.6.6	Bar-end to handlebar — Torsional security test		N/A
4.7.7	Handlebar and stem assembly — Fatigue test		N/A
4.8	Frames		

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4.8.1	Suspension-frames — Special requirements		N/A
4.8.2	Frame and front-fork assembly - Impact test (falling mass)		N/A
4.8.3	Frame - Fatigue test with pedalling forces		N/A
4.8.4	Frame - Fatigue test with a vertical force		N/A
4.9	Front fork		
4.9.1	General		
4.9.2	Means of location of the axle and wheel retention		N/A
4.9.3	Suspension-forks — Special requirements		
4.9.3.1	Fail-safe requirement		N/A
4.9.3.2	Tyre-clearance test		N/A
4.9.3.3	Tensile test		N/A
4.9.4	Front fork — Static bending test		N/A
4.9.5	Front fork — Rearward impact test		
4.9.5.1	Crown/stem joint assembled by welding or brazing		N/A
4.9.5.2	Crown/stem joint assembled by press-fitting, bonding, or clamping		N/A
4.9.6	Front fork — Bending fatigue test		N/A
4.9.7	Forks intended for use with hub- or disc-brakes		
4.9.7.1	General		N/A
4.9.7.2	Static brake-torque test		N/A
4.9.7.3	Fork for hub/disc-brake — Repeated brake-torque test		N/A
4.10	Wheels and wheel/tyre assembly		
4.10.1	Rotational accuracy		
4.10.1.1	General		
4.10.1.2	Wheels/tyre assembly — Concentricity tolerance	Front wheel: 0.68mm; Rear wheel: 0.41mm.	P
4.10.1.3	Wheels/tyre assembly — Lateral tolerance	Front wheel: 0.84mm; Rear wheel: 0.53mm.	P
4.10.2	Wheel/tyre assembly — Clearance	Checked OK.	P
4.10.3	Wheels — Static strength test	Front wheel: 0.65mm; Rear wheel: 0.29mm.	P
4.10.4	Wheels — Wheel retention		
4.10.4.1	General	Front wheel: nuts; Rear wheel: nuts.	P
4.10.4.2	Front wheel retention — Retention devices secured		N/A
4.10.4.3	Rear wheel retention — Retention devices secured		N/A
4.10.4.4	Front wheel retention — Retention devices unsecured		P
4.10.5	Wheels — Quick-release devices		
4.10.5.1	Quick-release devices — Operating features		N/A

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4.10.5.2	Quick-release devices — Wheel removal		N/A
4.11	Rims, tyres and tubes		
4.11.1	Tyre inflation pressure	Max. recommended pressure: 65P.S.I.	P
4.11.2	Tyre and rim compatibility	ISO 5775 is not requested.	P
4.11.3	Rim-wear		N/A
4.12	Mudguards		
4.12.1	Requirement		P
4.13	Pedals and pedal/crank drive system		
4.13.1	Pedal tread		
4.13.1.1	Tread surface		P
4.13.1.2	Toe Clips	a): Tread surfaces on the top and bottom surfaces of the pedal	P
4.13.1.3			N/A
4.13.2	Pedal clearance		
4.13.2.1	Ground clearance		N/A
4.13.2.2	Toe clearance	Left side: 146mm; Right side: 148mm.	P
4.13.3	Pedal/pedal-spindle assembly — Static strength test		P
4.13.4	Pedal-spindle — Impact test	Permanent bending: 6mm	P
4.13.5	Pedal/pedal-spindle — Dynamic durability test		P
4.13.6	Drive-system — Static strength test	Multi-speed system	N/A
4.13.7	Crank assembly — Fatigue test	Test frequency: 1.5Hz.	P
4.14	Saddles and seat-pillar		
4.14.1	General		
4.14.2	Limiting dimensions	Checked OK.	P
4.14.3	Seat-pillar - Insertion-depth mark or positive stop	a) a permanent, transverse mark	P
4.14.4	Saddle/seat pillar		
4.14.4.1	Saddles with adjustment-clamps		P
4.14.4.2	Saddles without adjustment-clamps		N/A
4.14.5	Saddle — Static strength test		P
4.14.6	Saddle and seat-pillar clamp - Fatigue test	Test frequency: 1.5Hz.	P
4.14.7	Seat-pillar — Fatigue test	See clause 4.14.6	N/A
4.15	Drive-chain	ISO 9633 is not requested.	P
4.16	Chainguard		
4.16.1	Requirement	b): A protective device was provided.	P

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4.16.2	Chain-wheel disc diameter		N/A
4.16.3	Chain protective device		P
4.16.4	Combined front gear-change guide		N/A
4.17	Spoke protector		P
4.18	Luggage carriers	Normal rear mounted luggage carrier: 25kg. Complied with EN 14872.	P
4.19	Handling and operation of a fully-assembled bicycle		P
4.20	Lighting systems and reflectors		
4.20.1	Lighting and reflectors	Lighting: Rear: Red; Reflector: Front: White; Rear: Red; Front Side: Reflective material + White reflector; Rear Side: Reflective material; Pedal: Yellow.	P
4.20.2	Wiring harness		N/A
4.21	Warning device		N/A
5	**Manufacturer's instructions**	Instruction was provided and checked OK.	P
6	**Marking**		
6.1	Requirement		P
6.2	Durability test		P

***** End of test report *****