Product Service

Technical Report No.: 70.300.23.11393.01-00

Date: 2024-03-27

Applicant:	TNCP Vertriebs GmbH Braaker Grund 8, 22145 Braak, GERMANY
Manufacturer:	Kunshan Sevenone cycle Co.,Ltd No.26 Liushijing Road Development Zone kunshan, Jiangsu,China
Factory:	Kunshan Sevenone cycle Co.,Ltd No.26 Liushijing Road Development Zone kunshan, Jiangsu,China
Test object:	Product: Bicycle with electric drive E-bike Model: 20"Petit
Test specification:	EN 15194:2017 Cycles - Electrically power assisted cycles - EPAC Bicycles
Purpose of examination:	Testing and evaluation according to the test specification
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.

1. Description of the test object

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1.1 Picture(s)

20"Petit

Company: Kunshan Sevenone cycle Co., Ltd
Address: No.26 Liushijing Road Development Zone kunshan, Jiangsu, China
TEL: 86-15850381627
E-mail: sophia.huang@sevenonecycle.com
EPAC According to EN 15194
Cut off speed:25 km/h
Maximum continuous rated power 250W
Maximum permissible total weight: 125 kg
Designation of series or type: 20”Petit
Year of construction:2023
Mass of the EPAC: 22.5 kg

CE

1.2 Function

Manufacturer’s specification for intended use:
According to the user manual

1.3 Consideration of the foreseeable use

☐ Not applicable
☒ Covered through the applied standard
☐ Covered by the following comment*
☐ Covered by attached risk analysis

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1.4 Technical Data

Product:	E-bike
Model No.:	20"Petit
Function:	☒ Electric Pedal Assist Bicycle
Maximum saddle height (mm):	980 mm
Minimum saddle height (mm):	850 mm
Net Weight (kg):	22.5 kg
Max. Permissible total weight (kg):	125 kg
Wheelbase (mm):	1080 mm
Dimensions (mm):	1615×600×1245 (mm)
Cut off speed (km/h):	25
Max. Continuous rated power (W):	250
Rated voltage (V DC):	36
Frame:	☐ Suspension frame ☒ Rigid frame
Front fork:	☒ Suspension fork ☐ Rigid fork
Wheels:	20×1.75
Speed:	Single-speed
Brakes:	V type brake on front and rear, back pedal brake on rear.
Reflectors:	White light and reflector on front, red light and reflector on rear. Yellow reflectors on pedals. Yellow reflectors on wheels.

TABLE: list of critical parts/components

Component Name	Manufacturer	Model	Main Technical Parameter
Battery 1	Guangdong Greenway Technology Co., Ltd.	ZZ031004	36V 10.4Ah
Battery 2	Guangdong Greenway Technology Co., Ltd.	ZZ031006	36V 15Ah
Charger	Kunshan ST Electronics Co., Ltd	STC-8101LC	36V 2A
Controller	Nanjing Lishui Electronics Research Institute Co.,Ltd	LSW06-90B1AFSB-U	36V 7A

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Brake lever	Taicang Baina Sanfeng Automobile Industry Co. , Ltd.	E18DT	5V
Motor	Bafang Electric (Suzhou) Co., Ltd	FM.G010.250.V	36V 250W
Sensor	KING-METER TECHNOLOGY CO.,LTD	DH-SENSOR	Pas sensor
Display	Tianjin Key-Disp Technology Co., Ltd	KD-986	LCD
Front light	Spanninga Bicycle Components (Foshan) Co., Ltd	HL1900	LED with reflector
Rear light	Spanninga Bicycle Components (Foshan) Co., Ltd	RL1900	LED with reflector
Throttle	JIANDE WUXING BICYCLE CO.,LTD	21X	1.1-4.2V

2. Order

2.1 Date of Purchase Order, Customer's Reference

2023-12-22

2.2 Test Sample(s)

Reception date(s): 2024-01-08

Location(s) of reception: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch, Testing Center
No. 1999, Du Hui Road, Minhang District, Shanghai

Condition of test sample(s): No Defects found.

2.3 Date(s) of Testing 2024-01-08 ~ 2024-03-27

2.4 Location(s) of Testing TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch, Testing Center
No. 1999, Du Hui Road, Minhang District, Shanghai

2.5 Points of Non-Compliance or Exceptions of the Test Procedure

None

3. Test results

3.1 Positive Test Results

Item	*Requirement, test item*	*Results, remarks*	*Evaluation*
T 1	**Scope**		/

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	This test program is provided for electrically power assisted bicycles 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 EPAC reaches a speed of 25 km/h, or sooner, if the cyclist stops pedalling (sub-assemblies for systems having a rated voltage up to and including 48 V d.c. or integrated battery charger with a nominal 230 V a.c. input). **It applies to private and commercial use with exception of EPAC intended for hire from unattended station.** **It applies to EPAC bicycles that have a maximum saddle height of 635 mm or more and that are intended for use on public roads.**		
T 2	**Safety requirements and/or protective measures (EN 15194:2017, 4)**		/
T 2.1	**General** (EN 15194:2017, 4.1) EPAC shall be designed according to the principles of EN ISO 12100 for relevant but not significant hazards, which are not dealt with by this document. It includes evaluation of such risks for all relevant components. Means shall be provided to the user to prevent an unauthorized use of the EPAC e.g. key, locks, electronic control device.	The report of EN ISO 12100 was provided by clients.	P
T 2.2	**Electrical requirements (EN 15194:2017, 4.2)**		/
T 2.2.1	**Electric circuit** (EN 15194:2017, 4.2.1) The electrical control system shall be designed so that, should it malfunction in a hazardous manner, a) it shall switch off power to the electric motor without causing a hazardous situation and b) it requires user interaction to switch on again.	The electrical control system meet the requirement.	P
T 2.2.2	**Controls and symbols** (EN 15194:2017, 4.2.2) a) If symbols are used, their meaning shall be described in the instructions for use. b) "On" "Off" symbols, lightings symbols, start-up assistance symbols, audible warning device symbols design shall be	A master control device is fitted to switch on the assistance and shut off. Which can be activated by voluntary action.	P

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	in accordance to those described in EN 15194:2017, Annex H and Annex I (see below). c) A master control device shall be fitted to switch on the assistance and shut off shall be apparent, easy to reach and unmistakable. d) This master control device shall be activated by voluntary action to enable all assistance modes (start up and pedalling) before use of the EPAC.		
T 2.2.3	**Batteries** **(EN 15194:2017, 4.2.3)**		/
T 2.2.3.1	**Batteries - Risk of fire and mechanical deterioration** (EN 15194:2017, 4.2.3) The EPAC and batteries pack shall be designed in order to avoid risk of fire and mechanical deterioration resulting from abnormal use. Compliance is checked by the test described in EN 15194:2017, 4.2.3.2.	The EPAC and batteries pack meet the requirements.	P
T 2.2.3.2	**Batteries - Safety and compatibility** (EN 15194:2017, 4.2.3.1 b) 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 EN 15194. Safety and compatibility of the battery/charger combination shall be ensured, according to the manufacturer's specifications. Test according to EN 15194:2017, 4.2.3.2.	No flames, molten metal or poisonous ignitable gas was present on the sample during the test. No damage was present on the enclosure after the test. The battery and the charger are matched.	P
T 2.2.3.3	**Batteries - Battery terminals** (EN 15194:2017, 4.2.3.1 c) The battery terminals shall be protected against creating an accidental short circuit. Test according to EN 15194:2017, 4.2.3.2.	Protection operating, no harzard.	P
T 2.2.3.4	**Batteries – Protection against overcharging** (EN 15194:2017, 4.2.3.1 d) An appropriate care shall be taken to	Protection operating, no harzard.	P

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	ensure that the batteries are protected against overcharging. An appropriate overheating and short circuit protection device shall be fitted. NOTE: Example solutions are given in Annex A of EN 15194:2017. Test according to EN 15194:2017, 4.2.3.2.		
T 2.2.3.5	**Batteries - Label** (EN 15194:2017, 4.2.3.1) Batteries and the charger unit shall be labelled in order to be able to check their compatibility.	The battery and the charger are matched.	P
T 2.2.4	**Battery charger** (EN 15194:2017, 4.2.4) Chargers for EPAC are considered to be operated in a residential (household) environment.	See result of test report & certificate issued by TUV Rheinland. LVD report: 60406048 003 LVD certificate: AN 50536133 0001	P
T 2.2.5	**Electric cables and connections (EN 15194:2017, 4.2.5)**		/
T 2.2.5.1	**General** (EN 15194:2017, 4.2.5.1) All connectors for cable and wire shall be selected to prevent corrosion of electrical contact conductance.	All connectors can prevent corrosion of electrical contact conductance when performed the temperature rise test.	P
T 2.2.5.2	**Requirements** (EN 15194:2017, 4.2.5.2) a) Cable and plug temperature shall be lower than that specified by the manufacturer of the cables and plugs. b) Damage to cable and plug insulation shall be prevented. c) The cable cross sections shall be selected in accordance to EN 60335-1:2012, Table 11. d) If these requirements are not met, a temperature rise test shall be performed, in accordance to EN 15194:2017, 4.2.5.3.	Temperature rise test was performed and meet the requirements.	P
T 2.2.6	**Wiring** **(EN 15194:2017, 4.2.6)** **Requirements on wiring shall be checked according to the following sequence at an ambient room temperature (20 ± 5) °C.**		/

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T 2.2.6.1	**Cable routes** (EN 15194:2017, 4.2.6 a)) Wire ways shall be smooth and free from sharp edges. Test: Inspection	The wire ways was smooth and free from sharp edges.	P
T 2.2.6.2	**Sharp edges and burrs** (EN 15194:2017, 4.2.6 b)) a) 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. b) Holes in metal through which insulated wires pass shall have smooth well-rounded surfaces or be provided with bushings. Test: Inspection	No burrs, cooling fins or similar sharp edges was contact with the wires.	P
T 2.2.6.3	**Contact between wiring** (EN 15194:2017, 4.2.6 c)) Wiring shall be effectively prevented from coming into contact with moving parts. Test: Inspection	The wiring was effectively prevented from coming into contact with moving parts.	P
T 2.2.6.4	**Bending stress on connections and internal conductors** (EN 15194:2017, 4.2.6 d)) 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. Test: Inspection and by the test method accoridng to EN 15194:2017, 4.2.6.	Bending test Test cycle: 10000 cycles Test frequency: 0.5 Hz	P
T 2.2.6.5	**Coil spring** (EN 15194:2017, 4.2.6) If an open coil spring is used to protect wire, it shall be correctly installed and insulated.	Complied	P
T 2.2.6.6	**Flexible metallic tubes** (EN 15194:2017, 4.2.6) Flexible metallic tubes shall not cause damage to the insulation of the conductors contained within them.	Complied	P
T 2.2.7	**Power cables and conduits**	Electrical strength: 572 V	P

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	(EN 15194:2017, 4.2.7) a) Conduit entries, cable entries and knockouts 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. Guidance for power cables size selection is given in HD 60364-5-52:2011, 5.22.1.2, 523.1523.3 and Table A . b) The insulation of internal wiring shall withstand the electrical stress likely to occur in normal use. c) The wiring and its connections shall withstand the electrical strength test. The test voltage expressed in V shall be equal to (500 + 2 × Ur) for 2 min and applied between live parts and other metal parts only.	The insulation of the wiring and its connections can withstand the electrical strength test.	
T 2.2.8	**External and internal electrical connections** (EN 15194:2017, 4.2.8) Electrical connection shall comply with HD 60364-5-52:2011, 526.1 and 526.2.	The electrical connections complied with the requirements.	P
T 2.2.9	**Moisture resistance** (EN 15194:2017, 4.2.9) The electrical components of a fully assembled EPAC shall be tested and shall comply IPX4 requirements according to EN 60529:1991.	The complete vechicle was tested to IEC 60529 for IPX4 and meet the requirements.	P
T 2.2.10	**Mechanical strength test** **The electrical components including the battery shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use. Compliance is checked by:**		/
T 2.2.10. 1	**Mechanical strength – Part I** (EN 15194:2017, 4.2.10 (1)) Applying impacts to the battery pack mounted on the EPAC by means of the spring hammer as specified in EN 60068-2-75:2014. 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.	Impact energy: 0.7 J No damage was present on the sample after the test.	P

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	After the test the battery pack shall show no damage that could impair compliance with EN 15194.		
T 2.2.10.2	**Mechanical strength – Part II** (EN 15194:2017, 4.2.10 (2)) Detachable batteries are submitted to free fall on a rigid surface as specified in EN 22248:1992 at a height of 0.90 m in three different positions. The positions shall be one surface, one edge and one corner of the enclosure that is likely to be weak. After the test the battery pack shall show no damage that could lad to emission of dangerous substances (gas or liquid) ignition, fire or overheating.	Fall height: 0.9 m No damage was present on the sample after the test.	P
T 2.2.11	**Maximum speed for which the electric motor gives assistance** (EN 15194:2017, 4.2.11.1) a) The electrical motor assistance shall stop when the EPAC reaches a speed of 25 km/h or lower values or lower speed if limited by design. b) The maximum speed for the EPAC which the electric motor gives assistance shall not differ by more than +10 % from the maximum assistance speed indicated in the marking required by EN 15194:2017, 5 when determined according to the test method described in EN 15194:2017, 4.2.11.2.	Maximum speed [km/h]: 24.8 km/h	P
T 2.2.12	**Start-up assistance mode** (EN 15194:2017, 4.2.12.1) a) An EPAC can be equipped with a start-up assistance mode that operates up to a maximum speed of 6 km/h. b) 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. Test according to EN 15194:2017, 4.2.12.2.	Maximum speed [km/h]: 4.2 km/h	P
T 2.2.13	**Power management**		/

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T 2.2.13. 1	**Power management - Support** (EN 15194:2017, 4.2.13.1 a)) When tested by the method described in EN 15194:2017, 4.2.13.2 the recordings shall show that assistance shall be provided only when the cyclist pedals forward. This requirement shall be checked according to the test methods described in EN 15194:2017, 4.2.13.2.3.	The assistance was provided only when the cyclist pedals forward during the test.	P
T 2.2.13. 2	**Power management - Interrupted support I** (EN 15194:2017, 4.2.13.1 b)) Assistance shall be cut off when the cyclist stops pedalling forward and the cut-off distance shall not exceed 2 m.	Cut-off distance [m]: 1.41 m	P
T 2.2.13. 3	**Power management - Interrupted support II** (EN 15194:2017, 4.2.13.1 c)) If all braking devices (e.g. levers, back pedal) are equipped with cut-off switches, the cut off distance shall not exceed 5 m.	/	N/A
T 2.2.13. 4	**Power management - Maximum speed support** (EN 15194:2017, 4.2.13.1 d)) The power output or assistance shall be progressively reduced (see EN 15194:2017, Annex A) and finally cut off as the EPAC reaches the maximum assistance speed as designed. This requirement has to be checked according to the test methods described in EN 15194:2017, 4.2.13.2.	No assistance was provided when the speed reach 24.8 km/h.	P
T 2.2.13. 5	**Power management - Control** (EN 15194:2017, 4.2.13.1 e)) The assistance shall be progressively and smoothly managed (e.g. no hunting).	No hunting present.	P
T 2.2.13. 6	**Power management - Starting** (EN 15194:2017, 4.2.13.1 f)) Two independent applying actions shall be conducted to start the electrical assistance mode (e.g. power switch and forward pedalling activation); A traffic caused stop (e.g. traffic lights) is	Power switch and forward pedalling activation.	P

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	not subject to this requirement.		
T 2.2.13.7	**Power management - Restart after any hazardous electric drive malfunction** (EN 15194:2017, 4.2.13.1 g)) After a deactivation of the electrical assistance mode due to any hazardous electric drive malfunction, the electric drive shall not start automatically without rider intervention.	The electric drive cannot be automatically without rider intervention after hazardous electric drive malfunction.	P
T 2.2.14	**Maximum power measurement - Measurement at the engine shaft** (EN 15194:2017, 4.2.14) The maximum continuous rated power shall be measured according to EN 60034-1:2010 when the motor reaches its thermal equilibrium as specified by the manufacturer. 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.	The maximum continuous rated power: 242.4 W	P
T 2.2.15	**Electro Magnetic Compatibility (EN 15194:2017, 4.2.15)**		/
T 2.2.15.1	**Emission** (EN 15194:2017, 4.2.15.1) The EPAC and ESA shall fulfil the requirements of EN 15194:2017, Annex B.	Test report: 4830024209100	P
T 2.2.15.2	**Immunity** (EN 15194:2017, 4.2.15.2) The EPAC and ESA shall fulfil the requirements of EN 15194:2017, Annex B.	Test report: 4830024209100	P
T 2.2.15.3	**Battery charger** (EN 15194:2017, 4.2.15.3) As an EPAC is not intended to be used while charging on the electric network,	See result of test report & certificate issued by TUV Rheinland. EMC report: NN20FXQ4 003	P

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	for integrated charger the whole EPAC plus integrated charger shall be tested for EMC according to the applicable standards based on the European EMC directive.	EMC certificate: AE 50538882 0001	
T 2.2.16	**Failure mode** (EN 15194:2017, 4.2.16.1) It shall be possible to ride the EPAC by pedalling even if the assistance failed. This requirement shall checked as described in EN 15194:2017, 4.2.16.2.	The sample can be rode up to 10 km/h.	P
T 2.2.17	**Anti-tampering measure (EN 15194:2017, 4.2.17)**		/
T 2.2.17. 1	**General** (EN 15194:2017, 4.2.17.1) Anti-tampering measures apply to tampering or modifications that general consumers carry out concerning the control unit, drive unit or other parts of power assisting system by using commercially available tools, equipment or parts.	Statement was provided by client.	P
T 2.2.17. 2	**Prevention of tampering of the motor (EN 15194:2017, 4.2.17.2) The following Anti-tampering requirements shall be taken into account:**		/
T 2.2.17. 2.1	**Prevention of tampering of the motor - Software configuration parameters** (EN 15194:2017, 4.2.17.2 a)) Anti-tampering relevant parameters indicated below shall only be accessible to the manufacturer or authorized persons and changes of software configuration parameters require programming tools that are not commercially available or security protected: 1) maximum speed with motor assistance (all systems), 2) parameters affecting the maximum vehicle speed limited by design, 3) maximum gear ratio (system with middle motors), 4) maximum motor power (all systems), 5) maximum speed of starting up	Statement was provided by client.	P

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	assistance;		
T 2.2.17. 2.2	**Prevention of tampering of the motor - Assumable manipulations** (EN 15194:2017, 4.2.17.2 b)) Assumable manipulations on the approval relevant configuration have to be prevented or compensated by effective counter measures, i.e. plausibility logics to detect manipulations on sensors	Statement was provided by client.	P
T 2.2.17. 2.3	**Prevention of tampering of the motor - Closed set of components** (EN 15194:2017, 4.2.17.2 c)) Closed set of components (i.e. operation only with released battery).	Statement was provided by client.	P
T 2.2.17. 2.4	**Prevention of tampering of the motor - Protection against opening without traces** (EN 15194:2017, 4.2.17.2 d)) Protection against opening of relevant components without traces (sealing).	The battery, controller equipped with a sealing.	P
T 2.3	**Mechanical requirements (EN 15194:2017, 4.3)**		/
T 2.3.1	**Sharp edges** (EN 15194:2017, 4.3.2) Exposed edges that could come into contact with the rider's hands, legs, etc., during normal riding or normal handling and normal maintenance shall not be sharp, e.g. deburred, broken, rolled or processed with comparable techniques.	No sharp edge was present on the sample.	P
T 2.3.2	**Security and strength of safety-related fasteners (EN 15194:2017, 4.3.3)**		/
T 2.3.2.1	**Security of screws** (EN 15194:2017, 4.3.3.1) Any screws used in the assembly of suspension systems or screws used to attach bracket attached electric generators, brake-mechanisms and mud-guards to the frame or fork, and the saddle to the seatpost shall be provided with suitable locking devices, e.g. lock-washers, lock-nuts, thread locking compound or stiff nuts.	The suitable locking devices were used.	P

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T 2.3.2.2	**Minimum failure torque** (EN 15194:2017, 4.3.3.2) The minimum failure torque of bolted joints for the fastening of handle bars, handlebar-stems, barends, saddle and seat-posts shall be at least 50 % greater than the manufacturer's recommended tightening torque.	Recommended tightening torque: Handlebar: 6 N.m Handlebar stem: 10 N.m Saddle: 20 N.m Seat post: Quick release device No failure was present on the sample after the test.	P
T 2.3.2.3	**Folding bicycles mechanism** (EN 15194:2017, 4.3.3.3) a) If provided, folding bicycle mechanism shall be designed so that EPAC can be locked for use in a simple, stable, safe way and b) when folded no damage shall occur to any cables. c) No locking mechanism shall contact the wheels or tyres during riding, and d) it shall be impossible to unintentionally loosen or unlock the folding mechanisms during riding.	The folding mechanisms meet the requirements.	P
T 2.3.3	**Protrusions** (EN 15194:2017, 4.3.4) These requirements are intended to address the hazards associated with the users of EPACs falling on projections or rigid components (e.g. handlebars, levers) on EPAC possibly causing internal injury or skin puncture. a) Tubes and rigid components in the form of projections which constitute a puncture hazard to the rider should be protected. The size and shape of the end protection has not been stipulated, but an adequate shape shall be given to avoid puncturing of the body. b) Screw threads which constitute a puncture hazard shall be limited to a protrusion length of one major diameter of the screw beyond the internally threaded mating part.	No protrusion was present on the sample.	P
T 2.3.4	**Brakes** **(EN 15194:2017, 4.3.5)**		/
T	**Braking-systems**		/

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2.3.4.1	**(EN 15194:2017, 4.3.5.1)**		
T 2.3.4.1.1	**Braking-systems - Number and arrangement** (EN 15194:2017, 4.3.5.1) a) EPAC shall be equipped with at least two independently actuated braking-systems. b) At least one shall operate on the front wheel and one on the rear wheel. c) The braking-systems shall operate without binding and shall be capable of meeting the braking-performance requirements of EN 15194:2017:2022, 4.3.5.9.	Front: V type brake Rear: V type and back pedal brake	P
T 2.3.4.1.2	**Braking-systems - Operating** (EN 15194:2017, 4.3.5.1) No hand shall need to be taken from the handlebar to operate the brake levers.	The operating of handlebrake meet the requirement.	P
T 2.3.4.1.3	**Braking-systems - Additional braking-systems** (EN 15194:2017, 4.3.5.1) If additional braking-systems are implemented, they shall meet the brake requirements of EN 15194:2017, 4.3.5.	No additional braking-system was equipped.	P
T 2.3.4.1.4	**Braking-systems - Brake-blocks shall not contain asbestos** (EN 15194:2017, 4.3.5.1) Brake-blocks containing asbestos shall not be used.	The brake blocks don′t contain asbestos.	P
T 2.3.4.2	**Hand-operated brakes (EN 15194:2017, 4.3.5.2)**		/
T 2.3.4.2.1	**Brake-lever position** (EN 15194:2017, 4.2.5.2.1) a) The brake levers for front and rear brakes shall be positioned according to the legislation or custom and practice of the country in which EPAC is to be sold, and b) EPAC manufacturer shall state in the manufacturer's instructions which levers operate the front and rear brakes (see also EN 15194:2017, 6 i)).	Left: Front brake Right: Rear brake	P
T	**Brake-lever grip dimensions**	The dimension measured with gauge	P

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2.3.4.2.2	(EN 15194:2017, 4.3.5.2.2.1) The dimension, d, measured between the outer surfaces of the brake-lever in the region intended for contact with the rider's fingers and the handlebar or any other covering present shall over a distance of not less than 40 mm as shown in Figure 1 not exceed 90 mm. Conformance shall be established by the method detailed in EN 15194:2017, 4.3.5.2.2.2. The range of adjustment on the brake-lever ought to permit these dimensions to be obtained.	was meet the requirement.	
T 2.3.4.3	**Attachment of brake assembly and cable requirements** (EN 15194:2017, 4.3.5.3) a) Cable pinch-bolts shall not sever any of the cable strands when assembled to the manufacturer's instructions. b) In the event of a cable failing, no part of the brake mechanism shall inadvertently inhibit the rotation of the wheel. c) The cable end shall either be protected with a cap that shall withstand a removal force of not less than 20 N or be otherwise treated to prevent unravelling.	Removal force [N]:> 20 N	P
T 2.3.4.4	**Brake-levers – Position of applied force** (EN 15194:2017, 4.3.5.4) For the purposes of braking tests in this standard, for brake-levers similar to Type A, the test force shall be applied at a distance, b, which is equal to either dimension a as determined in EN 15194:2017, 4.3.5.2.2.2 or 25 mm from the free end of the brake-lever, whichever is the greater (see EN 15194:2017, Figure 4).	Dimension: 25 mm	P
T 2.3.4.5	**Brake-block and brake-pad assemblies – safety test** (EN 15194:2017, 4.3.5.5.1) a) The friction material shall be securely attached to the holder, backing-plate, or shoe and	No failure was present on the sample after the test.	P

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	b) there shall be no failure of the braking system or any component thereof when tested by the method specified in EN 15194:2017, 4.3.5.5.2.		
T 2.3.4.6	**Brake adjustment (EN 15194:2017, 4.3.5.6)**		/
T 2.3.4.6.1	**Brake adjustment - Manual or automatic adjustment mechanism** (EN 15194:2017, 4.3.5.6) Each brake shall be equipped with an adjustment mechanism either manual or automatic.	The brakes were equipped with manual adjustment mechanism.	P
T 2.3.4.6.2	**Brake adjustment - Adjustment** (EN 15194:2017, 4.3.5.6) a) Each brake shall be capable of adjustment with or without the use of a tool to an efficient operating position until the friction material has worn to the point of requiring replacement as recommended in the manufacturer's instructions. b) Also, when correctly adjusted, the friction material shall not contact anything other than the intended braking surface.	The brakes were capable of being adjusted with the use of a tool.	P
T 2.3.4.6.3	**Brake adjustment - Brake blocks** (EN 15194:2017, 4.3.5.6) The brake blocks of a bicycle with rod brakes a) shall not come into contact with the rim of the wheels when the steering angle of the handlebars is set at 60 °, b) nor shall the rods bend, or be twisted after the handlebars are reset to the central position.	The sample was not fitted with rod brakes.	N/A
T 2.3.4.7	**Hand-operated braking-system - Strength test** (EN 15194:2017, 4.3.5.7.1) When tested by the method described in EN 15194:2017, 4.3.5.7.2, there shall be no failure of the braking-system or of any component thereof.	No failure was present on the sample after the test.	P
T 2.3.4.8	**Back-pedal braking system – Strength test (EN 15194:2017, 4.3.5.8)**		/

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T 2.3.4.8.1	**General** (EN 15194:2017, 4.3.5.8.1) a) If the back-pedal braking system is fitted, the brake shall be actuated by the operator's foot applying force to the pedal in a direction opposite to that of the drive force. b) The brake mechanism shall function regardless of any drive-gear positions or adjustments. c) The differential between the drive and brake positions of the crank shall not exceed 60 °. The measurement shall be taken with the crank held against each position with a pedal force of at least 250 N. The force shall be maintained for 1 min in each position.	The angle between the drive and braking position: 29°	P
T 2.3.4.8.2	**Back-pedal braking system - Strength** (EN 15194:2017, 4.3.5.8.2) When tested in accordance with EN 15194:2017, 4.3.5.8.3, there shall be no failure of the brake system or any component thereof.	No failure was present on the brake system	P
T 2.3.4.9	**Braking performance** **(EN 15194:2017, 4.3.5.9)**		/
T 2.3.4.9.1	**General** (EN 15194:2017, 4.3.5.9.1) The progressive characteristics of the brake are determined by linearity measurements. A final, simple track test checks for smooth, safe, stopping characteristics.	Complied	P
T 2.3.4.9.2	**Braking performance** (EN 15194:2017, 4.3.5.9.2) Where EPAC is fitted with secondary brake-levers attached to brake-levers, bar-ends or aerodynamic extensions, separate tests shall be conducted for the operation of the secondary brake-levers in addition to tests with the normal levers. When tested in accordance with EN 15194:2017, 4.3.5.9.5, the bicycle shall	The maximum permissible total weight: 125 kg V- brake: Front brake (dry): 366.5 N Front brake (wet): 345 N Rear brake (dry): 288.2 N Rear brake (wet): 223.4 N Back-pedal: Rear brake (dry): 232.5 N	P

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<table>
<tr><td></td><td>fulfil the requirements shown in EN 15194:2017, Table 1.

Figure 1:
Table 1 — Calculated braking performance value
<table><tr><th>Condition</th><th>Brake in use</th><th>Minimum braking performance value, B_p</th></tr><tr><td rowspan="2">Dry</td><td>Front only</td><td>340 N</td></tr><tr><td>Rear only</td><td>220 N</td></tr><tr><td rowspan="2">Wet</td><td>Front only</td><td>220 N</td></tr><tr><td>Rear only</td><td>140 N</td></tr></table></td><td>Rear brake (wet): 235.8 N</td><td></td></tr>
<tr><td>T 2.3.4.9.3</td><td>Linearity requirements
(EN 15194:2017, 4.3.5.9.3)
When tested by the methods described in EN 15194:2017, 4.3.5.9.5.6 c) 1) and 2), the braking force FBr average shall be linearly proportional (within ±20 %) to the progressively increasing intended operating forces FOp intend. The requirement applies to braking forces FBr average equal to and greater than 80 N (see EN 15194:2017, Annex E).</td><td>The test data was increased linearly proportional within ± 20%.</td><td>P</td></tr>
<tr><td>T 2.3.4.9.4</td><td>Ratio between wet and dry braking performance requirements
(EN 15194:2017, 4.3.5.9.4)
In order to ensure safety for both wet and dry braking, the ratio of braking performance wet:dry shall be greater than 4:10.
The methods for calculating this ratio are given in EN 15194:2017, 4.3.5.9.5.6 g).</td><td>V-brake:
Ratio (Front): 94.1 %
Ratio (Rear): 77.5 %

Back-pedal:
Ratio (Rear): 101.4 %</td><td>P</td></tr>
<tr><td>T 2.3.4.10</td><td colspan="2">Brakes - Heat-resistance test
(EN 15194:2017, 4.3.5.10)</td><td>/</td></tr>
<tr><td>T 2.3.4.10.1</td><td colspan="2">General
(EN 15194:2017, 4.3.5.10.1)
This test applies to all disc- and hub-brakes but to rim-brakes only where they are known or suspected to be manufactured from or include thermoplastic materials.
Each brake on the bicycle shall be tested individually, but where the front and rear brakes are identical only one brake need be tested.</td><td>/</td></tr>
<tr><td>T</td><td>Brakes - Heat-resistance test I</td><td>Braking force [N]: 137.6 N ~ 170.3 N</td><td>P</td></tr>
</table>

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2.3.4.10.2	(EN 15194:2017, 4.3.5.10.2) Throughout the test described in EN 15194:2017, 4.3.5.10.3, the brake-lever shall not touch the handlebar-grip, the operating force shall not exceed 180 N, and the braking force shall not deviate outside the range 60 N to 115 N.		
T 2.3.4.10.3	**Brakes - Heat-resistance test II** (EN 15194:2017, 4.3.5.10.2) Immediately after having been subjected to the test described in EN 15194:2017, 4.3.5.10.3, the brakes shall achieve at least 60 % of the braking performance which was recorded at the highest operating force used during the performance tests EN 15194:2017, 4.3.5.9.5.6 c) 1) and 2).	Rear (Dry): 110.4% Rear (Wet): 98%	P
T 2.3.4.11	**Back-pedal brake linearity test** (EN 15194:2017, 4.3.5.11) This test shall be conducted on a fully assembled EPAC. The output force for a back-pedal brake shall be measured tangentially to the circumference of the rear tyre, when the wheel is rotated in the direction of forward movement, while a force of between 90 N and 300 N is being applied to the pedal at right angles to the crank and in the direction of braking. The braking force reading shall be taken during a steady pull and after one revolution of the wheel. A minimum of five results, each at a different pedal force level, shall be taken. Each result shall be the average of three individual readings at the same load level. The results shall be plotted on a graph, showing the line of best fit and the ± 20 % limit lines obtained by the method of least squares outlined in EN 15194:2017, Annex E.	y = 87 + 0.61x y (upper)=104.4 + 0.732x y (lower)=69.6 + 0.488x The results were within ±20 % of the line.	P
T 2.3.5	**Steering** **(EN 15194:2017, 4.3.6)**		/
T 2.3.5.1	**Handlebar – Dimensions** (EN 15194:2017, 4.3.6.1) Adjust the handlebar height to its highest	The highest handlebar height [mm]: 1125 mm The lowest saddle height [mm]: 850 mm	P

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	normal riding position and the saddle to its lowest normal riding position as specified by the manufacturer (see EN 15194:2017, 6 i)). Measure the vertical distance from the centre and top of the handlebar grips to a point where the saddle surface is intersected by the seat post axis (see EN 15194:2017, Figure 9). This dimension shall not exceed 400 mm.	Dimension h [mm]: 275 mm	
T 2.3.5.2	**Handlebar grips and plugs** (EN 15194:2017, 4.3.6.2) The ends of the handlebar shall be fitted with handgrips or end plugs. When tested by the method described in a) EN 15194:2017, 4.3.6.2.2 (Freezing test method) and b) EN 15194:2017, 4.3.6.2.3 (Hot water test method), the handgrips or plugs shall withstand the specified removal forces.	The handgrips were not removed with 70N after freezing test and hot water test.	P
T 2.3.5.3	**Handlebar stem – Insertion-depth mark or positive stop (EN 15194:2017, 4.3.6.3)** **The handlebar-stem shall be provided with one of the two following alternative means of ensuring a safe insertion depth into the fork steerer:**		/
T 2.3.5.3.1	**Handlebar stem – Insertion-depth mark or positive stop - a)** (EN 15194:2017, 4.3.6.3) a) It shall contain a permanent, transverse mark, b) of length not less than the external diameter of the stem, c) that clearly indicates the minimum insertion depth of the handlebar-stem into the fork steerer. d) The insertion mark shall be located at a position not less than 2,5 times the external diameter of the handlebar-stem from the bottom of the stem, and e) there shall be at least one stem diameter's length of contiguous, circumferential stem material below the mark.	Handlebar stem diameter: 20.5 mm Length from the bottom of the stem: 71.9 mm Continuous length: 34.1 mm Transverse mark length: 64.8 mm	P
T	**Handlebar stem – Insertion-depth**	/	N/A

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2.3.5.3.2	**mark or positive stop - b)** (EN 15194:2017, 4.3.6.3) It shall incorporates a permanent stop to prevent it from being drawn out of the fork steerer such as to leave the insertion less than the amount specified in a) above.		
T 2.3.5.4	**Handlebar stem to fork steerer – Clamping requirements (EN 15194:2017, 4.3.6.4)**		/
T 2.3.5.4.1	**Handlebar stem to fork steerer – Clamping requirements - I** (EN 15194:2017, 4.3.6.4) The distance g, see EN 15194:2017, Figure 11 between the top of the handlebar stem and the top of the fork steerer to which the handlebar stem is clamped shall not be greater than 5 mm.	/	N/A
T 2.3.5.4.2	**Handlebar stem to fork steerer – Clamping requirements - II** (EN 15194:2017, 4.3.6.4) The upper part of the fork steerer to which the handlebar stem is clamped shall not be threaded.	/	N/A
T 2.3.5.4.3	**Handlebar stem to fork steerer – Clamping requirements - III** (EN 15194:2017, 4.3.6.4) The dimension g shall also ensure that the proper adjustment of the steering system can be achieved.	/	N/A
T 2.3.5.4.4	**Handlebar stem to fork steerer – Clamping requirements - IV** (EN 15194:2017, 4.3.6.4) For aluminium and composite fork steerer any internal device that could damage the internal surface of the fork steerer shall be avoided.	/	N/A
T 2.3.5.5	**Steering stability (EN 15194:2017, 4.3.6.5)**		/
T 2.3.5.5.1	**Steering stability - turn through** (EN 15194:2017, 4.3.6.5) The steering shall be free to turn through at least 60 ° either side of the straight-ahead position and shall exhibit no tight	The angle: > 60° for each side	P

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	spots, stiffness or slackness in the bearings when correctly adjusted.		
T 2.3.5.5.2	**Steering stability – Load distribution** (EN 15194:2017, 4.3.6.5) A minimum of 25 % of the total mass of EPAC and rider shall act on the front wheel when the rider is holding the handlebar grips and sitting on the saddle, with the saddle and rider in their most rearward positions.	Total weight: 90.2 kg The weight of front wheel: 29.5 kg Ratio: 32.7 %	P
T 2.3.5.6	**Steering assembly - Static strength and safety tests (EN 15194:2017, 4.3.6.6)**		/
T 2.3.5.6.1	**Handlebar and stem assembly - Lateral bending test** (EN 15194:2017, 4.3.6.6.1) When tested by the method described in EN 15194:2017, 4.3.6.6.1.3, there shall be a) no cracking or fracture of the handlebar, stem or clamp-bolt and b) the permanent deformation measured at the point of application of the test force shall not exceed 15 mm.	Permanent deformation [mm]: 5 mm No visible cracks or fractures was present on the sample after the test.	P
T 2.3.5.6.2	**Handlebar-stem – Forward bending test (EN 15194:2017, 4.3.6.6.2)**		/
T 2.3.5.6.2.1	**Handlebar-stem – Forward bending test (EN 15194:2017, 4.3.6.6.2.1) Conduct the test in two stages on the same assembly as follows.**		/
T 2.3.5.6.2.2	**Requirement for Stage 1** (EN 15194:2017, 4.3.6.6.2.2) When tested by the method described in EN 15194:2017, 4.3.6.6.2.3, there shall be a) no visible cracks or fractures and b) the permanent deformation measured at the point of application of the test force and in the direction of the test force shall not exceed 10 mm.	Permanent deformation [mm]: 9 mm No visible cracks or fractures was present on the sample after the test.	P
T 2.3.5.6.2.3	**Requirement for Stage 2** (EN 15194:2017, 4.3.6.6.2.4) When tested by the method described in	No visible cracks or fractures was present on the sample during the test.	P

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	EN 15194:2017, 4.3.6.6.2.5, there shall be no visible cracks or fractures.		
T 2.3.5.6.3	**Handlebar to handlebar-stem - Torsional security test** (EN 15194:2017, 4.3.6.6.3.1) When tested by the method described in EN 15194:2017, 4.3.6.6.3.2, there shall be no movement of the handlebar relative to the handlebar-stem.	No movement between handlebar and handlebar-stem during the test.	P
T 2.3.5.6.4	**Handlebar-stem to fork steerer - Torsional safety test** (EN 15194:2017, 4.3.6.6.4.1) When tested by the method described in EN 15194:2017, 4.3.6.6.4.2, there shall be no movement of the handlebar-stem relative to the fork steerer.	No movement between handlebar-stem and fork steerer during the test.	P
T 2.3.5.6.5	**Bar-end to handlebar - Torsional safety test** (EN 15194:2017, 4.3.6.6.5.1) When tested by the method described in EN 15194:2017, 4.3.6.6.5.2, there shall be no movement of the bar-end in relation to the handlebar.	No bar-end fitted.	N/A
T 2.3.5.7	**Handlebar and stem assembly - Fatigue test (EN 15194:2017, 4.3.6.7)**		/
T 2.3.5.7.1	**General (EN 15194:2017, 4.3.6.7.1)** **Handlebar-stems can influence test failures of handlebars and for this reason, a handlebar shall always be tested mounted in a stem, but it is permitted to test a stem with a solid bar in place of the handlebar and bar-ends with dimensions corresponding to handlebars/bar-ends suitable for that stem.** **When the fatigue test is for the stem only, the manufacturer of the stem shall specify the types and sizes of handlebar for which the stem is intended and the test shall be based on the most severe combination.** **Conduct the test in two stages on the same assembly.**		/
T 2.3.5.7.2	**Handlebar and stem assembly - Fatigue test** (EN 15194:2017, 4.3.6.7.2) When tested by the method described in EN 15194:2017, 4.3.6.7.3 (stage 1) or EN 15194:2017, 4.3.6.7.4 (stage 2), there shall be no visible cracks or fractures in any part of the handlebar	Stage 1 Test force: 220 N Test cycle: 100000 cycles Test frequency: 2 Hz Stage 2 Test force: 280 N Test cycle: 100000 cycles	P

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	and stem assembly or any bolt failure.	Test frequency: 2 Hz No visible cracks or fractures was present on the sample after test.	
T 2.3.5.7.3	**Handlebar and stem assembly - Fatigue test - composite handlebars or stems** (EN 15194:2017, 4.3.6.7.2) For composite handlebars or stems, the running displacements (peak-to-peak value) at the points where the test forces are applied shall not increase by more than 20 % of the initial values.	/	N/A
T 2.3.6	**Frames** **(EN 15194:2017, 4.3.7)**		/
T 2.3.6.1	**Suspension-frames - Special requirements** (EN 15194:2017, 4.3.7.1) The design shall be such that if the spring or damper fails, neither the tyre shall contact any part of the frame nor the assembly carrying the rear wheel become detached from the rest of the frame.	Rigid frame	N/A
T 2.3.6.2	**Frame - Impact test (falling mass)** (EN 15194:2017, 4.3.7.2.1) a) When tested by the method described in EN 15194:2017, 4.3.7.2.3, there shall be no visible cracks or fractures of the frame. b) The permanent deformation measured between the axes of the wheel axles shall not exceed the following values: - 30 mm where a fork is fitted; - where a dummy fork is fitted in place of a fork, the values are given in EN 15194:2017, Table 9. ***Figure 2:*** Table 9 — The values of permanent deformation **Fork type** | **Real fork** | **Dummy fork** Permanent deformation | 30 mm | 10 mm	Permanent deformation [mm]: 9 mm No visible cracks or fractures was present on the sample after the test.	P

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T 2.3.6.3	**Frame and front fork assembly – Impact test (falling frame)** (EN 15194:2017, 4.3.7.3.2) a9 When tested by the method described in EN 15194:2017, 4.3.7.3.3, there shall be no visible cracks or fractures in the assembly and after the second impact there shall be no separation of any parts of any suspension system. b) The permanent deformation measured between the axes of the wheel axles shall not exceed the values specified in EN 15194:2017, Table 11 (60 mm).	Permanent deformation [mm]: 4 mm No visible cracks or fractures was present on the sample after the test.	P
T 2.3.6.4	**Frame - Fatigue test with pedalling forces** (EN 15194:2017, 4.3.7.4.2) a) When tested by the method described in EN 15194:2017, 4.3.7.4.3, there shall be no visible cracks or fractures in any part of the frame, and there shall be no separation of any parts of the suspension system. b) For composite frames, the running displacements (peak-to-peak values) at the points where the test forces are applied shall not increase by more than 20 % of the initial values (see EN 15194:2017, 4.3.1.6).	Test force: 1000 N Test cycle: 100000 cycles Test frequency 2 Hz No visible cracks or fractures was present on the sample after the test.	P
T 2.3.6.5	**Frame – Fatigue test with horizontal forces** (EN 15194:2017, 4.3.7.5.2) a) When tested by the method described in EN 15194:2017, 4.3.7.5.3, there shall be no visible cracks or fractures in the frame and there shall be no separation of any parts of any suspension system. b) For composite frames, the running displacement (peak-to-peak value) at the point where the test forces are applied shall not increase by more than 20 % of the initial values (see EN 15194:2017, 4.3.1.6).	Test force: 600 N Test cycle: 100000 cycles Test frequency 2 Hz No visible cracks or fractures was present on the sample after the test.	P
T 2.3.6.6	**Frame – Fatigue test with a vertical force** (EN 15194:2017, 4.3.7.6.2)	Test force: 1100 N Test cycle: 50000 cycles Test frequency 2 Hz	P

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	a) When tested by the method described in EN 15194:2017, 4.3.7.6.3, there shall be no visible cracks or fractures in the frame and there shall be no separation of any parts of the suspension system. b) For composite frames, the running displacement (peak-to-peak value) at the point where the test forces are applied shall not increase by more than 20 % of the initial value (see EN 15194:2017, 4.3.1.6).	No visible cracks or fractures was present on the sample after the test.	
T 2.3.7	**Front fork** **(EN 15194:2017, 4.3.8)**		/
T 2.3.7.1	**Means of location of the axle and wheel retention** (EN 15194:2017, 4.3.8.2) The slots or other means of location for the wheel-axle within the front fork shall be such that when the axle or cones are firmly abutting the top face of the slots, the front wheel remains central within the fork.	The wheel and fork meet the requirements.	P
T 2.3.7.2	**Suspension-forks - Special requirements** **(EN 15194:2017, 4.3.8.3)**		/
T 2.3.7.2.1	**Tyre-clearance test** (EN 15194:2017, 4.3.8.3.1.1) When tested by the method described in EN 15194:2017, 4.3.8.3.1.2, the tyre shall not contact the crown of the fork nor shall the components separate.	No failure was present on the sample during the test.	P
T 2.3.7.2.2	**Tensile test** (EN 15194:2017, 4.3.8.3.2.1) When tested by the method described in EN 15194:2017, 4.3.8.3.2.2, there shall be no detachment or loosening of any parts of the assembly and the tubular, telescopic components of any fork-leg shall not separate under the test force.	No detachment or loosening was present on the sample during the test.	P
T 2.3.7.3	**Front fork – Static bending test** (EN 15194:2017, 4.3.8.4.1) When tested by the method described in EN 15194:2017, 4.3.8.4.2, there shall be no fractures or visible cracks in any part of the fork, and the permanent	Permanent deformation [mm]: 3.32 mm	P

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	deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, shall not exceed 10 mm.		
T 2.3.7.4	**Front fork - Rearward impact test (EN 15194:2017, 4.3.8.5)**		/
T 2.3.7.4. 1	**Forks made entirely of metal (EN 15194:2017, 4.3.8.5.1)**		/
T 2.3.7.4. 1.1	**Crown/steerer joint assembled by welding or brazing** (EN 15194:2017, 4.3.8.5.1.1) When tested by the method described in EN 15194:2017, 4.3.8.5.3, there shall be no fractures or visible cracks in any part of the fork, and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, shall not exceed 45 mm. If the fork is used in the frame impact test (falling-mass), EN 15194:2017, 4.3.7.2, there is no need to perform this test.	/	N/A
T 2.3.7.4. 1.2	**Crown/steerer joint assembled by press-fitting, bonding, or clamping** (EN 15194:2017, 4.3.8.5.1.2) a) When tested by the method described EN 15194:2017, 4.3.8.5.4 a), if there are any fractures or visible cracks in any part of the fork, and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, exceeds 45 mm, the fork shall be considered to have failed. b) If the fork meets these criteria then it shall be subjected to a second test as described in EN 15194:2017, 4.3.8.5.4 b), after which, it shall exhibit no fractures, then it shall be subjected to a	Permanent deformation [mm]: 9 mm No visible cracks or fractures was present on the sample after the test as described in clause 4.3.8.5.4 a and clause 4.3.8.5.4 b. No relative movement was present between the steerer and the crown after the test as described in clause 4.3.8.5.4 c.	P

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	third test as described in EN 15194:2017, 4.3.8.5.4 c), irrespective of the amount of permanent deformation, there shall be no relative movement between the steerer and the crown.		
T 2.3.7.4.2	**Forks which have composite parts** (EN 15194:2017, 4.3.8.5.2) a) When tested by the method described in EN 15194:2017, 4.3.8.5.3, there shall be no fractures in any part of a fork and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, shall not exceed 45 mm. b) After which, it shall exhibit no fractures, then it shall be subjected to a second test as described in EN 15194:2017, 4.3.8.5.4 c) Torque on fork, irrespective of the amount of permanent deformation, there shall be no relative movement between the steerer and the crown.	/	N/A
T 2.3.7.5	**Front fork - Bending fatigue test plus rearward impact test** (EN 15194:2017, 4.3.8.6.1) a) When tested by the method described in EN 15194:2017, 4.3.8.6.2, there shall be no fractures in any part of the fork, and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, shall not exceed 45 mm. b) For composite forks, the running displacement (peak-to-peak value) at the points where the test forces are applied shall not increase by more than 20 % of the initial values (see EN 15194:2017, 4.3.1.6).	Test force: 500 N Test cycle: 100000 cycles Test frequency: 2 Hz No fractures was present on the sample after the test. Permanent deformation [mm]: 17 mm	P
T 2.3.7.6	**Forks intended for use with hub- or disc-brakes (EN 15194:2017, 4.3.8.7)**		/
T 2.3.7.6.1	**Static brake-torque test** (EN 15194:2017, 4.3.8.7.2) When tested by the method described in	/	N/A

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	EN 15194:2017, 4.3.8.7.3, there shall be no fractures or visible cracks in any part of the fork.		
T 2.3.7.6.2	**Brake mount fatigue test** When tested by the method described in EN 15194:2017, 4.3.8.7.5, there shall be no fractures or visible cracks in any part of the fork and, in the case of suspension-forks, there shall be no separation of any parts.	/	N/A
T 2.3.7.7	**Tensile test for a non-welded fork** (EN 15194:2017, 4.3.8.8.2) When tested by the method described in EN 15194:2017, 4.3.8.8.3, there shall be no detachment or loosening of any parts of the assembly.	No detachment or loosening was present on the sample after the test.	P
T 2.3.8	**Wheels and wheel/tyre assembly (EN 15194:2017, 4.3.9)**		/
T 2.3.8.1	**Wheels/tyre assembly - Concentricity tolerance and lateral tolerance** (EN 15194:2017, 4.3.9.1.1) When measured by the method described in EN 15194:2017, 4.3.9.1.2, the run-out shall not exceed the values which are given in EN 15194:2017, Table 22.	V brake on front and rear. Back-pedal brake on rear Concentricity tolerance Front: 0.81 mm Rear: 0.66 mm Lateral tolerance Front: 0.40 mm Rear 0.64 mm	P
T 2.3.8.2	**Wheel/tyre assembly – Clearance** (EN 15194:2017, 4.3.9.2) Alignment of the wheel assembly in EPAC shall allow not less than the clearance values given in EN 15194:2017, Table 23 of between the tyre and any frame or fork element or a front mudguard and its attachment bolts.	Clearance [mm]: > 6 mm	P
T 2.3.8.3	**Wheel/tyre assembly - Static strength test** (EN 15194:2017, 4.3.9.3.1) When a fully assembled wheel fitted with a tyre inflated to the maximum inflation pressure is tested by the method described in EN 15194:2017, 4.3.9.3.2, there shall be no failure of any of the components of the wheel, and the	Permanent deformation [mm]: Front: 0.65 mm Rear: 0.52 mm	P

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	permanent deformation, measured at the point of application of the force on the rim, shall not exceed the values which are given in EN 15194:2017, Table 24.		
T 2.3.8.4	**Wheels - Wheel retention (EN 15194:2017, 4.3.9.4)**		/
T 2.3.8.4.1	**General** (EN 15194:2017, 4.3.9.4.1) Wheel retention safety is related to the combination of wheel, retention device, and drop-out design. Wheels shall be secured to EPAC frame and fork such that when adjusted to the manufacturer's instructions they comply with EN 15194:2017, 4.3.9.4.2, EN 15194:2017, 4.3.9.4.3 and EN 15194:2017, 4.3.9.5. Wheel nuts shall have a minimum removal torque of 70 % of the manufacturer's recommended tightening torque. Where quick-release axle devices are used they shall comply with EN 15194:2017, 4.3.9.5.	Recommand torque [Nm] Front wheel: 35 Nm Rear wheel: 35 Nm Minimum removal torque [Nm] Front wheel: 26 Nm Rear wheel: 27 Nm	P
T 2.3.8.4.2	**Wheel retention – Retention devices secured** (EN 15194:2017, 4.3.9.4.2.1) When tested by the method described in EN 15194:2017, 4.3.9.4.2.2, there shall be no relative motion between the axle and the front fork/frame.	No relative motion between the axle and the front fork/frame.	P
T 2.3.8.5	**Front wheel retention – Retention devices unsecured (EN 15194:2017, 4.3.9.4.3)**		/
T 2.3.8.5.1	**Front wheel retention – Retention devices unsecured - I** (EN 15194:2017, 4.3.9.4.3) EPAC shall be equipped with secondary retention system that retains the front wheel in the dropouts when the primary retention system is in the open (unlocked) position and wheel off the	The front wheel retention meet the requirement.	P

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	ground.		
T 2.3.8.5. 2	**Front wheel retention – Retention devices unsecured - II** (EN 15194:2017, 4.3.9.4.3) Where threaded axles and nuts are fitted, and the nuts are unscrewed by at least 360 ° from the finger tight condition and the brake system disconnected or released, the wheel shall not detach from the front fork when a force of 100 N is applied radially outwards, in line with the drop-out slots, and maintained for 1 min.	Force: > 100 N	P
T 2.3.8.5. 3	**Front wheel retention – Retention devices unsecured - III** (EN 15194:2017, 4.3.9.4.3) Where quick-release is fitted, and the quick-release lever is fully open and the brake system is disconnected or released, the wheel shall not detach from the front fork when a force of 100 N is applied to the wheel radially outwards, in line with the drop-out slots, and maintained for 1 min.	No quick-release devices used.	N/A
T 2.3.8.5. 4	**Wheels - Quick-release devices - Operating features (EN 15194:2017, 4.3.9.5) Any quick-release device shall have the following operating features:**		/
T 2.3.8.5. 4.1	It shall be adjustable to allow setting for tightness.	No quick-release devices used.	N/A
T 2.3.8.5. 4.2	Its form and marking shall clearly indicate whether the device is in the open or locked position.	No quick-release devices used.	N/A
T 2.3.8.5. 4.3	If adjustable by a lever, the force required to close a properly set lever shall not exceed 200 N and, at this closing force there shall be no permanent deformation of the quick-release device. If applied to a lever, the forces shall be applied 5 mm from the tip end of the	No quick-release devices used.	N/A

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	lever.		
T 2.3.8.5. 4.4	The releasing force of the clamping device when closed shall not be less than 50 N. If applied to a lever, the forces shall be applied 5 mm from the tip end of the lever.	No quick-release devices used.	N/A
T 2.3.8.5. 4.5	If operated by a lever, the quick-release device shall withstand without fracture or permanent deformation a closing force of not less than 250 N applied with the adjustment set to prevent closure at this force. If applied to a lever, the forces shall be applied 5 mm from the tip end of the lever.	No quick-release devices used.	N/A
T 2.3.8.5. 4.6	The wheel retention with the quick-release device in the clamped position shall be in accordance with EN 15194:2017, 4.3.9.4.2, EN 15194:2017, 4.3.9.4.3.	No quick-release devices used.	N/A
T 2.3.8.5. 4.7	The front wheel retention with the quick-release device in the open position shall be in accordance with EN 15194:2017, 4.3.9.4.3.	No quick-release devices used.	N/A
T 2.3.9	**Rims, tyres and tubes (EN 15194:2017, 4.3.10)**		/
T 2.3.9.1	**General (EN 15194:2017, 4.3.10.1) Non-pneumatic tyres are excluded from the requirements of EN 15194:2017:2022, 4.3.10.2 and EN 15194:2017:2022, 4.3.10.3.**		/
T 2.3.9.2	**Tyre inflation pressure** (EN 15194:2017, 4.3.10.2) a) The maximum inflation pressure recommended by the manufacturer shall be permanently marked on the side wall of the tyre so as to be readily visible when the latter is assembled on the wheel. b) If the rim manufacturer recommends a maximum tyre inflation pressure, it shall be clearly and permanently marked on the rim and also specified in the manufacturer's instructions.	Tyre inflation pressure: 65 p.s.i	P

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	c) It is recommended that the minimum inflation pressure specified by the tyre manufacturer also be permanently marked on the side wall of the tyre.		
T 2.3.9.3	**Tyre and rim compatibility** (EN 15194:2017, 4.3.10.3) a) Tyres that comply with the requirements of ISO 5775-1:2014 and rims that comply with the requirements of ISO 5775-2:2021 are compatible. b) The tyre, tube and tape shall be compatible with the rim design. c) When inflated to 110 % of the maximum inflation pressure, determined by the lower value between maximum inflation pressures recommended on the rim or the tyre, for a period of not less than 5 min, the tyre shall remain intact on the rim.	65 x 110% = 71.5 p.s.i	P
T 2.3.9.4	**Rim-wear** (EN 15194:2017, 4.3.10.4) a) In the case where the rim forms part of a braking system and there is a danger of failure due to wear, the manufacturer shall make the rider aware of this danger by durable and legible marking on the rim, in an area not obscured by the tyre, (see also EN 15194:2017, 6 z) and EN 15194:2017, 5.1). b) Where the rim is made of composite materials, the manufacturer shall include in the manufacturer's instructions warnings of the danger of rim failure caused by wear of the braking surfaces.	The rim-wear marking was meet the requirement.	P
T 2.3.9.5	**Greenhouse effect test for composite wheels** (EN 15194:2017, 4.3.10.5.2) When a fully assembled wheel made of composite material, fitted with the appropriate size tyre and inflated according to the lowest value between maximum inflation pressure recommended on the rim or the tyre, is tested by the method described asEN 15194:2017, 4.3.10.5.3, there shall be:	/	N/A

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	a) no failure of any of the components of the wheel; b) no tyre separation from the rim during the test; c) no increase in rim width greater than 5 % of the initial maximal width value; d) compliance of lateral and concentricity tolerance according to EN 15194:2017, 4.3.9.1; e) compliance of tyre and rim compatibility according to EN 15194:2017, 4.3.10.3; f) compliance of static strength according to EN 15194:2017, 4.3.9.3.		
T 2.3.10	**Front mudguard** (EN 15194:2017, 4.3.11.1) If front mudguard is fitted, when tested by the method described in the two-stage tests in EN 15194:2017, 4.3.11.2 (for mudguard with stays) or EN 15194:2017, 4.3.11.3 (for mudguard without stays), the front mudguard shall not prevent rotation of the wheel or shall obstruct the steering.	The front mudguard(without stays) didn′t prevent rotation of the wheel and obstruct the steering during the test.	P
T 2.3.11	**Pedals and pedal/crank drive system (EN 15194:2017, 4.3.12)**		/
T 2.3.11. 1	**Pedal tread (EN 15194:2017, 4.3.12.1)**		/
T 2.3.11. 1.1	**Tread surfae** (EN 15194:2017, 4.3.12.1.1) The tread surface of a pedal shall be secured against movement within the pedal assembly.	The tread surface meet the requirement.	P
T 2.3.11. 1.2	**Toe clips** (EN 15194:2017, 4.3.12.1.2) Pedals intended to be used without toe-clips, or for optional use with toe-clips, shall have: a) tread surfaces on the top and bottom surfaces of the pedal; or b) a definite preferred position that automatically presents the tread surface to the rider′s foot.	Tread surfaces on the top and bottom surfaces of the pedal.	P

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	c) 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 EN 15194:2017, 4.3.12.1.2 a) and b).		
T 2.3.11.2	**Pedal clearance (EN 15194:2017, 4.3.12.2)**		/
T 2.3.11.2.1	**Ground clearance** (EN 15194:2017, 4.3.12.2.1) With EPAC un-laden, the pedal at its lowest point and the tread surface of the pedal parallel to the ground and uppermost where it has only one tread surface, EPAC shall be capable of being leaned over at an angle of [theta] from the vertical before any part of the pedal touches the ground. The values are given in EN 15194:2017, Table 26. When EPAC is equipped with a suspension system, this measurement shall be taken with the suspension adjusted to the softest condition and with EPAC depressed into a position such as would be caused by a rider weighing 90 kg.	Lean angle [°]: Left: 28° Right: 30.7°	P
T 2.3.11.2.2	**Toe clearance** (EN 15194:2017, 4.3.12.2.2) EPACs shall have at least C clearance between the pedal and front tyre or mudguard (when turned to any position). The clearance shall be measured forward and parallel to the longitudinal axis of EPAC from the centre of either pedal-axle to the arc swept by the tyre or mudguard, whichever results in the least clearance (see EN 15194:2017, Figure 37). The values are given in EN 15194:2017, Table 27.	Toe clearance [mm]: Left: 270 mm Right: 270 mm	P
T 2.3.11.3	**Pedal – Static strength test** (EN 15194:2017, 4.3.12.3.1) When tested by the method described in EN 15194:2017, 4.3.12.3.2, there shall be no fractures, visible cracks, or	No fractures, visible cracks, or distortion was present on the sample after the test.	P

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	distortion of the pedal or spindle that could affect the operation of the pedal and pedal-spindle.		
T 2.3.11.4	**Pedal – Impact test** (EN 15194:2017, 4.3.12.4.1) When tested by the method described in EN 15194:2017, 4.3.12.4.2, there shall be no fractures of any part of the pedal body, the pedal-spindle or any failure of the bearing system.	No fractures was present on the sample after the test.	P
T 2.3.11.5	**Pedal – Dynamic durability test** (EN 15194:2017, 4.3.12.5.1) When tested by the method described in EN 15194:2017, 4.3.12.5.2, there shall be no fractures or visible cracking of any part of the pedal, the pedal-spindle nor any failure of the bearing system.	No fractures or visible cracks was present on the sample after the test.	P
T 2.3.11.6	**Drive-system – Static strength test (EN 15194:2017, 4.3.12.6)**		/
T 2.3.11.6.1	**Drive-system with chain** (EN 15194:2017, 4.3.12.6.1 a)) When tested by the method described in EN 15194:2017, 4.3.12.6.2, there shall be no fracture of any component of the drive system, and drive capability shall not be lost.	No fractures was present on the sample after the test.	P
T 2.3.11.6.2	**Drive-system with belt** (EN 15194:2017, 4.3.12.6.1 b)) a) When tested by the method described in EN 15194:2017, 4.3.12.6.3, there shall be no fracture of any component of the drive system, and the belt shall not slip/skip, fracture or cause any loss in drive capability. b) Smooth sliding between pulleys and belt is allowed at a rate not exceeding 1 °/s at the drive axis.	/	N/A
T 2.3.11.7	**Crank assembly - Fatigue test** (EN 15194:2017, 4.3.12.7.2) a) When tested by the method described in EN 15194:2017, 4.3.12.7.2, there shall be no fractures or visible cracks in the cranks, the bottom-bracket spindle or	Test force: 1300 N Test cycle: 100000 cycles Test frequency: 2 Hz No fractures or visible cracks was present on the sample after the test.	P

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	any of the attachment features, or loosening or detachment of the chain-wheel from the crank. b) For composite cranks, the running displacements (peak-to-peak values) of either crank at the point where the test forces are applied shall not increase by more than 20 % of the initial value (see EN 15194:2017, 4.3.1.6).		
T 2.3.12	**Drive-chain and drive belt (EN 15194:2017, 4.3.13)**		/
T 2.3.12.1	**Drive-chain and drive belt - Running** (EN 15194:2017, 4.3.13.1) Where a chain-drive is used as a means of transmitting the motive force, the chain shall operate over the front and rear sprockets without binding.	The chain transmitting without binding.	P
T 2.3.12.2	**Drive-chain and drive belt - ISO 9633** (EN 15194:2017, 4.3.13.1) The chain shall conform to the tensile strength and push-out force requirements of the ISO 9633:2001.	Tensile strength: 9124.5 N Pushout force: 814.5 N	P
T 2.3.12.3	**Drive belt** (EN 15194:2017, 4.3.13.2.1) a) Where a belt-drive is used as a means of transmitting the motive force, the drive belt shall operate over the front and rear pulleys without binding. b) And when tested by the methods described in EN 15194:2017, 4.3.13.2.2, there shall be no evidence of cracking, fracture or delamination of the belt drive.	/	N/A
T 2.3.13	**Chain-wheel and belt-drive protective device** (EN 15194:2017, 4.3.14.1) EPAC shall be equipped with one of the following; a) a chain wheel disc or drive pulley disk which conforms to EN 15194:2017, 4.3.14.2; or b) a chain and drive belt protective device which conforms to EN 15194:2017, 4.3.14.3; or c) where fitted with positive foot-retention devices on the pedals, a	EPAC was equipped with the protective device (b)	P

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	combined front gear-change guide which conforms to EN 15194:2017, 4.3.14.4 shall be used.		
T 2.3.14	**Saddles and seat-posts (EN 15194:2017, 4.3.15)**		/
T 2.3.14. 1	**Limiting dimensions** (EN 15194:2017, 4.3.15.1) No part of the saddle, saddle supports, or accessories to the saddle shall be more than 125 mm above the top saddle surface at the point where the saddle surface is intersected by the seat-post axis.	Complied	P
T 2.3.14. 2	**Seat-post – Insertion-depth mark or positive stop (EN 15194:2017, 4.3.15.2) The seat-post shall be provided with one of the two following alternative means of ensuring a safe insertion-depth into the frame:**		/
T 2.3.14. 2.1	**Seat-post – Insertion-depth mark or positive stop - I** (EN 15194:2017, 4.3.15.2 a)) a) It shall contain a permanent, transverse mark of length not less than the external diameter or the major dimension of the cross-section of the seat-post that clearly indicates the minimum insertion-depth of the seat-post into the frame. b) For a circular cross-section, the mark shall be located not less than two diameters of the seat-post from the bottom of the seat-post (i.e. where the diameter is the external diameter). b) For a non-circular cross-section, the insertion-depth mark shall be located not less than 65 mm from the bottom of the seat-post (i.e. where seat-post has its full cross-section).	Diameter: 27.0 mm Length from the bottom: 104.8 mm Transverse mark length: 56.9 mm	P
T 2.3.14. 2.2	**Seat-post – Insertion-depth mark or positive stop - II** (EN 15194:2017, 4.3.15.2 b)) It shall incorporate a permanent stop to prevent it from being drawn out of the frame such as to leave the insertion less than the amount specified in a) above.	/	N/A

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T 2.3.14. 3	**Saddle/seat-post – security test (EN 15194:2017, 4.3.15.3)**		/
T 2.3.14. 3.1	**General** (EN 15194:2017, 4.3.15.3.1) If a suspension seat-post is involved, the test may be conducted with the suspension-system either free to operate or locked. If it is locked, the pillar shall be at its maximum length.	Complied	P
T 2.3.14. 3.2	**Saddles with adjustment-clamps** (EN 15194:2017, 4.3.15.3.2) a) When tested by the method described in EN 15194:2017, 4.3.15.3.4, there shall be no movement of the saddle adjustment clamp in any direction with respect to the seat-post, or of the seat-post with respect to the frame, nor any failure of saddle, adjustment clamp or seat-post. b) If the saddle design is such that it cannot accurately test the saddle/ seat-post clamp, it shall be possible to use a fixture which is representative of the saddle dimensions.	No movement between the saddle adjustment clamp and the seat-post during the test.	P
T 2.3.14. 3.3	**Saddles without adjustment-clamps** (EN 15194:2017, 4.3.15.3.3) Saddles that are not clamped, but are designed to pivot in a vertical plane with respect to the seat-post, shall be allowed to move within the parameters of the design and shall withstand the tests described in EN 15194:2017, 4.3.15.3.4 without failure of any components.	The saddle with adjustment clamps.	N/A
T 2.3.14. 4	**Saddle - Static strength test** (EN 15194:2017, 4.3.15.4.1) When tested by the method described in EN 15194:2017, 4.3.15.4.2, the saddle cover and/or plastic moulding shall not disengage from the chassis of the saddle, and there shall be no cracking or permanent distortion of the saddle assembly.	No cracking or permanent distortion was present on the sample during the test.	P
T 2.3.14.	**Saddle and seat-post clamp – Fatigue test**	Test force: 1000 N Test cycle: 200000 cycles	P

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5	(EN 15194:2017, 4.3.15.5.1) When tested by method described in EN 15194:2017, 4.3.15.5.3, there shall be no fractures or visible cracks in the seat-post or in the saddle, and no loosening of the clamp.	Test frequency: 2 Hz No fractures or visible cracks was present on the sample after the test.	
T 2.3.14. 6	**Seat-post - Fatigue test (EN 15194:2017, 4.3.15.6)**		/
T 2.3.14. 6.1	**Seat-post – Fatigue test (EN 15194:2017, 4.3.15.6.1)** **In the following test, if a suspension seat-post is involved, the test shall be conducted with the suspension system adjusted to give maximum resistance.** **Conduct the test in two stages on the same assembly as perEN 15194:2017, 4.3.15.6.2 and EN 15194:2017, 4.3.15.6.4.**		/
T 2.3.14. 6.2	**Seat-post - Fatigue test - Requirement for stage 1 - Seat-post without suspension system** (EN 15194:2017, 4.3.15.6.2.1) When tested by the method described in EN 15194:2017, 4.3.15.6.3, there shall be no visible cracks or fractures in the seat-post, nor any bolt failure. For composite seat-post, the peak deflection of seat-post during the test shall not increase by more than 20 % of the initial value.	/	N/A
T 2.3.14. 6.3	**Seat-post - Fatigue test - Requirement for stage 1 - Seat-post with suspension system** (EN 15194:2017, 4.3.15.6.2.2) a) When tested by the method described in EN 15194:2017, 4.3.15.6.3, there shall be no visible cracks or fractures in the seat-post, nor any bolt failure. b) The design shall be such that in the event of failure of the suspension system, the two main parts do not separate nor does the upper part (i.e. the part to which the saddle is attached) become free to swivel in the lower part.	Test force: 1000 N Test cycle: 100000 cycles Test frequency: 2 Hz No fractures or visible cracks was present on the sample after the test.	P
T 2.3.14. 6.4	**Seat-post - Fatigue test - Requirement for stage 2 - Seat-post without suspension system**	/	N/A

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	(EN 15194:2017, 4.3.15.6.4.1) When tested by the method described in EN 15194:2017, 4.3.15.6.5, there shall be no fractures, and the displacement shall not exceed 10 mm during testing.		
T 2.3.14. 6.5	**Seat-post - Fatigue test - Requirement for stage 2 - Seat-post with suspension system** (EN 15194:2017, 4.3.15.6.4.2) a) When tested by the method described in EN 15194:2017, 4.3.15.6.5, there shall be no fractures. b) The design shall be such that in the event of failure of the suspension system, the two main parts do not separate nor does the upper part (i.e. the part to which the saddle would be attached) become free to swivel in the lower part.	No fractures was present on the sample after the test.	P
T 2.3.15	**Spoke protector** (EN 15194:2017, 4.3.16) EPAC bicycles with multiple free-wheel/cassette sprockets shall be fitted with a spoke-protector guard to prevent the chain interfering with or stopping rotation of the wheel through improper adjustment or damage.	The single free-wheel sprockets was fitted on the bicycle.	N/A
T 2.3.16	**Luggage carriers** (EN 15194:2017, 4.3.17) If luggage carriers are fitted or provided they shall comply with EN ISO 11243:2016.	Complied Maximum load of rear luggage carrier: 25 kg	P
T 2.3.17	**Road-test of a fully-assembled EPAC (EN 15194:2017, 4.3.18)**		/
T 2.3.17. 1	**Road-test of a fully-assembled EPAC – Attachment of the components** (EN 15194:2017, 4.3.18.1) When tested by the method described in EN 15194:2017, 4.3.18.2, there shall be no system or component failure and no loosening or misalignment of the saddle, handlebar, controls or reflectors.	No failure, loosening or misalignment was present on the sample during the test.	P
T 2.3.17.	**Road-test of a fully-assembled EPAC – Driving behaviour**	No system or component failure and no loosening or misalignment of the	P

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2	(EN 15194:2017, 4.3.18.1) The EPAC shall with or without assistance exhibit stable handling in braking, turning and steering, and it shall be possible to ride with one hand removed from the handlebar (as when giving hand signals), without difficulty of operation or hazard to the rider.	saddle, handlebar, controls or reflectors.	
T 2.3.18	**Lighting systems and reflectors (EN 15194:2017, 4.3.19)**		/
T 2.3.18. 1	**General** (EN 15194:2017, 4.3.19.1) a) EPAC shall be equipped with reflectors at the front, rear and side. b) EPAC shall be equipped with lighting systems and reflectors in conformity with the national regulations in the country in which EPAC is marketed, because national regulations for lighting systems and reflectors differ from country to country.	Front light and reflector set, rear light and rear reflector, pedals reflectors and side reflectors were fitted;	P
T 2.3.18. 2	**Wiring harness** (EN 15194:2017, 4.3.19.2) a) When a wiring harness is fitted, it shall be positioned to avoid any damage by contact with moving parts or sharp edges. b) All connections shall withstand a tensile force in any direction of 10 N.	Tensile force [N]:>10N	P
T 2.3.18. 3	**Lighting systems** (EN 15194:2017, 4.3.19.3) a9 The lighting system consists of a front and a rear light. b) These devices shall comply with the provisions in force in the country in which the product is marketed. c) If there are no forced provisions of these devices, the lighting system shall comply with the requirements of ISO 6742-1:2015.	The vehicle is fitted with a front light and a rear light.	P
T 2.3.18. 4	**Reflectors (EN 15194:2017, 4.3.19.4)**		/

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T 2.3.18. 4.1	**General** (EN 15194:2017, 4.3.19.4.1) a) These devices shall comply with the provisions in force in the country in which the product is marketed. b) If there are no forced provisions of these devices, the retro-reflective devices shall comply with the requirements of ISO 6742-2:2015.	Complied	P
T 2.3.18. 4.2	**Rear reflectors** (EN 15194:2017, 4.3.19.4.2) Rear reflectors shall be red in colour.	Red reflector on the rear.	P
T 2.3.18. 4.3	**Side reflectors** (EN 15194:2017, 4.3.19.4.3) The retro reflective device(s) shall be either a) a reflectors fitted on the front half and on the rear half of EPAC. At least one of these shall be mounted on the spokes of the wheel. Where EPAC incorporates features at the rear wheel other than the frame and mudguard stays, the moving reflector shall be mounted on the front wheel; or b) a continuous circle of reflective material applied to both sides of each wheel within 10 cm of the outer diameter of the tyre. c) All side reflectors shall be of the same colour, either white (clear) or yellow.	Yellow side reflectors on the wheels.	P
T 2.3.18. 4.4	**Front reflectors** (EN 15194:2017, 4.3.19.4.4) Front reflectors shall be white (clear) in colour.	White reflector on the front.	P
T 2.3.18. 4.5	**Pedal reflectors** (EN 15194:2017, 4.3.19.4.5) a) Each pedal shall have reflectors, located on the front and rear surfaces of the pedal. b) The reflector elements shall be either integral with the construction of the pedal or mechanically attached, but shall be recessed from the edge of the pedal, or of the reflector housing, to prevent contact of the reflector element with a	Yellow reflector on the pedals.	P

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	flat edge placed in contact with the edge of the pedal.		
T 2.3.19	**Warning device** (EN 15194:2017, 4.3.20) Where a bell or other suitable device is fitted, it shall comply with the provisions in force in the country in which the product is marketed.	Warning device equipped.	P
T 2.3.20	**Thermal hazards** (EN 15194:2017, 4.3.21) A warning shall be placed on the surface if the temperature of the hot accessible surface could be above 60 °C (see EN ISO 7010:2020, symbol W017). Brake systems are excluded from this requirement.	Warning symbol present on the Motor.	P
T 2.3.21	**Performance Levels (PLr) for control system of EPACs (EN 15194:2017, 4.3.22)**		/
T 2.3.21.1	**General - Necessary performance level** (EN 15194:2017, 4.3.22) The safety related parts of the control systems of the EPAC shall comply with the required performance level (PLr) given in Table 34 in accordance with EN ISO 13849-1:2015.	Battery: PL c, category2 Controller: PL c, category2	P
T 2.3.21.2	**General - Functional safety according to EN ISO 13849** (EN 15194:2017, 4.3.22) Should risk assessment indicate that additional or different PLr are required for a particular application, these should be determined in accordance with EN ISO 13849:2015. Such PLr will be outside the scope of this standard.	The function safety of battery was assessed by SGS. Report No. : SHES191102665101 The function safety of controller was assessed by SGS. Report No. : SHES210100065001 The function safety report was provided by client.	P
T 2.3.21.3	**General - Described process (documentation)** (EN 15194:2017, 4.3.22) The manufacturer of the EPAC shall record the process adopted for verification of compliance with PLr for each relevant safety function.	The manufacturer recorded the process adopted for verification of compliance with PLr.	P
T 2.4	**List of significant hazards**		/

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	(EN 15194:2017)		
T 2.4.1	**Significant hazards** (EN 15194:2017, 4.4) The following significant hazards have been considered in this standard: a) Mechanical hazards: high deceleration, high acceleration, Protrusion, instability; kinetic energy; rotating elements and moving elements, rough, slippery surface, sharp edges; b) Electrical hazards: electromagnetic phenomena; electrostatic phenomena; overload; short-circuit; thermal radiation; c) Thermal hazards: explosion; flame; radiation from heat sources; d) Ergonomic hazards: effort; lighting; posture; e) Hazards associated with the environment in which the machine is used: water (rain and projection); f) Combination of hazards: braking under wet and dry condition, handgrips, motor management system, engine power management, installed braking power.	The significant hazards were considered in the test report and instruction manual.	P
T 3	**Marking and labelling**		/
T 3.1	**General** (EN 15194:2017, 5.1) The EPAC shall be marked visibly, legibly and indelibly with the following minimum particulars: a) contact and address of the manufacturer or authorized representative; b) EPAC according to EN 15194; c) appropriate marking required by legislation (CE); d) year of construction, that is the year in which the manufacturing was completed (it is not possible to use a code); e) cut off speed XX km/h; f) maximum continuous rated power XX kW; g) maximum permissible total weight (e.g. marked near the seat post or handlebar); h) designation of series or type;	See the marking	P

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	i) individual serial number if any; j) mass if EPAC mass is more than 25 kg; k) mass of the EPAC in the most usual configuration.		
T 3.2	**Frame** (EN 15194:2017, 5.1) The frame shall be: a) visibly and permanently marked with a successive frame number at a readily visible location such as near the pedal-crank, the seat-post, or the handlebar; b) visibly and durably marked, with the name of the manufacturer of complete EPAC or the manufacturer's representative and the number of this document, i.e. EN 15194. The method of testing for durability is specified in EN 15194:2017, 5.2. Where appropriate, if EPAC is equipped with a coupling device for a trailer the following values shall be given: c) Total weight of the trailer d) Vertical load on the coupling system.	Frame No.: S024MB02784 The sample is not equipped with a coupling device for a trailer.	P
T 3.3	**Recommended markings** (EN 15194:2017, 5.1) For components, currently there are no specific requirements, but it is recommended that the following safety-critical components be clearly and permanently marked with traceable identification, such as a manufacturer's name and a part number: e) front fork; f) handlebar and handlebar-stem; g) seat-post; h) brake-levers, brake blocks and/or brake-block holders; i) outer brake-cable casing; j) hydraulic-brake tubing; k) disc-brake callipers, brake-discs, and brake pads; l) chain; m) pedals and cranks; n) bottom-bracket spindle; o) wheel-rims.	See the actual components marking.	P
T 3.4	**Durability test**	No curling or erasure was present on	P

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	(EN 15194:2017, 5.2.1) When tested by the method described in EN 15194:2017, 5.2.2 (Rub the marking by hand for 15 s with a piece of cloth soaked in water and again for 15 s with a piece of cloth soaked in petroleum spirit.), the marking shall remain easily legible. It shall not be easily possible to remove any label nor shall any label show any sign of curling.	the label after the test.	
T 4	**Instruction for use** **(EN 15194:2017, 6)**		/
T 4.1	**General** (EN 15194:2017, 6) a) Each EPAC shall be provided with a set of instructions in the language of the country to which EPAC will be supplied. Different countries may have local requirements regarding this type of information (see EN 82079-1:2012). b) Instructions for use shall be delivered obligatory in paper form. c) For more detailed information and enabling an access for vulnerable people instructions for use should be available additionally in electronic form on demand.	Complied	P

3.2 Points of Non-Compliance according to the test specification

None

4. Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2 Factory surveillance cycle

None

4.3 Additional information for routine tests to be performed by the factory(ies)

Routine tests for mechanical testing: None

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5. Documentation

None

6. Summary

"The test specification is met"
TÜV SÜD

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Tested by: Jidong Zhang

Project handler

Approved by: Caspar Zhu

Project reviewer

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