Prüfbericht-Nr.: *Test Report No.*:	**15102735 001**	**Auftrags-Nr.:** *Order No.*:	1200300814	Seite 1 von 23 *Page 1 of 23*
Kunden-Referenz-Nr.: *Client Reference No.*:	419879	**Auftragsdatum:** *Order date*:	25.04.2017	
Auftraggeber: *Client*:	**XIANGJIN (TIANJIN) CYCLE CO., LTD.** No.20, Xixia Road, Zhongbei Industrial Zone,Xiqing District,Tianjin 300112 P.R. China			
Prüfgegenstand: *Test item*:	EPAC Bicycle			
Bezeichnung / Typ-Nr.: *Identification / Type No.*:	E-times City 4000DV-26/28			
Auftrags-Inhalt: *Order content*:	Test of selected parameters			
Prüfgrundlage: *Test specification*:	EN 15194:2009+A1:2011 Cycles-Electrically power assisted cycles-EPAC Bicycle			

Wareneingangsdatum: *Date of receipt*:	25.04.2017
Prüfmuster-Nr.: *Test sample No.*:	A000562525-001 A000562525-002~12
Prüfzeitraum: *Testing period*:	24.07.2017 – 01.08.2017 01.08.2017 – 11.08.2017
Ort der Prüfung: *Place of testing*:	Bicycle lab
Prüflaboratorium: *Testing laboratory*:	TÜV Rheinland Antaean (Kunshan) Co.,Ltd.
Prüfergebnis*: *Test result**:	Pass

geprüft von / *tested by*:

22.08.2017	Rain Wei / PE	Rain wei
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

kontrolliert von / *reviewed by*:

22.08.2017	Simon Huang / Reviewer	Simon Huang
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other* :

1. Partial tests were subcontracted to external laboratories which are assessed to be competent.
2. EMC test report no: **50083918 001**. Certificate number: **AE 50381211 0001**.

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*

V04

Liste der verwendeten Prüfmittel
List of used test equipment

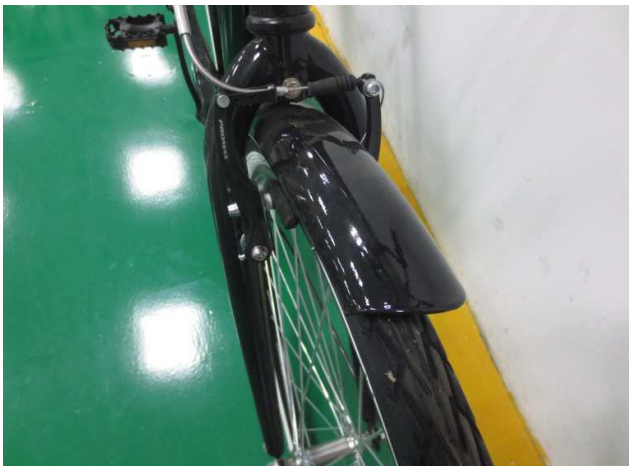
Prüfmittel *Test equipment*	**Prüfmittel-Nr. / ID-Nr.** *Equipment No. / ID-No.*	**Nächste Kalibrierung** *Next calibration*
Spring hammer	GC-KS-I005	29.08.2018
Voltage withstand test meter	GC-KS-E004	29.08.2018
Leakage current tester	GC-KS-E005	29.08.2018
Numberical controller and 4 pneumatical actuator for bicycle benches	GC-KS-E002	29.08.2018
Push-Pull Scale	GC-KS-P004	29.08.2018
Torque meter	GC-KS-R002	29.08.2018
Steel tape	GC-KS-L020	29.08.2018
Digital Vernier caliper	GC-KS-L006	29.08.2018
Crank assembly fatigue testing machine	GC-KS-Z026	29.08.2018
Frame pedalling fatigue test machine	GC-KS-Z024	29.08.2018
Falling mass impact tester	GC-KS-I001	29.08.2018
Wheels retention test machine	GC-KS-Z003	29.08.2018
Wheel static strength and suspension fork test machine	GC-KS-Z002	29.08.2018
Driving system static loading test machine	GC-KS-Z016	29.08.2018
Handlebar assembly /Seat assembly clamping performance test machine	GC-KS-Z001	29.08.2018
Standard servo type universal test machine (5T)	GC-KS-Z015	29.08.2018
Balance	GC-KS-L022	29.08.2018
Grip dimension gauge 90mm	GC-KS-L017	29.08.2018
Front fork fatigue test machine	GC-KS-Z029	29.08.2018
Saddle & seat pillar fatigue test bench	GC-KS-Z007	29.08.2018
Frame horizontal and vertical fatigue test bench	GC-KS-Z010	29.08.2018
Impact test machine	GC-KS-I003	29.08.2018
Digital thermometer	GC-KS-T003	29.08.2018
Centesimal meter 50mm	GC-KS-L011	29.08.2018
Braking performance test machine	GC-KS-Z030	29.08.2018
Integrated fatigue test machine for bicycle components	GC-KS-Z054	07.09.2018
Pedal dynamic test machine	GC-KS-Z034	29.08.2018
Handlegrip removal test stand	GC-KS-Z022	29.08.2018

Produktbeschreibung
Product description

1	**Produktdetails** *Product details*	EPAC Bicycle.
2	**Maße / Gewicht** *Dimensions / Weight*	Max. saddle height: 901mm; Weight: 25.60kg.
3	**Bedienelemente** *Operating elements*	N/A.
4	**Ausstattung / Zubehör** *Equipment / Accessories*	Battery charger.
5	**Verwendete Materialien** *Used materials*	Frame: Steel.
6	**Sonstiges** *Other*	Wheel size: 700X38C; Speed: 1×6.

1

2



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4

Absatz	**EN 15194:2009+A1:2011**	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / *Requirements - Tests*	*Measuring results - Remarks*	*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. 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.		
2	**Normative references**		
	Details see EN 15194: 2009+A1:2011		
3	**Terms and definitions**		
	Details see EN 15194: 2009+A1:2011		
4	**Requirements**		
	Details see EN 15194: 2009+A1:2011		
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.	Refer to Appendix I from Page 16 to 22.	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.	Checked Ok. The electrical system meet the requirement. The symbol "ON/OFF" function was used,complied with ISO 2575.	P ☒ F ☐ N/A ☐ N/T ☐

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

4.2.2	**Batteries**		
4.2.2.1	**Requirements**		
	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.	The Li-ion batteries are tested with positive results.	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.	Output of battery: 36V 7.8Ah; Type: Li-ion.	
	Safety and compatibility of the combination battery/charger combination shall be ensured, according to the manufacturer‘s specifications.	Checked Ok.	
	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.	Protective circuit provided. Fuse provided.	
	Batteries and the charger unit shall be labelled in order to be able to check their compatibility.	Battery and charger were 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.		

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

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.		
4.2.3.3	**Wiring**		
	a) Wire ways shall be smooth and free from sharp edges. 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. 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 for a) to c).	P ☒ F ☐ N/A ☐ N/T ☐

Absatz	**EN 15194:2009+A1:2011**	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / *Requirements - Tests*	*Measuring results - Remarks*	*Evaluation*
Continue of **4.2.3.3**	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 10000 cycles at a 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. 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.	No open coil spring used. No flexible metallic tubes used. Such conductors were tested for 10 000 cycles with positive results. Electrical strength test to voltage of 572V with positive results. Not integrated battery charger.	P ☒ F ☐ N/A ☐ N/T ☐
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. The conduit and cable entries has protection of bushing and protective tubes.	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 ☐

Absatz	**EN 15194:2009+A1:2011**	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / *Requirements - Tests*	*Measuring results - Remarks*	*Evaluation*
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 complete EPAC was subjected to the IPX4 test, no mal-function was found after the test.	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 fulfill all relevant tests to ensure safety.	No damage shown after three impacts by the spring hammer. The battery is detachable. No damage occurred after the free fall test. The tests are subcontracted to external laboratory which has been assessed to be competent.	P ☒ F ☐ N/A ☐ N/T ☐

Absatz	**EN 15194:2009+A1:2011**	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / *Requirements - Tests*	*Measuring results - Remarks*	*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:		P ☒ F ☐ N/A ☐ N/T ☐
	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);	Pedalling forward: assistance provided; Pedalling backward: no assistance provided.	
	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);	Brake levers cut off switch fitted. Cut off distance: 2.80m.	
	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;	Checked Ok.	
	d) the assistance shall be progressively and smoothly managed.	Checked Ok.	
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.	An indoor test bench was used to perform the test.	P ☒ F ☐ N/A ☐ N/T ☐

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

4.2.4.2 .2	**Test procedure**
	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: – speed versus time measurement, – direct or indirect torque versus distance measurement (e.g. motor current), – or any other appropriate method. e) Carry out the test ten times and then average.

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

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.	Start up assistance mode is activated by maintained action. Measurement of the speed: 5.8km/h.	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: - Accuracy: ± 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**		
	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. >A1 deleted text A1< e) Verify that speed decreases when the start up assistance mode is activated and the current drops to a value equal to or less than no load current point. f) Activate the start up assistance mode and maintain it for 1 min. g) Verify that speed is equal to or less than 6 km/h.		

Absatz *Clause*	**EN 15194:2009+A1:2011** Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse - Bemerkungen *Measuring results - Remarks*	Bewertung *Evaluation*
4.2.5	**Electro Magnetic Compatibility**		
4.2.5.1	**Emission**		
	The EPAC and ESA shall conform to Annex C.	Refer to the EMC test report no.: 50083918 001 The tests are subcontracted to external laboratory which has been assessed to be competent.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.5.2	**Immunity**		
	The EPAC and ESA shall conform to Annex C.	Refer to the EMC test report no.: 50083918 001 The tests are subcontracted to external laboratory which has been assessed to be competent.	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, EN55014-2, EN61000-3-2, EN61000-3-3.	By document review of the EMC test report of battery charger submitted from the client, Reference No.: 16072519 001 Issued by: TÜV Rheinland (Guangdong) Ltd. Model: SSLC084V42J Output: 42.0V 2.0A Manufacturer: Wuxi Sans Elecctronic Co.,Ltd. Testing is not requested; It is the client's responsibility to ensure the compliance of the battery charger with the requirements.	P ☒ F ☐ N/A ☐ N/T ☐

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

4.2.6	**Maximum speed for which the electric motor gives assistance**		
4.2.6.1	**Requirements**		
	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.	The measured max. speed : 24.9km/h. Allowed max. speed range: 25(1±5%)km/h= (23.75-26.25)km/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: Accuracy: ± 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.		

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

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 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**		
	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.	197.5W when reaching equilibrium. The tests are subcontracted to external laboratory which has been assessed to be competent.	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 ☐

Absatz	**EN 15194:2009+A1:2011**	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / *Requirements - Tests*	*Measuring results - Remarks*	*Evaluation*
5	**Marking, labeling**		
	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 [1)] - XX W [2)] [1)] Cut of speed [2)] Electric motor maximum continuous rated power	25km/h; 197.5W.	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.	Instructions manual checked ok.	P ☒ F ☐ N/A ☐ N/T ☐
Annex A	**Example of recommendation for battery charging (informative)**		
	Details see EN 15194: 2009+A1:2011		
Annex B	**Example of relation between speed/torque/current (informative)**		
	Details see EN 15194: 2009+A1:2011		
Annex C	**Electromagnetic compatibility of EPAC and ESA (normative)**		
	Details see EN 15194: 2009+A1:2011		
Annex D	**Maximum power measurement — Alternative method (informative)**		
	Details see EN 15194: 2009+A1:2011		

Absatz	**EN 15194:2009+A1:2011**	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / *Requirements - Tests*	*Measuring results - Remarks*	*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		P
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	Tested with max. recommended torque × 150% with positive results.	P
4.3.3	Folding bicycles	Not a folding bicycle.	N/A
4.4	Crack detection methods		P
4.5	Protrusions		P
4.6	Brakes		
4.6.1	Braking-systems	Front: V-type brake; Rear: V-type brake; Asbestos content in brake-blocks is not determined.	P
4.6.2	Hand-operated brakes		
4.6.2.1	Brake-lever position	Left lever controls rear brake; Right lever controls front brake.	P
4.6.2.2	Brake-lever grip dimensions	Minimum intended height of the saddle: 832mm; Brake lever grip dimension is less than 90 mm.	P
4.6.2.3	Handbrake levers-Position of applied force	The position of applied force is 25mm from the free end of the brake-lever.	P
4.6.3	Attachment of brake assembly and cable requirements	Brake caps were not removed with force of 20N.	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	No back-pedal brake fitted.	N/A
4.6.8	Braking performance		
4.6.8.1	General	Machine test method adopted.	P
4.6.8.2	Test bicycle		
4.6.8.3	Secondary brake-levers	No secondary brake-lever	N/A
4.6.8.4	Requirements		

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4.6.8.4.1	Braking distance	Braking distance: Both in dry: 3.71m; Rear in dry: 10.3m; Both in wet: 3.55m; Rear in wet: 5.87m.	P
4.6.8.4.2	Smooth, safe-stop characteristics	Linearity: see Annex 1; Simple track test: bicycle can smooth, safely stop.	P
4.6.8.4.3	Ratio between wet and dry braking performance	Ratio of braking force between wet and dry: Front brake: Applied force / Ratio 80N / 107% 100N / 110% 120N / 105% Rear brake: Applied force / Ratio 100N / 109% 120N / 110% 140N / 108%	P
4.6.9	Brakes - Heat-resistance test		N/A
4.7	Steering		
4.7.1	Handlebar- Dimensions	Overall width: 634mm; Vertical distance: 293mm.	P
4.7.2	Handlebar grips and plugs	Handgrips fitted.	P
4.7.3	Handlebar stem - Insertion-depth mark or positive stop	Diameter of the handlebar stem: 25.24mm; Length of marking > 25.24mm; The marking locates at 64.43mm from the bottom of the stem; The marking locates at 40.41mm from the lowest circular cross-section part.	P
4.7.4	Handlebar stem-extension to fork-stem - Clamping requirements		N/A
4.7.5	Steering stability	Checked Ok; Percentage: 25.9%.	P
4.7.6	Steering assembly-Static strength and security tests		
4.7.6.1	Handlebar-stem- Lateral bending test		N/A
4.7.6.2	Handlebar and stem assembly - Lateral bending test	Permanent set: 4.96mm.	P
4.7.6.3	Handlebar-stem- Forward bending test	Permanent set in first stage: 0.62mm.	P
4.7.6.4	Handlebar to handlebar-stem - Torsional security test		P

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4.7.6.5	Handlebar-stem to fork-stem - Torsional security test		P
4.7.6.6	Bar-end to handlebar- Torsional security test	No bar-ends fitted.	N/A
4.7.7	Handlebar and stem assembly - Fatigue test	Test frequency in two stages: 1.5Hz.	P
4.8	Frames		
4.8.1	Suspension-frames - Special requirements	Not suspension frame.	N/A
4.8.2	Frame and front-fork assembly - Impact test (falling mass)	A fork is fitted; Permanent set: 8.0mm;	P
4.8.3	Frame - Fatigue test with pedalling forces	Test frequency: 1.5Hz.	P
4.8.4	Frame - Fatigue test with a vertical forces	Test frequency: 1.5Hz.	P
4.9	Front fork		
4.9.1	General		
4.9.2	Means of location of the axle and wheel retention		P
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	Permanent set: 2.63mm.	P
4.9.5	Front fork - Rearward impact test		
4.9.5.1	Crown/stem joint assembled by welding or brazing	Permanent set: 13.0mm.	P
4.9.5.2	Crown/stem joint assembled by press-fitting, bonding, or clamping	See 4.9.5.1.	N/A
4.9.6	Front fork - Bending fatigue test	Test frequency: 1.5Hz.	P
4.9.7	Forks intended for use with hub- or disc-brakes		
4.9.7.1	General	Not intended for use with hub- or disc- brakes.	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	Concentricity tolerance checked < 1mm;	P
4.10.1.3	Wheels/tyre assembly - Lateral tolerance	lateral tolerance checked < 1mm.	P
4.10.2	Wheel/tyre assembly - Clearance	Checked Ok.	P

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4.10.3	Wheels - Static strength test	Front permanent set: 0.09mm. Rear permanent set: 0.12mm.	P
4.10.4	Wheels - Wheel retention		
4.10.4.1	General	Checked Ok.	P
4.10.4.2	Front wheel retention - Retention devices secured		P
4.10.4.3	Rear wheel retention - Retention devices secured		P
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	Not fitted with quick-released device.	N/A
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: 65 P.S.I.	P
4.11.2	Tyre and rim compatibility	Checked ok; Tested pressure: 65×1.1=71.5 P.S.I.	P
4.11.3	Rim-wear	Rim-wear (grooves) was present on front and rear rims.	P
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	Pedals designed to be used only with toe-clips or shoe-retention devices shall have toe-clips or shoe-retention devices securely attached and need not comply with the requirements of 4.13.1.2 a) and b).		N/A
4.13.2	Pedal clearance		
4.13.2.1	Ground clearance	Ground clearance checked > 25^{o}.	P
4.13.2.2	Toe clearance	Toe clearance checked > 100mm.	P
4.13.3	Pedal/pedal-spindle assembly - Static strength test		P
4.13.4	Pedal-spindle - Impact test	Permanent bending: 6.0mm.	P
4.13.5	Pedal/pedal-spindle - Dynamic durability test		P

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4.13.6	Drive-system - Static strength test	Multi-speed system.	P
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		P
4.14.3	Seat-pillar - Insertion-depth mark or positive stop	Diameter of the seat post (lower section): 28.54mm; The marking locates at 70.97mm from the bottom of the pillar. Length of marking >28.54mm.	P
4.14.4	Saddle/seat pillar		
4.14.4.1	Saddles with adjustment-clamps		P
4.14.4.2	Saddles without adjustment-clamps	See 4.14.4.1.	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	Test frequency: 1.5Hz.	P
4.15	Drive-chain	Tensile strength: 8671N.	P
4.16	Chainguard		
4.16.1	Requirement		P
4.16.2	Chain-wheel disc diameter	See 4.16.3.	N/A
4.16.3	Chain protective device		P
4.16.4	Combined front gear-change guide		N/A
4.17	Spoke protector	Rear-mounted motor; The hazards of the chain blocking between the spoke and free-wheel is not forseeable.	N/A
4.18	Luggage carriers	Normal rear luggage carrier: 25kg; Complied with EN ISO 11243.	P
4.19	Handling and operation of a fully-assembled bicycle		P
4.20	Lighting systems and reflectors		
4.20.1	Lighting and reflectors	Reflectors: Pedal: yellow;	P
4.20.2	Wiring harness		N/A
4.21	Warning device	A bell is fitted. ISO 7636 is withdrawn.	P
5	Manufacturer's instructions		P
6	Marking		
6.1	Requirement		P
6.2	Durability test		P

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Annex A	**Explanation of the method of least squares for obtaining line of best fit and ± 20% limit lines for braking performance linearity**		
Annex B	**Steering geometry**		
Annex C	**Structural integrity of the fully assembled bicycle**		
Annex D	**Wheel/tyre assembly – Fatigue test**		
NA	**Brakes and structural integrity of the fully assembled bicycle**		
NA.1	Brakes		**N/A**
NA.2	Structural integrity of the fully assembled bicycle		**N/A**
NB	**Bibliography**		

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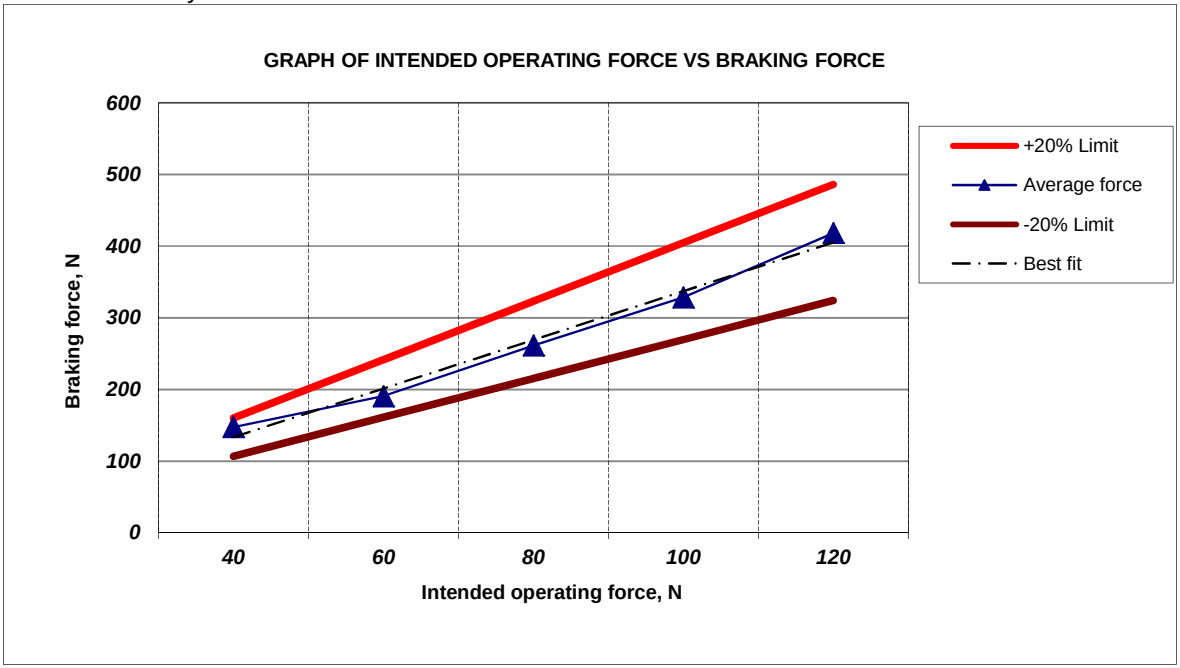
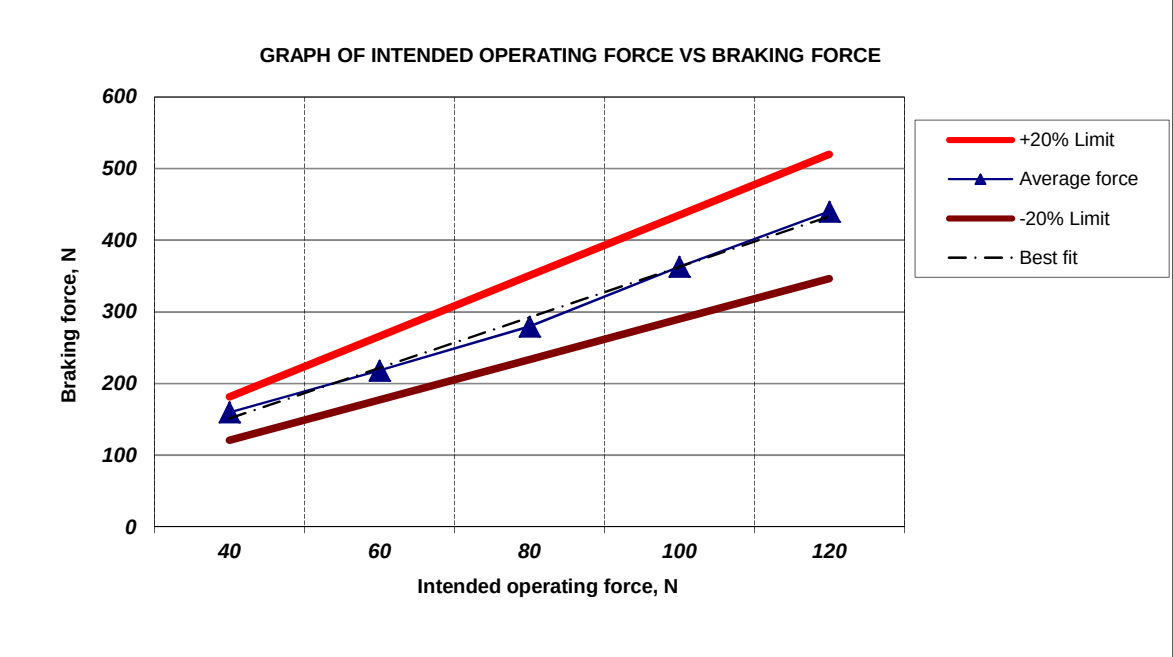
Annex I

Linearity

Front brake in dry



Front brake in wet



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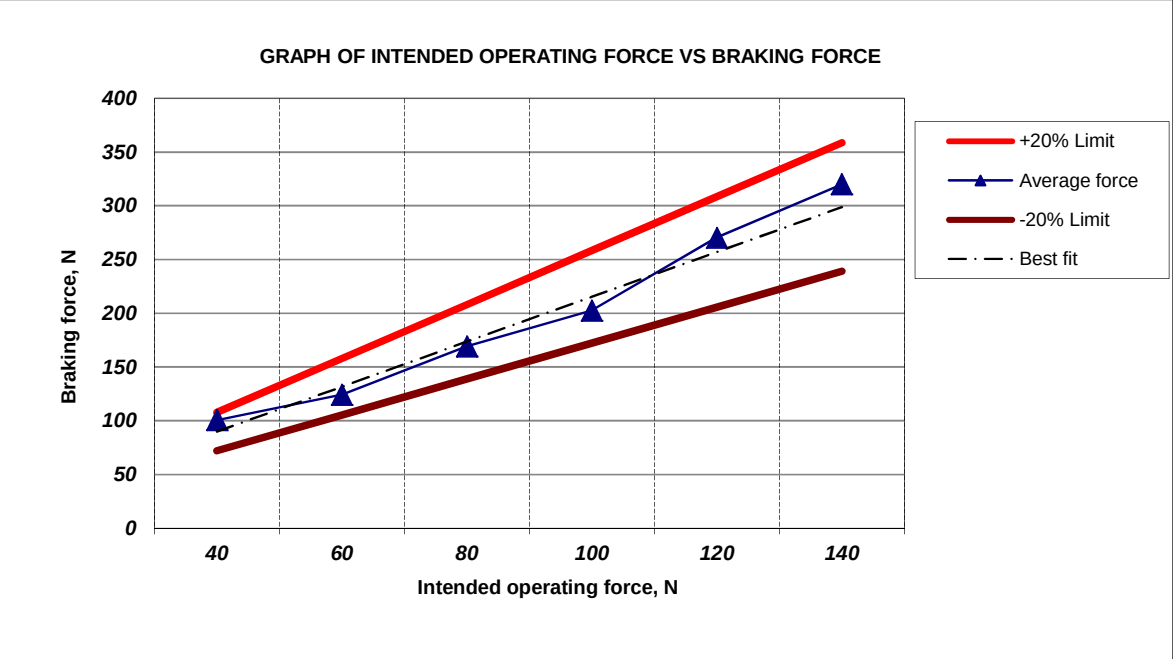
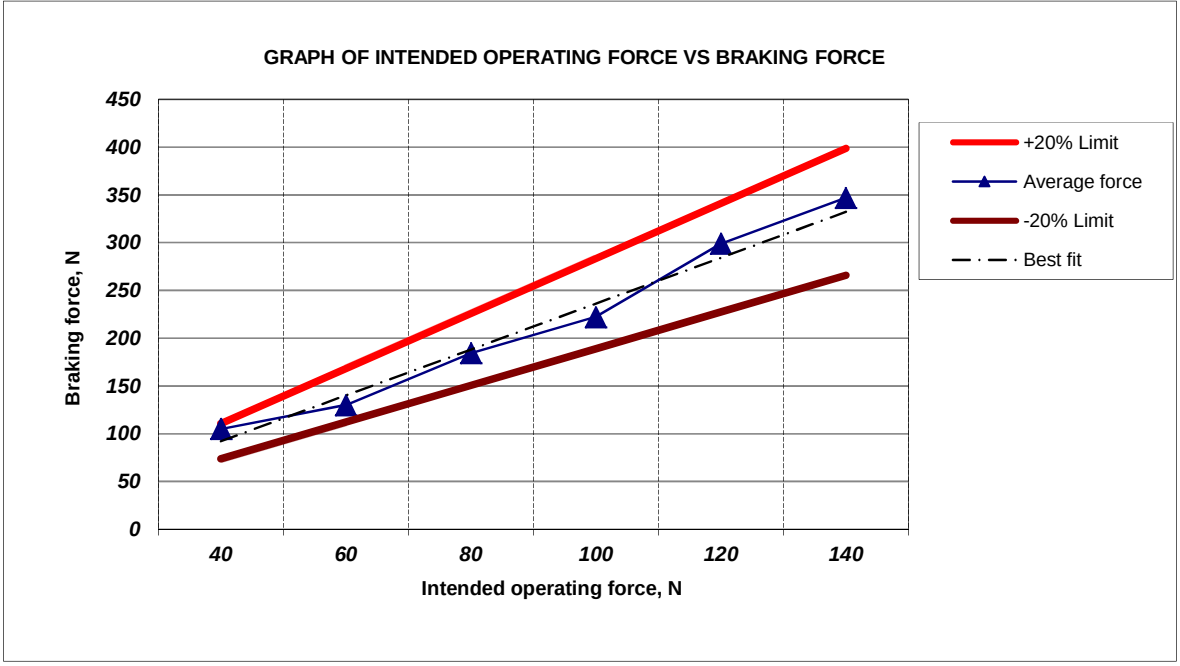
Rear brake in dry



Rear brake in wet



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