



| TEST REPORT EN ISO 12100:2010 Safety of machinery –General principles for design- Risk assessment and risk reduction | |
|--|---|
| Report Reference No: | GZES191102656502 |
| Date of issue | 2020-01-17 |
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| Testing Laboratory | SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch |
| Address | 198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China |
| Applicant's name: | Shenzhen Kixin Electronics Co., Ltd. |
| Address | 4/F, Maker Space, Hualian Industrial Zone, Huaning RD., Dalang ST., Longhua, Shenzhen, China |
| Test specification | |
| Standard | EN ISO 12100:2010 |
| Test procedure.....: | SGS-CSTC |
| Non-standard test method.....: | N/A |
| Test Report Form No: | EN ISO 12100 A |
| Test Report Form(s) Originator.....: | SGS-CSTC |
| Master TRF.....: | Dated 2012-12 |
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| Test item description | Scooter |
| Trade Mark | Not supplied |
| Manufacturer | Same as applicant |
| Model/Type reference.....: | X8 |
| Ratings | For adapter: 100 V - 240 V~; 50 Hz / 60 Hz; 2.5 A; Class II For scooter: 36V ; IPX4 |

Test Laboratory:

Testing location/ address : SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch
198 Kezhu Road, Science City, Economic & Technology
Development Area, Guangzhou, Guangdong, China

Tested by (name + signature) : Sharon Wang *Sharon Wang*

Approved by (name + signature) : Andy Fan *Andy Fan*

 **Testing procedure: TMP**

Tested by (name + signature) :

Approved by (name + signature) . :

Testing location/ address :

 Testing procedure: WMT

Tested by (name + signature) :

Witnessed by (name + signature) :

Approved by (name + signature) . :

Testing location/ address :

 Testing procedure: SMT

Tested by (name + signature) :

Approved by (name + signature) . :

Supervised by (name + signature)

..... :

Testing location/ address :

 Testing procedure: RMT

Tested by (name + signature) :

Approved by (name + signature) . :

Supervised by (name + signature)

..... :

Testing location/ address :

Summary of testing:

All tests and assessments are performed on the prototype of the original sample (X8) and the technical file which are submitted by the client.

Risk assessment was carried according to EN ISO 12100:2010. Followed by risk assessment, protective measures have been implemented by the manufacturer for risk reduction. Iteration of this process have been carried out to eliminate hazards as far as practicable and to achieve appropriate risk reduction.

Tests performed (name of test and test clause):

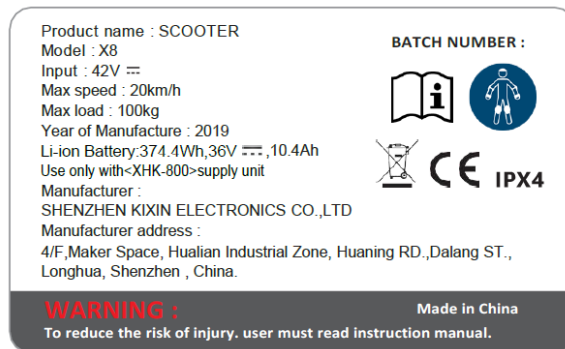
Risk assessment was carried according to EN ISO 12100:2010.

Test location:

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch
 198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China

Copy of marking plate

(Scooter Label)



Adapter Label



| | |
|--|--------------------------|
| Test case verdicts.....: | |
| Test case does not apply to the test object | N/A |
| Test item does meet the requirement | P(ass) |
| Test item does not meet the requirement | F(ail) |
| Testing | |
| Date of receipt of test item.....: | 2019-11-16 |
| Date(s) of performance of test.....: | 2019-11-16 to 2020-01-06 |
| General remarks | |
| <p>This report shall not be reproduced except in full without prior approval of the company.</p> <p>The test results presented in this report relate only to the item(s) tested.</p> <p>“(see remark #)” refers to a remark appended to the report.</p> <p>“(see Annex #)” refers to an annex appended the report.</p> <p>Throughout this report a point is used as the decimal separator.</p> <p>This document is issued by the company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company’s findings at the time of its intervention only and within the limits of Client’s instructions, if any. The Company’s sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.</p> | |
| General product information: | |
| <p>Foldable scooter, electrical brake and mechanical brake, built in battery power supply charged by an adapter which supplied by client.</p> | |

| No. | Type or group | Hazard | Y/N | Notes |
|-----|--------------------|---|-----|-------|
| 1 | Mechanical hazards | Being run over | Y | |
| | | Being thrown | Y | |
| | | Crushing | N | |
| | | Cutting or severing | N | |
| | | Drawing-in or trapping | N | |
| | | Entanglement | Y | |
| | | Friction or abrasion | N | |
| | | Impact | Y | |
| | | Injection | N | |
| | | Shearing | N | |
| | | Slipping, tripping and falling | Y | |
| | | Stabbing or puncture | N | |
| | | Suffocation | N | |
| 2 | Electrical hazards | Burn | Y | |
| | | Chemical effects | Y | |
| | | Effects on medical implants | N | |
| | | Electrocution | Y | |
| | | Falling, being thrown | N | |
| | | Fire | Y | |
| | | Projection of molten particles | N | |
| | | Shock | Y | |
| 3 | Thermal hazards | Burn | Y | |
| | | Dehydration | N | |
| | | Discomfort | N | |
| | | Frostbite | N | |
| | | Injuries by the radiation of heat sources | N | |
| | | Scald | N | |
| 4 | Noise hazards | Discomfort | N | |
| | | Loss of awareness | N | |
| | | Loss of balance | N | |
| | | Permanent hearing loss | N | |
| | | Stress | N | |
| | | Tinnitus | N | |
| | | Tiredness | N | |

| No. | Type or group | Hazard | Y/N | Notes |
|---------------|--|--|-----|-------|
| | | Any other (e.g. mechanical, electrical) as a consequence of an interference with speech communication or with acoustic signals | N | |
| 5 | Vibration hazards | Discomfort | N | |
| | | Low-back morbidity | N | |
| | | Neurological disorder | N | |
| | | Osteo-articular disorder | N | |
| | | Trauma of spine | N | |
| | | vascular disorder | N | |
| 6 | Radiation hazards | Burn | N | |
| | | Damage to eyes and skin | N | |
| | | Effects on reproductive capability | N | |
| | | Genetic mutation | N | |
| | | Headache, insomnia, etc. | N | |
| 7 | Material/substance hazard | Breathing difficulties suffocation | N | |
| | | Cancer | N | |
| | | Corrosion | N | |
| | | Effects on reproductive capability | N | |
| | | Explosion | N | |
| | | Fire | N | |
| | | Infection | N | |
| | | Mutation | N | |
| | | Poisoning | N | |
| Sensitization | Y | | | |
| 8 | Ergonomic hazards | Discomfort | N | |
| | | Fatigue | N | |
| | | Musculoskeletal disorder | N | |
| | | stress | N | |
| | | Any other(e.g. mechanical, electrical) as a consequence of human error | Y | |
| 9 | Hazards associated with environment in | Burn | N | |
| | | Slight disease | N | |
| | | Slipping, falling | Y | |
| | | suffocation | N | |

| No. | Type or group | Hazard | Y/N | Notes |
|-----|---------------------------|--|-----|-------|
| | which the machine is used | Any other as a consequence of the effect caused by the sources of the hazards on the machine or parts of the machine | N | |
| 10 | Combination of hazards | e.g. dehydration, loss of awareness, heat stroke | N | |

Each hazards situation is allocated a risk index according to the following matrix:

| | | Risk index calculation | | | | | |
|----|----|------------------------|----|----|----|----|----|
| | | O1 | | O2 | | O3 | |
| | | A1 | A2 | A1 | A2 | A1 | A2 |
| S1 | F1 | 1 | | | | 2 | |
| | F2 | 1 | | | | 2 | |
| S2 | F1 | 2 | | 3 | | 4 | |
| | F2 | 3 | 4 | 5 | | 6 | |

- a risk index of 1 or 2 corresponds to the lowest priority of action (priority 3)
- a risk index of 3 or 4 corresponds to a medium priority of action (priority 2)
- a risk index of 5 or 6 corresponds to the highest priority of action (priority 1)

Severity of harm: S

- 1) S1 slight injury (usually reversible)
- 2) S2 serious injury (usually irreversible, including fatality)

Frequency and/or duration of exposure to hazard: F

- 1) F1 twice or less per work shift or less than 15 min cumulated exposure per work shift
- 2) F2 more than twice per work shift or more than 15 min cumulated exposure per work shift

Probability of occurrence of the hazardous event: O

- 1) O1 mature technology, proven and recognized in safety application; robustness
- 2) O2 technical failure observed in the two last years:
 - inappropriate human action by a well-trained person aware of the risks and having more than six months experience on the work station
- 3) O3 technical failure regularly observed (every six months or less):
 - inappropriate human action by an untrained person having less than six months experiences on the work station;
 - similar accident observed in the plant in the preceding ten years

Possibility of avoidance or reduction of harm: A

- 1) A1 possible under some conditions:
 - if parts move at a speed less than 0,25 m/s
 - And the exposed worker is familiar with the risks and with the indications of a hazardous situation or impending hazardous event;
 - depending on particular conditions (temperature, noise, ergonomics, etc.)
- 2) A2 impossible

| Risk assessment (hazard identification) | | | | | | | | | |
|---|--------------------|--|---|--|---|---|---|---|------------|
| Ref. no. | Task | Hazard | Hazardous situation | Hazardous events | S | F | O | A | Risk index |
| 1. | Riding | Being run over Impact | Approaching the moving machine Emergency brake | Being run over by the machine. Being impacted by the machine or other traffic on the road | 2 | 2 | 2 | 2 | 5 |
| 2. | Riding | Being thrown | Abrupt stop during moving. | Being thrown is possible with abrupt stop. | 2 | 1 | 2 | 1 | 2 |
| 3. | Riding | Entanglement | Approaching the rotating wheels | Entanglement by the rotating wheels | 1 | 2 | 2 | 2 | 1 |
| 4. | Riding | Slipping, tripping and falling | Lose of balance | Slipping from the foot pedal. Falling from the machine. | 2 | 2 | 2 | 2 | 5 |
| 5. | Riding Charging | Burn Electrocution Fire Shock | Operation, commissioning or maintain | Contact live parts. Failure of basic insulation. Burn or fire due to short circuit. | 2 | 2 | 2 | 2 | 5 |
| 6. | Charging | Chemical effects | Exposure of chemical substances and material. | Chemical effects are possible by batteries overvoltage. | 2 | 2 | 2 | 2 | 5 |
| 7. | Charging | Burn | Explosion during charging. | Burn is possible by batteries overvoltage. | 2 | 2 | 2 | 2 | 5 |
| 8. | Charging Riding | Sensitization | Explosion during riding or charging. | Sensitization is possible when using chemical-physical-unsafe materials | 2 | 1 | 2 | 2 | 3 |
| 9. | Riding | Any other(e.g. mechanical, | Riding on scooter. | Any other (e.g. mechanical, electrical) as a con-sequence of | 2 | 1 | 2 | 2 | 3 |

| | | | | | | | | | |
|-----|--------|---|--|---|---|---|---|---|---|
| | | electrical) as a consequence of human error | | human error is possible by cramped posture while learning | | | | | |
| 10. | Riding | Slipping, falling | <p>Standing on smooth pedal surface. Crash the projection of ground. Riding on ground with bumps and hollows. Rush over the deceleration zone with high speed.</p> | Slipping, falling is possible by improper use or incorrect ground | 2 | 2 | 2 | 2 | 5 |

| Risk reduction and risk assessment after risk reduction | | | | | | |
|---|---|--------------------------------------|---|---|---|------------|
| Ref. no. | Risk reduction Protective measures | Risk estimation after risk reduction | | | | |
| | | S | F | O | A | Risk index |
| 1. | <ol style="list-style-type: none"> 1. Good visibility from the riding position, speed and braking control easily. 2. Limited motor speed 3. Warning notice in instruction manual | 1 | 2 | 2 | 1 | 1 |
| 2. | <ol style="list-style-type: none"> 1. Warning of residual risk. User shall keep low speed and play in the safe open area while learning how to control the scooter. 2. All persons shall keep sufficient braking distance to avoid crash. 3. Personal protection equipment like a skateboard helmet, and knee and elbow pads and wrist guards shall be wear on to reduce risk of injury. | 2 | 1 | 2 | 1 | 2 |
| 3. | <ol style="list-style-type: none"> 1. Wheels guard are provided to avoid entanglement. | 1 | 2 | 2 | 1 | 1 |
| 4. | <ol style="list-style-type: none"> 1. Foot pedal are made of slip-resistant material. 2. Warning of residual risk. | 2 | 1 | 1 | 2 | 2 |
| 5. | <ol style="list-style-type: none"> 1. Use of proven components. 2. Suitable design of IP protection degree. 3. Adequate and appropriate insulation is used. 4. Protection of indirect contact is provided by protective bonding and automatic disconnecting the power supply by overcurrent protection devices. 5. Overcurrent and overload protection are provided. 6. Warning labels against electric shock are affixed on the machine(s) and the instruction manual. | 2 | 1 | 1 | 2 | 2 |

| | | | | | | |
|-----|--|---|---|---|---|---|
| 6. | <ol style="list-style-type: none"> 1. Batteries are complied with IEC 62133. 2. Overcharge and overvoltage charging test are carried out according to EN 60335-1 to verify safety during overvoltage of batteries. 3. The batteries are totally covered by the scooter enclosure to avoid exposure of chemical substances and material once leakage occurs. | 2 | 1 | 2 | 2 | 3 |
| 7. | <ol style="list-style-type: none"> 1. Batteries are complied with IEC 62133. 2. Overcharge and overvoltage charging test are carried out according to EN 60335-1 to verify safety during overvoltage of batteries. | 2 | 1 | 2 | 2 | 3 |
| 8. | <ol style="list-style-type: none"> 1. The batteries are totally covered by the scooter enclosure to avoid exposure of chemical substances and material once leakage occurs. | 2 | 1 | 1 | 2 | 2 |
| 9. | <ol style="list-style-type: none"> 1. Warning of residual risk. Personal have no experience on riding such type of scooter shall be learn carefully and under the supervision of professional trainer. | 2 | 1 | 2 | 2 | 3 |
| 10. | <ol style="list-style-type: none"> 1. Foot pedal are made of slip-resistant material. 2. Warning of residual risk. Person shall not play the scooter on ground with bumps and hollows and shall not rush over the deceleration zone with high speed. 3. Personal protection equipment like a skateboard helmet, and knee and elbow pads and wrist guards shall be wear on to reduce risk of injury. | 1 | 2 | 2 | 2 | 1 |

--- End of Report ---